



## POPULAR CLOUD APPLICATIONS: A CASE STUDY

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**Abstract-** The role of cloud computing for business is more and more prominent. Indeed, cloud computing is probably the most buzzed tech today. The cloud has proven that it can help small businesses to cut costs, while improving productivity. New cloud applications are being introduced to small business on regular basis. There are plenty of alternatives for small business owners to choose. Unfortunately, choosing the right cloud apps for your business need is rather trivial. We have given importance to usefulness of these Free Cloud Applications and have listed them.

These Free Cloud Applications, usually those which can be accessed from the browser, (Some may be supported by desktop applications) does not store information or data on your local hard disk but in the Cloud. Free Cloud Applications can do basic tasks like maintaining the schedule of your work to advanced and complex tasks. Only less known and useful are listed.

**Keywords-** Cloud, Cloud computing, IaaS, SaaS, PaaS, Data centers, I Cloud, IBM Cloud, Google apps, Microsoft Azure, e Governance

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### Introduction

**Cloud Computing:** Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction [14].

#### Three delivery models of Cloud

**Software as a Service (SaaS):** The consumer uses an application, but does not control the operating system, hardware or network infrastructure on which it's running.

**Platform as a Service (PaaS):** The consumer uses a hosting environment for their applications. The consumer controls the applications that run in the environment (and possibly has some degree of control over the hosting environment), but does not control the operating system, hardware or network infrastructure on which they are running. The platform is typically an application framework.

**Infrastructure as a Service (IaaS):** The consumer uses

"fundamental computing resources" such as processing power, storage, networking components or middleware. The consumer can control the operating system, storage, deployed applications and possibly networking components such as firewalls and load balancers, but not the cloud infrastructure beneath them. [4]

#### Four Deployment Models

**Public Cloud:** In simple terms, public cloud services are characterized as being available to clients from a third party service provider via the Internet. The term "public" does not always mean free, even though it can be free or fairly inexpensive to use. A public cloud does not mean that a user's data is publically visible; public cloud vendors typically provide an access control mechanism for their users. Public clouds provide an elastic, cost effective means to deploy solutions. [9] processing to the public cloud, while keeping business-critical services and data in their control.

#### Popular Cloud Applications

**IClouds-** This new service is the latest incarnation of what has been called iTools, then .Mac, then MobileMe.

iCloud is so much more than a hard drive in the sky. It makes it quick and effortless to access just about everything on the devices you use every day. iCloud automatically and securely stores your content so it's always available to your iPhone, iPad, iPod touch, Mac, or PC. It gives you access to your music, apps, latest photos, and more from whichever device you happen to be using. And it keeps your email, contacts, and calendars up to date across all your devices. No syncing required. No management required. In fact, no anything required. iCloud does it all for you.

When you sign up for iCloud, you automatically get 5GB of free storage. And that's plenty of room, because of the way iCloud stores your content. You're purchased music, apps, books, and TV shows, as well as your Photo Stream, don't count against your free storage. Since your mail, documents, Camera Roll, account information, settings, and other app data don't use as much space, you'll find that 5GB goes a long way. And if you need more storage, you can easily purchase storage right from your device.

Documents can be synced to all devices through iCloud using iWork apps. These include Pages, Keynote and Numbers.

Apple's take on the cloud is download-centric. Information, music, and photos are stored in the cloud and then synced to devices. You'll have to have the complete files downloaded to your device, which means iCloud won't save you any storage space. This is in sharp contrast to Amazon Cloud Player and Google Music, both of which stream music directly from the cloud without requiring a download. Apple's approach does ensure that you'll have access to data without wireless connectivity, but some of its components rely on Wi-Fi—3G won't cut it. And with its emphasis on ownership, don't count on iCloud offering a paid music subscription service in the near future, despite the company's enormous repository of online tunage.

**Ibm cloud-** IBM Cloud refers to a collection of enterprise-class technologies and services developed to help customers assess their cloud readiness, develop adoption strategies and identify business entry points for a cloud environment. IBM's cloud computing strategy is based on a hybrid cloud model that focuses on integrating the private cloud services of a company with the public cloud.

One large component of the IBM Cloud strategy is SaaS IBM Cast Iron Cloud, a cloud integration appliance that emerged following IBM's acquisition of Cast Iron Systems in 2010. Additional components include IBM Strategy and Change Services for Cloud Adoption and IBM Strategy and Design Services for Cloud Infrastructure to help clients develop a cloud roadmap, as well as IBM Smart Business Development and Test Cloud, IBM Smart Desktop Cloud, IBM Cloud Service Provider Platform to help build an enterprise cloud environment. [22]

To help ramp up its cloud computing initiative, IBM also recently opened a large cloud research facility in Singapore, launched a core cloud facility in its Raleigh, N.C. data center, and unveiled a new cloud certification program.

**IBM's products for cloud includes** [19]

- Development & test cloud solutions for secure, scalable software development and testing
- Desktop solutions for virtual desktops and end user support
- IBM LotusLive solutions for online collaboration, secure cloud based email, and more

- Information solutions for storage, business analytics and information archiving
- Business and infrastructure cloud consulting services for adoption, infrastructure and testing needs
- IBM CloudBurst 1.2 (US) with integrated storage, virtualization, networking and built-in service management systems for a variety of workloads

**Google apps-** Google has been pushing the technological bounds of cloud computing for more than ten years.

Because data in Google Apps is stored in the cloud instead of on employee computers, multiple users can access and contribute to projects simultaneously without worrying about using the same operating system, software, or browser. [16]

Moving to Google's cloud doesn't mean you lose control of your data or your technology. The Google Apps Terms of Service explicitly state that customers retain ownership of their data in Google Apps, and Google firmly believes the customers should be able to easily get their data out of Google Apps if they ever decide to stop using the service. Furthermore, Google Apps provides controls so administrators can manage which applications their users can access and how employees can use each service. Finally, Google Apps APIs allows administrators build custom functionality and integrations with other technologies. [20]

Google Apps is a collection of web-based programs and file storage that run in a web browser.

**The applications include:**

- Communication tools (Gmail, Google Talk, and Google Calendar),
- Productivity tools (Google Docs: text files, spreadsheets, and presentations),
- Customizable start page (iGoogle), and
- Google Sites (to develop web pages).

Google stores all of the files and content centrally and keeps a record of the different versions of a file. With Google Apps, sharing content is as simple as granting someone access, which facilitates collaboration, peer review of academic materials, and the collective generation of knowledge. [21]

**Why choose Google Apps?** [22]

**Lower infrastructure costs-** All your email is stored securely on Google's servers, so your organization no longer has to maintain email servers on-site.

**Lower support costs-** Because Google hosts the email and calendar services, there's no more email client software to maintain on your computer.

**Highly scalable environment-** With Google Apps, your email capacity will grow automatically as your organization grows, and we'll avoid the complexity of internal systems.

**Access to services from anywhere, anytime-** A key benefit of the Google-hosted solution is that you can access email, contacts, and calendar from any computer or mobile device with an Internet connection, anywhere in the world.

**More collaboration features-** With Google's next-generation applications, you can collaborate with colleagues, customers, and partners more easily and efficiently than ever before.

**Instant messaging-** Because Google Apps includes Google Talk, you can now implement an instant messaging system for your organization.

### What are the key benefits of Google Apps?

**Dual factor authentication-** You get the option to turn on dual factor authentication straight to your mobile phone – More details

**Lots of storage-** You get a full 25 GB of online storage for your email (much more than what you probably have now), so you can archive all of your email online. You'll no longer need to worry about deleting messages or saving them in offline folders.

**Enhanced message organization and retrieval-** With Google Mail, you'll spend less time managing folders and searching for messages. For example, you can add one or more tags, or "labels," to your messages to organize and store them more efficiently. And with the Google-powered search feature, you can find any message quickly and easily, whether it's in your Inbox or stored in your message archive.

**Easier calendar sharing-** Google Calendar lets you and your team members quickly and easily share your calendars with each other and specify the details you want to show. Calendar sharing is a great way for you and your coworkers to keep each other informed about your schedules. Now it's easier than ever to find out if someone is in a meeting, on a business trip, or on vacation.

**Integrated chat-** With the Google Talk instant messaging application, you can communicate instantly with your coworker's right from the Email interface. In addition, all your chats are automatically saved in your Email application, so you can always retrieve important information.

**Real-time collaboration-** Using Google Docs, you can create documents, spreadsheets, and presentations, and you and your team members can view and edit them at the same time. You can still use your other document editors, as needed, but now you'll have more options for storing and collaborating on documents.

**Easy-to-build team web sites-** With Google Sites, your team has the ability to quickly publish a robust internal web site on which to gather all sorts of shared information, such as documents, spreadsheets, presentations, files, and videos. You can even embed Google calendars and other gadgets on your site!

**Powerful video sharing-** Using Google Video for business, you can easily share videos with your team or across your organization, for a whole new level of communication and collaboration.

**Microsoft Azure-** Windows Azure exists in a public cloud. Windows Azure itself is not made available as a packaged software product for organizations to deploy into their own IT enterprises. However, Windows Azure-related features and extensions exist in Microsoft's on-premise software products, and are collectively part of Microsoft's private cloud strategy. It is important to understand that even though the software infrastructure that runs Microsoft's public cloud and private clouds are different, layers that matter to end-user organizations, such as management, security, integration, data, and application are increasingly consistent across private and public cloud environments. [23]

The Windows Azure platform represents one of the major components of the Software-plus-Services strategy, as Microsoft's cloud computing operating environment, designed from the outset to holistically manage pools of computation, storage and networking; all encapsulated by one or more services. [23]

Windows Azure platform allows you to deploy and scale your web applications transparently in the cloud. You can build Azure application with Microsoft ASP.NET and Microsoft SQL Server, or with open source components such as PHP and MySQL. Gain the

skills to architect and develop real-world applications using Windows Azure. It is expected that attendees have some prior experience with Windows Azure, and the Azure Services Training Kit is a recommended prerequisite. During this half-day workshop, we show how to build basic Windows Azure applications on Microsoft and open source technologies, and introduce best practices for deploying, managing, and scaling your applications.[24]

### Benefits of using Windows Azure: [27]

- **Wide Distribution** – Instead of having just one big machine where all your data sits, your data is distributed over a large number of smaller machines. That's really the essence of cloud computing.
  - **Scalability** – In terms of performance, Windows Azure ensures your servers perform the same no matter how much data they are storing. Your chance of being Slash dotted is decreased tremendously to very slim.
  - **Replication** – All data is replicated more than once. That equals greater performance, more scalability, and overall better service.
  - **Consistency** – Writing code for Windows Azure is simple. When you update the projects you are working on, all future API calls will see those changes. Windows Azure updates immediately.
  - **Geodistribution** - Imagine being in New Orleans when Hurricane Katrina wiped out the city. If you had your data on one server in that location, then it was lost. Geodistribution allows you to distribute your data geographically. Having more than one copy prevent natural disasters from killing your business, but it also allows you to store your code close to the teams that need it.
  - **Loads Of Storage**– You pay only for what you use, and you can always be assured that you'll have more than you need.
  - **E-Governance data centers on cloud (IaaS)**-State Data Centre (SDC) has been identified as one of the important element of the core infrastructure for supporting e-Governance initiatives of National eGovernance Plan (NeGP). Under NeGP, it is proposed to create State Data Centers for the States to consolidate services, applications and infrastructure to provide efficient electronic delivery of G2G, G2C and G2B services. These services can be rendered by the States through common delivery platform seamlessly supported by core Connectivity Infrastructure such as State Wide Area Network (SWAN) and Common Service Centre (CSC) connectivity extended up to village level. State Data Centre would provide many functionalities and some of the key functionalities are Central Repository of the State, Secure Data Storage, Online Delivery of Services, Citizen Information/Services Portal, State Intranet Portal, Disaster Recovery, Remote Management and Service Integration etc. SDCs would also provide better operation & management control and minimize overall cost of Data Management, IT Resource Management, Deployment and other costs. [24]
- Department of Information Technology (DIT) has formulated the Guidelines to provide Technical and Financial assistance to the States for setting up State Data Centre. These Guidelines also include the implementation options that can be exercised by the State to establish the SDC.
- SDC scheme has been approved by Government with an outlay

of Rs. 1623.20 Crores over a period of 5 years. [22]  
 It is expected that the State Data Centers shall be set-up and operationalised in all the States/UTs by March 2011. [22]  
 The Indian government is moving to adopt the Cloud faster than the large enterprise segment. Some state governments are already consuming services from others through this model and there is potential to employ Cloud computing for things like sharing SDCs. Obviously, thanks to the sensitive nature of information handled by the government and data residency issues, the private Cloud is going to be the preferred option for this sector. [26]  
 "Governments in BRICS are extremely active participants in the Cloud ecosystem. The government of India is actively promoting Cloud computing through the construction of various test beds and the launch of multiple Cloud service initiatives such as e-governance, Cloud grids etc.," said Praveen Bhadada, Manager-Global Consulting, Zinnov Management Consulting Pvt. Ltd.  
 The Jammu & Kashmir state government is the first to adopt Cloud computing for its e-governance services. The government, using the State Data Centers based out of Madhya Pradesh, is provisioning e-governance services such as issuing death or birth certificates and trade licenses through the Cloud. It is using Microsoft's solution to implement Cloud computing. The governments of Himachal Pradesh and Uttaranchal are also in discussions with Microsoft to roll out e-Government services based on the Cloud platform.[26]

**Conclusion**

Cloud computing has a lot of benefits as it helps reduce maintenance costs, hardware costs and licensing costs.  
 Investing in cloud computing helps improve productivity in the firm and customer satisfaction. It also improves provision of services. It also has some disadvantages as the firm investing in cloud computing loses control of its data and information. This affects data and information security as the company relies on the third party for such services.  
 Though cloud computing is still in its infancy but it's clearly gaining momentum. Organizations like Google, Yahoo, and Amazon are already providing cloud services. The products like Google App-Engine, Amazon EC2, and Windows Azure are capturing the market with their ease of use, availability aspects and utility computing model. Users don't have to be worried about the hinges of distributed programming as they are taken care of by the cloud providers.

**Future Scope**

In future cloud computing offers more complex service like e-commerce, e-procurement etc. The future of cloud computing has to be visible more in coming years and people will learn lessons about the drawbacks of cloud computing like security of data after some time.

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