

CLOUD ERP – A SOLUTION MODEL

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Abstract – Recently cloud computing has become a buzzword and it is having applications in many domains. New cloud ERP based solutions are multiplying, by setting stage for acceleration of the delivery of ERP functions as cloud-based services. This is an attempt to study how cloud services especially SaaS helps in implementation of Cloud ERP.

Keywords- Cloud Computing, SaaS, Cloud ERP.

I. INTRODUCTION

Globally, business is changing very fast in terms of enterprise systems and industries need very specialized solutions and at the same time most of the economies are coming out of recession and the companies are catching up on the growth curve. Industrial problems are very complex and need lot of money and efforts. There is a continued need to enhance the efficiency of operations. The ERP platforms are evolving to address these emerging needs of global enterprise. The use of ERP has changed radically over a period of few years. Today ERP can be applied to any company operating in any kind of field. Cloud ERP is evolving as a solution model.

Cloud ERP is simple to deploy and its controlling depends on the support of the vendor. Organizations need not to bear additional server and other dependent costs. Cloud ERP Vendor can ensure the control of ERP on behalf of business organizations. It is easy and quick to implement an ERP to a business organization as it relies on internet.

SaaS is currently the most popular and prolific type of cloud computing service. SaaS ERP enables smaller, budget limited companies to have access to incredible technologies in an affordable way. Its high flexibility and scalability, high performance with better availability, vast services and less maintenance makes SaaS the key setting for the rapid development that Cloud Computing is creating. It is becoming an increasingly universal software delivery model that support implementation of service-oriented architecture using Web services technologies. With SaaS gaining mainstream popularity, enhanced by the advent of web based computing options and virtualization platforms, the enterprise infrastructure is rapidly expanding into a large 'computing cloud'.

This paper gives an insight into the nature of cloud computing impact on ERP implementations and attempts to find how external cloud services (SaaS) can make ERP at low

cost working with simple experience, faster and better. This paper also identifies the scope and benefits of cloud ERP.

II. CLOUD COMPUTING

Cloud computing, as an innovative distributed computing, can provide dynamic resource buffer, virtualization and highly usable next generation of enterprise data center. With cloud computing, the resources are shared and so are the costs. Users can pay as they go and only use what they need at any given time, keeping cost to the user down. Cloud computing is very much a business model as well. Providers of cloud computing solutions, whether they are software, hardware, platform, or storage providers, deliver their offerings over the Internet. There are no shrink wrapped boxes containing discs or hardware for you to buy and set up yourself. Cloud providers typically charge monthly recurring fees based on your usage.



Fig 1. Cloud Computing Resources

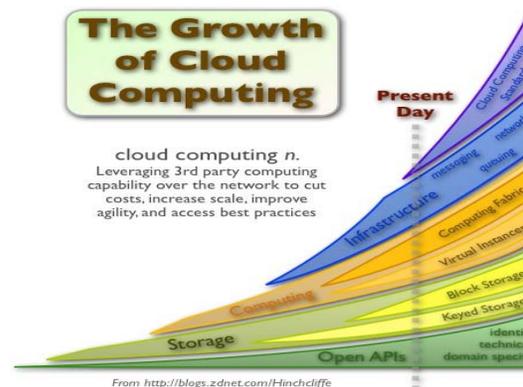


Fig 2. The growth of Cloud Computing

III. CLOUD COMPUTING MODELS

The cloud computing can be categorized as Public Cloud, Private Cloud and Hybrid Cloud as depicted in fig. 3 given below defines the various models of cloud computing.

- A. **Public Cloud Computing:** The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.
- B. **Private cloud Computing:** The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premise or off premise.
- C. **Hybrid cloud Computing:** The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).

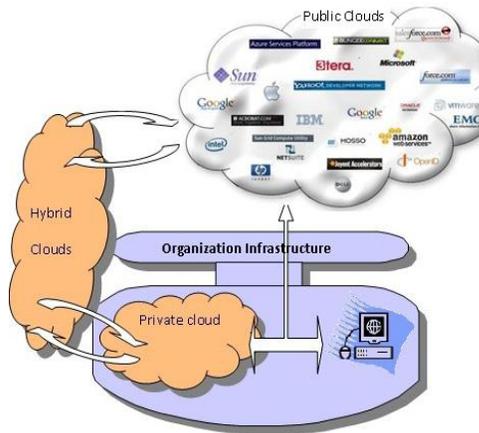


Fig 3. Cloud Computing Models

IV. CLOUD COMPUTING SERVICES

Below Fig. 4 illustrates the services provided by the cloud service providers that can be collected into three categories:

- A. **SAAS:** Cloud application services or "*Software as a Service (SaaS)*" deliver software as a service over the Internet, eliminating the need to install and run the application on the customer's own computers and simplifying maintenance and support.
- B. **PAAS:** The "*Platform as a service*" covering a layer of software and presents it as a service that can be used to construct a higher-level services. In other words, the capability provided to the consumer is to deploy onto the cloud infrastructure consumer-related or acquired applications created using programming languages and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over

the deployed applications and possibly application hosting environment configurations.

- C. **IAAS:** Cloud infrastructure services or "*Infrastructure as a Service (IaaS)*" delivers computer infrastructure, typically a platform virtualization environment as a service. Rather than purchasing servers, software, data center space or network equipment, clients instead buy those resources as a fully outsourced service. The service is typically billed on a utility computing basis and amount of resources consumed (and therefore the cost) will typically reflect the level of activity. It is an evolution of virtual private server offerings.

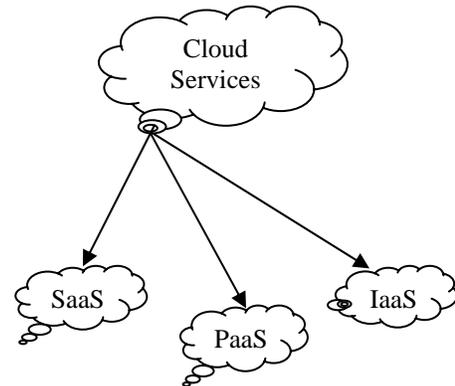


Fig 4. Cloud Services

V. ERP SYSTEM

An **Enterprise Resource Planning (ERP)** is the term that covers whole product line. It is an integrated computer-based application used to manage internal and external resources, including tangible assets, financial resources, materials, and human resources. Any business greatly benefits by adapting this feature because you can customize it or integrate it with other packages to satisfy unique requirements. Its purpose is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders. Built on a centralized database and normally utilizing a common computing platform, ERP systems consolidate all business operations into a uniform and enterprise-wide system environment.

An ERP system can either reside on a centralized server or be distributed across modular hardware and software units that provide "services" and communicate on a local area network. The distributed design allows a business to assemble modules from different vendors without the need for the placement of multiple copies of complex and expensive computer systems in areas which will not use their full capacity. ERP is a massive software architecture that supports the streaming and distribution of geographically scattered enterprise wide information across all the functional units of a business house. It provides the executives with a comprehensive overview of the complete business execution which in turn influences their decisions in a productive way.

ERP referred to the way a large organization planned to use its organizational wide resources. Formerly, ERP systems were used in larger and more industrial types of companies. However, the use of ERP has changed radically over a period of few years. Today ERP can be applied to any type of company, operating in any kind of field.

VI. CLOUD ERP

ERP software that is deployed into a cloud environment becomes "Cloud ERP Software". Most (if not all) cloud environments are built using virtualization and load balancing technology that allows applications to be deployed across multiple servers and database resources.

Cloud ERP is positioned as a revolutionary approach to deploy an ERP solution. It provides a solution that is flexible, adaptable, scalable, efficient and affordable. Cloud ERP as a business management software has provided big success to deliver business critical data.

ERP software as a service (SaaS) for customers who want to acquire ERP without managing hardware, software, and upgrades while reducing up-front expenses. Customers can build an internal cloud to reduce ongoing hardware costs while maintaining greater control over integration and require local access to their data server.

Software-as-a-Service (SaaS) often referred to as on-demand or hosted applications which can be used in the enterprise resource planning systems. SaaS vendor advertently takes responsibility for deploying and managing the IT infrastructure (servers, operating system software, databases, data center space, network access, power and cooling, etc.) and processes (infrastructure patches/upgrades, application patches/upgrades, backups, etc.) required to run and manage the full solution. Software as a service features a complete application offered as a service on demand. A single instance of the software runs on the cloud and services multiple end users or client organizations.

Software-as-a-Service (SaaS) may be described as a process by which Application Service Provider (ASP) provide different software applications over the Internet leveraging cloud infrastructure on "pay-as-you-go" pricing structure. This makes the customer to get rid of installing and operating the application on own computer. It also eliminates the tremendous load of software maintenance; continuing operation, safeguarding and support. The great benefit of SaaS is the ability to run the most recent version of the application.

The SaaS software model has fixed financial and operative advantages over the others in on-campus software models. The operation cost is very less and the subscription cost is also low normally far cheaper than a licensed application fee which is possible due to its monthly fees based revenue model. With SaaS Architecture, a provider licenses an application to customers on subscription based service delivery. It allows customer to require a computer or a server with internet access to download the application and utilize the software, which make customer to get rid of purchasing expensive hardware / software to run an application. It also

allows the software to be licensed for either a single user or for a whole group of users.

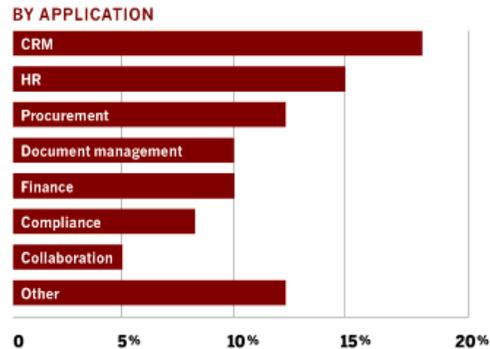


Fig 5. Per cent of Application delivered in SaaS Model.

SaaS has now become common by business for tasks such as ERP, CRM, Computerized HR, Invoicing, Service Desk Management, Procurement, Workflow systems, Document Management etc.

VII. SCOPE OF CLOUD ERP

The future of Cloud ERP is going to be an exciting one. The next five years will be very exciting as more and more providers and customers transitioning to Cloud ERP and as a result, many legacy systems will likely be retired. Software that is running on old platforms will begin to disappear. Cloud updates and version controlling happens so fast and so regular. No more waiting for disks and announcing downtime to your users while you test, load, and then patch updates. The end user will authenticate and confirm that the system is fit for their purpose and will make an efficient use of the system.

A. Benefits of Cloud ERP:

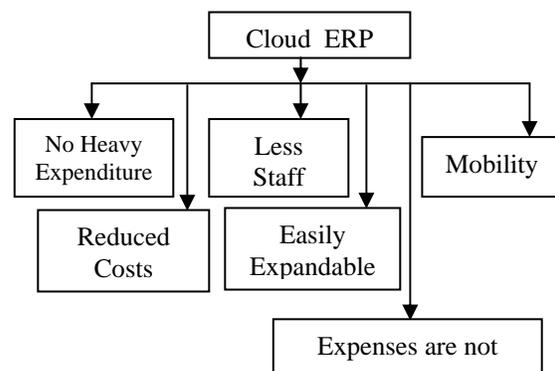


Fig 6. Benefits of Cloud ERP

VIII. CONCLUSION

Cloud ERP applications have been getting tremendous demand for companies battling the business challenges. It is a maturing deployment model that may provide a greater opportunity to capitalize on an ERP investment which encourages standardization through visible economic drivers and provides the opportunity for greater focus on strategic activities. Balance of enthusiasms for cloud ERP with realistic expectations is needed. The association of right people at the time the system is evolving is crucial.

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