

# ERP IMPLEMENTATION ON CLOUD: CHALLENGES AND CONSIDERATIONS

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## ABSTRACT

Businesses of all forms and dimensions can benefit from a well-integrated Enterprise Resource Planning (ERP) system through remarkably streamlined and enhanced business communications with customers, workforces, dealers, etc. Modern development for ERP is the move from on-premises setup to the cloud solutions through deployment of cloud computing technologies. ERP systems and solutions offer industries the facility to scale across customer relationship management (CRM), E-commerce, human resources (HR), supplier management, and many more areas. The features of cloud computing prompt numerous prospects to cloud-based ERP systems and makes Cloud ERP a positive replacement to the current on-premises ERP systems. Though, migrating ERP systems into the cloud also has a lot of challenges. The study described in this paper aimed to explore the prospective benefits and obstacles related with the adoption of cloud ERPs in SMEs.

**Keywords:** Cloud ERP, ERP, Cloud Computing, Challenges for Cloud ERP

## 1. INTRODUCTION

Customary software suites are the strength of many enterprise applications. Numerous organizations rely on these regular software bundles to carry out their day-to-day processes. From one point of view, regular software suites are very robust and backing many sophisticated enterprise applications. From others point of view, they claim that the monolithic, regular software suites may not adequately accommodate the variety of complex enterprise needs. (Berente and Yoo 2012; Wagner and Newell 2004). The current trend for ERP systems, which are a classic model of regular software suites, is the move from on-premises solutions to the cloud environs. Naturally, cloud computing derives in standardized procedures. The implementation of cloud based ERP unsurprisingly prompted additional standardization to ERP systems and consequently produces new challenges and openings for modern enterprises [1].

ERP is a kind of business management software or, simply identified, an umbrella term for a complex, multi-layered, and integrated software solution used to manage the business process. Fundamentally, ERP links every person, every department, and every process throughout the whole enterprise with the accurate information. By

using ERP systems enterprises manage, collect, and then store critical business and activities. And a fully integrated real-time system offers the flexibility to work from everywhere around the world.

Cloud computing establishes a state-of-the-art technology that provides IT resources through the Internet. Enterprises retrieves services from a pool of virtualized IT resources, allowing for an on-demand, pay-per-use billing model. Cloud computing deals vast potential and profits for all types of enterprises. In India, the acceptance of cloud computing is gaining momentum and rising exponentially. This is due to the government's support in taking on evolving state-of-the-art technologies and best practices resulting from diverse cloud deployment scenarios and application areas. Research studies specify that CIOs in India are planning to transfer their business functions to the cloud and this becomes their highest priority.

Cloud ERP Solutions is a new delivery model for ERP systems that is based on cloud computing technology. It wishes to deal comparable functionality to on-premises ERP systems enriched with features distinctive to cloud computing. Cloud ERP is getting more popularity and affecting legacy ERP system to drop market share. Catalysts to cloud-based ERP progress include the steady adoption of mobile phones and other electronic communication devices, and the erosion of corporate barriers to the Internet and social media [10].

Even though the growing impact of cloud based ERP, this is practically a new and evolving domain. Only few research studies are conducted on the adoption of cloud ERP and on the benefits and constraints of this new model. Present literatures mostly study ERP and cloud computing as two separate research domains. For ERP systems, there is an ample volume of studies aiming primarily on issues associated to on-premises systems. For cloud computing, many studies aiming on cloud computing in general but the various types of cloud services are often ignored. Consequently, not many studies have explicitly considered at various types of cloud applications, covering cloud ERP.

This research purposes to reduce the gap between researches on on-premises ERP and cloud based ERP. Given the vital significance of ERP systems, cloud ERP can be estimated to turn into one of the ultimate crucial cloud computing applications for enterprises. Cloud ERP is very disrupting to the traditional ERP market and it is decisive for enterprises to be aware of the effect of cloud computing to ERP. IT managers and researchers can noticeably gain from a well understanding of the possible benefits and intrinsic challenges of cloud ERP for small to medium enterprises

## **II. ERP DEPLOYMENT MODELS**

### **2.1 On-Premise ERP**

On-Premise ERP solutions are deployed within the company's hardware and servers and then controlled by their IT experts. The company owns the hardware and software. On-premise ERP solutions typically involve more upfront and continuing investments to procure and manage the software and the associated hardware, servers, and facilities required to run it. [7]

## **2.2 Hosted ERP**

The ERP solutions which are hosted on a remote rented server and use the application through an active internet connection. Web-based ERP is set up as single tenant, meaning that the business has its own virtual application and database servers. Scalability of this services is always time-consuming. Integrating additional new modules, software updates, and other system enhancements will require substantial migration time.

## **2.3 Cloud based ERP**

Cloud based ERP as well called as Software-as-a-Service (SaaS) is delivered as a service by the cloud service providers. With this type of implementation, a business's ERP software and its related data are stored and controlled virtually (in the Internet "cloud") by the ERP vendor and are accessed by clients using a web browser. For cloud-based ERP, preliminary costs are typically considerably less because business only deploy the software to their requirements and then access it through their computer's internet connection. The cloud ERP provider hosts and manages all of the IT infrastructure for the organization, ensures the system is uninterruptedly running, that the data is securely protected, and that product improvements are rolled out painlessly to company solution without disturbing their earlier implemented customizations.[7]

### **2.3.1 Private Cloud ERP**

The ERP software is being installed on hardware at a third party. The third party is responsible for the management of the software and hardware and the customer has access to the software via the internet. A single-tenant scenario: one server specifically for the customer.

### **2.3.2 Public Cloud ERP**

The ERP software is being installed on hardware at a third party. The third party is responsible for the management of the software and hardware and the customer has access to the software via the internet. A multi-tenant scenario: one server for software for multiple customers.[1]

## **III.CLOUD COMPUTING CHALLENGES**

Cloud computing is an evolving and not yet effusively established model. A great percentage of current studies on cloud computing are so piloted to categorize or report varies concerns and threats drive in the implementation of cloud computing. The main challenges of cloud computing that found in the cloud computing literature are following.

### **3.1. Security maintained by Cloud Services Provider**

Security is one of the main concerns that enterprises are worried almost in respects to cloud computing implementation. Specially, maintaining security in access control, privacy, and identity management has turn into a main concern for enterprises seeing the implementation of cloud computing [6]

### **3.2. Vendor lock-in**

Enterprises regularly realize vendor lock-in as a main concern to the implementation of cloud services. Vendor lock-in in cloud computing happens as soon as customers of cloud services see it problematic to switch to another vendor, generally as a result of the proprietary tools of a specific cloud service. Critically, data in the cloud is typically put in storage in a proprietary form and cannot be switched over with new cloud services.

### **3.3. Unsteady Performance**

Enterprises should assess the performance of the cloud services provided by the service provider carefully to avoid the switching cost later. Performance in cloud computing states to the network speed, high availability, reliability and service outage possibilities of cloud services.

### **3.4. Lack of Well-defined Service-Level -Agreements (SLAs)**

The enterprise and the cloud services provider must have a lawfully binding agreement that covers necessary assurances for enterprises to use and be capable to depend on the services. These legally binding contracts are stated to as Service-Level-Agreements (SLAs). The absence of a well-established SLA can end in service providers negating responsibility while conflict or disputes get up. At the present state, SLAs regularly afford very limited defenses to the users.[1][3]

## **IV. CHALLENGES OF ERP IN THE CLOUD**

### **4.1 Customization of Cloud ERP software to the organization needs**

Cloud ERP systems are regularly challenging to alter as they deliver in regular software suites. Cloud ERP customization states to the degree to which the software bundles are customized to adequate the precise needs of the business. The cloud services provider owns and manages the cloud infrastructure and the customers have therefore restricted control over the system. Hence, cloud ERP may not be appropriate for enterprises with explicit needs.[3]

### **4.2 Integration compromised in strict Cloud environs**

Customizing the cloud ERP systems are very limited when the high level of standardization is adopted in cloud infrastructure. Thus it is very difficult to integrate the heterogeneous services with cloud ERP. If cloud service provider explicitly supports this then only customers can integrate the heterogeneous services.[3]

## **V. CLOUD COMPUTING CONSIDERATIONS**

Enterprises decide on cloud computing for a diversity of reasons, including lesser implementation costs due to the following reasons.[5][6]

- Cloud ERP works in a web browser, thus no high end servers are required and basically any normal PC is apt for users. Since cloud computing have need of no any specialized hardware, this is an automatic cost savings when compared to on-premise alternatives.
- Cloud computing deployments usually adhere an interactive technique with relatively small implementations when related with on-premise ERP implementations. This methodology lessens risk and support effective implementations.
- Cloud computing not necessities any an extensive hardware or software infrastructure, so manual labor costs related with continuing technical support are moreover inexpensive.
- Support and maintenance fees for cloud computing is not commonly required but typically required for on-premise solutions.
- The flexibility and effortlessness in-built in cloud computing facilitate the organizations to implement new techniques of work that earlier were costly or challenging to realize.
- The personnel gain unified mobility with wireless devices, drive in analytics, and the facility to work for a universally spread business with great comfort.

## **VI. GUIDELINES FOR A SPECIALIZED CLOUD SERVICES PARTNER**

The key differences among on-premise with cloud products have significant consequences for choosing a professional cloud services provider. For that reason, think about the following while selecting the external body to support with SMEs cloud implementation:

### **6.1. Qualified expertise in the product you are planning to purchase.**

Discover a service provider with profound knowledge in the particular product you desire to purchase. Request the service provider for a list of engagements with your planned item that includes the exact modules you are planning.

### **6.2. Proficiency in your specific industry.**

Search for service providers with clear experience in your specific industry. Enquire for references in your industry, with companies that have similar characteristics, such as revenues, number of employees, and so on.

### **6.3. Balancing solutions.**

Some providers have profound knowledge in particular vertical divisions that they matured dedicated software additions that could help you. Providers that have established vertical solutions regularly have class understanding of that market and great technical proficiency.

#### **6.4. Comprehensive implementation capability.**

Cloud ERP can drive world wide rapidly, thus choose a provider with global expertise, if appropriate to your enterprise. The Service provider must have expertise with training, worldwide support, and accounting and regulatory issues in your overseas marketplaces.

#### **6.5. Cloud integration ability.**

Make sure your professional services team be familiar with how to manage cloud-to-cloud incorporations with web services. It saves money and time, thus use whenever feasible.[8]

#### **6.6. Leasing a company which is reliable and you trust**

Cloud ERP deployment is one step in a long-standing affiliation between you, the software developing company, and the services provider. Trust forms self-assurance and builds strong associations that will sustain over time. Run business with enterprises that place your achievement at the top of their list.

### **VII. CONCLUSION**

In this paper, we have identified fundamental challenges for adoption of cloud computing, cloud ERP implementation. These challenges help IT managers and investigators to gain a superior understanding of what the pros and cons are for cloud computing, on-premises ERP, and cloud ERP. In addition, cloud computing considerations and guidelines for selecting the right Cloud ERP service partner for SMEs also addressed. Cloud service providers are spending much in augmenting their offerings, expanding the functionality and availability of their services, and lessening the risks of adoption. Smaller enterprises that want to gain the welfare of scale, lesser their expenses, and drive standardization should consider cloud ERP now, as should larger enterprises considering to reduce budgets and drive standardization within divisions or functional units.

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