ERP in the cloud

Is it ready?
Are you?
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As a wide variety of information technology services move to online offerings in the cloud, more and more IT executives are considering whether to move their enterprise resource planning (ERP) systems there as well. Although some IT organizations have succeeded in moving a portion of their “fringe” ERP services, such as human resources systems, into the cloud, many CIOs remain skeptical of doing the same with core financial and supply chain operations.

There are a number of factors that executives should consider in deciding whether and how to use cloud-based services for their ERP systems. Industry type, company size, solution complexity, security needs, and several other organizational issues must all be addressed. In this Perspective, we analyze the pros and cons of moving ERP services to the cloud and present a framework that CIOs can use to evaluate the viability of cloud-based ERP systems for their organizations. Whether or not you choose to jump in now, it is essential that this be marked on your agenda.
Three models for housing ERP

Ever since the advent of full-scale enterprise resource planning (ERP) systems in the early 1990s, companies have struggled to balance the systems’ high costs and complexity against the need for customized features and flexibility. Early on, the only choice was an on-premises model: Long available from companies like SAP and Oracle, these systems are still the preferred choice for some organizations. The early 2000s saw the arrival of hosted solutions, in which the platform is managed off-site but the software must be installed on end-users’ computers.

Recently, a third model has arisen, in which the ERP system is distributed from the cloud and accessed by end-users via Web browsers. This solution can offer substantial benefits, including decreased capital expenditures, lower overall costs, and quicker implementation. Indeed, much of the ERP market is already moving in this direction: SAP recently announced that its HANA platform–based applications will be available via the cloud, and Oracle’s cloud-based offering for ERP, budgeting, and planning continues to build interest (see “Selected Cloud-Based ERP Vendor Offerings,” page 11). Although significant concerns remain — limited functionality, the potential loss of internal control, performance reliability, and security among them — cloud-based models continue to gain traction (see Exhibit 1, next page).

So is the cloud the right choice? Not necessarily. And even when it is, there are several approaches IT leaders should consider. We offer an analysis of the benefits and challenges of these systems and a framework for how to choose.
### Exhibit 1
ERP systems deployment models

<table>
<thead>
<tr>
<th></th>
<th>On-premises</th>
<th>Hosted</th>
<th>Cloud-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation size</td>
<td>Large</td>
<td>Medium</td>
<td>Small to medium</td>
</tr>
<tr>
<td>Solution complexity</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Capital costs</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Operating costs</td>
<td>Low to medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Implementation time</td>
<td>12–36 months</td>
<td>9–18 months</td>
<td>4–8 months</td>
</tr>
</tbody>
</table>

Source: Strategy& analysis
The benefits of cloud-based ERP

The brief history of ERP systems has been marked by both significant successes and notorious failures — no surprise, given the cost and complexity of these huge implementations. The cloud promises a new way to address ERP’s most notorious challenges.

Cost

Rather than being purchased outright, cloud-based ERP implementations are paid for through a subscription model, which typically includes not just the software but also the hosting and support costs. Thus, the initial capital expenditure required for implementation is significantly lower than for traditional systems, and operating costs can often be lower as well.

Cloud-based providers can scale up their offerings with relative ease as an organization’s needs evolve. Vendors are responsible for maintaining both the hardware and the software — including all patches, upgrades, and refreshes. They also provide the necessary backups, system monitoring, and user support. Transferring all of this responsibility elsewhere should allow companies to reduce the size of their IT support organizations and free up resources for other activities that cannot be outsourced. Overall, the total cost of ownership for a cloud-based solution can be 50 to 60 percent less than for traditional solutions over a 10-year period (see Exhibit 2, page 8).

Rapid deployment

One major drawback to both in-house and hosted ERP systems is that vendors and system integrators frequently use existing templates that must be customized and configured to match a company’s specific practices and processes. Implementations typically take months and sometimes years.
Cloud-based solutions, on the other hand, offer a basic configuration with a limited range of options that are designed to meet the requirements of most businesses — an approach that can significantly reduce deployment time while still addressing the most critical needs of the organization. How long it takes to roll out a cloud-based ERP system is determined not by the time required to build the system, but by the time needed to update any affected business processes and convert the pertinent data. In other words, companies must revamp their business practices to fit the system — a reversal of traditional ERP implementations that can significantly reduce complexity. And despite the limits on configuration, cloud-based systems are designed to let companies quickly add new business functionalities — sales lead generation, for example — while meeting any common requirements, such as high availability and disaster recovery.

**Flexibility and scalability**

Vendors have been developing new ways for companies to acquire additional software and functions without going through the usual cumbersome software delivery process. Both SAP and Salesforce.com, for example, offer bolt-on applications for advanced analytics, collaboration, finance management, and the like through Web-based app stores that resemble the iTunes store. This makes cloud-based systems even more appropriate for companies that are quickly evolving to meet a changing competitive environment. Although the benefits of a cloud-based solution seem clear, many companies are apprehensive about adopting this technology for ERP systems.
Exhibit 2
Cost comparison of in-house and cloud-based solutions

Typical one-time costs
(US$ in millions)

Typical ongoing costs
(5-year cumulative, US$ in millions)

Source: Strategy& analysis
Limitations of the cloud

Because cloud-based ERP services are still new to the market, and maturity is a concern to CIOs, some companies remain wary. Other primary concerns include restricted functionality and customization, and perceived data risk.

Limited functionality and availability

So far, vendors of cloud-based ERP systems have focused on delivering core ERP functionality such as general accounting, purchasing, and accounts receivable and payable. They continue to invest in developing new functions like statistical forecasting, constraint-based planning, social media, and production management — but these offerings have not caught up to the advanced functionality of traditional on-premises and hosted ERP offerings. Furthermore, cloud-based applications are currently confined to certain geographies, in part because they cannot yet support the financial reporting requirements of every region in which a company might operate.

Reduced customization and integration

Compared with traditional on-premises and hosted applications, cloud-based solutions typically offer a limited range of configuration options. That makes cloud options most appropriate for companies that use highly standardized business processes in areas like sales, purchasing, and accounts receivable. Cloud-based ERP may not be able to handle the needs of companies with either highly tailored business processes or highly developed application architectures (such as those involving multiple points of integration across a variety of legacy IT systems, highly customized software, or packaged software). For example, SAP’s current on-demand ERP system for small and medium enterprises offers only standard connections via NetWeaver and integration with common applications such as Salesforce.com.
Perceived data risks

Companies choosing a cloud-based ERP system must be willing to trust a third-party provider with sensitive company information, such as financial data or customer orders, where it may be mingled with that of other companies. But cloud providers, including Oracle and SAP, have invested heavily in state-of-the-art security that may exceed what a hosted solution, or even an on-premises solution, can provide. Some of them are even willing to guarantee that the data will stay in the same national jurisdiction or in a specific data center. Moreover, many providers of human resources software already host and manage sensitive employee data for companies that compete with one another.

It’s important to note that certain regulatory requirements such as the U.S. International Traffic in Arms Regulations and specific business needs that involve storing highly confidential intellectual property may be too stringent for a cloud-based system. Given the measures that cloud providers have taken to ensure security, however, the perception of increased risk tends to be based more on a lack of familiarity with these emerging options than on actual security risks (see “Is the Cloud Secure Enough?” page 14).

Organizational resistance

IT organizations at most companies have already put in place the teams and developed the skills needed to operate their ERP environment, including data-center hosting, support, maintenance, and ongoing application development. Like any outsourcing decision, moving ERP to the cloud can create significant organizational disruptions that must be taken into account when considering the options. IT organizations with a strong culture of pride of ownership of technology solutions, or those that are new to application and infrastructure outsourcing, are likely to feel threatened by moving ERP applications into the cloud.
## Selected cloud-based ERP vendor offerings

<table>
<thead>
<tr>
<th>Company</th>
<th>Cloud offering</th>
<th>Functionality</th>
<th>Target users</th>
<th>Market adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP</td>
<td>Business ByDesign</td>
<td>Integrated suite with financials, HR, sales, procurement, customer service, and supply chain management</td>
<td>Small and medium enterprises; subsidiaries of large companies</td>
<td>Solution initially developed in 2010; About 1,000 customers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Serves professional services companies, and manufacturing and wholesale industries</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>May have limitations serving all geographies</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Additional components available as cloud solutions</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Human Capital Management with focus on talent and workforce management</td>
<td>Large companies</td>
<td>Early-adoption phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Future expansion to include Sales OnDemand, Financials OnDemand, and HANA</td>
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<td></td>
</tr>
<tr>
<td>Oracle</td>
<td>ERP Cloud Service/Fusion</td>
<td>Focus on financial and procurement functions such as planning and budgeting, sourcing, and inventory management</td>
<td>Midsized companies</td>
<td>Initially developed in 2004; About 300 Fusion customers</td>
</tr>
<tr>
<td>QAD</td>
<td>QAD on Demand</td>
<td>Specific focus on manufacturing industry</td>
<td>Small and medium enterprises</td>
<td>QAD Enterprise Applications launched in 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Includes financial, customer management, supply chain, and asset management functions</td>
<td>Supports 10 to 5,000 users</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Serves automotive, life sciences, configured products, consumer products, and food and beverage industries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft</td>
<td>Microsoft Dynamics ERP</td>
<td>Cloud solution running on Windows Azure platform</td>
<td>Targets small, midsized, and enterprise customers</td>
<td>Support for cloud via Azure announced in 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partners developing vertical solutions and add-ons through Microsoft Dynamics Marketplace</td>
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</tbody>
</table>
Given the trade-offs involved, companies must carefully evaluate whether a cloud-based ERP system is the right choice. In our experience, two key factors stand out from all the others: implementation size and system complexity. These issues take on different intensities depending on whether the company is implementing an ERP solution for the first time, migrating from its current ERP system, or extending its current system’s capabilities to include additional functionality. Exhibit 3 provides a decision framework for evaluating whether a cloud-based ERP system would work for your company.

Exhibit 3
Likelihood of success with a cloud-based ERP system

Source: Strategy& analysis
Implementation size

At present, small to midsized companies are the most likely candidates for cloud-based ERP systems, because implementation and support costs are relatively low. Many large, complex companies will find that cloud-based systems do not yet meet their enterprise-level needs, although they may be suitable for smaller divisions if the cloud-based solution can be integrated into the existing enterprise-wide ERP platform. Companies with large-scale ERP systems may simply find the benefits of scale gained from in-house ownership to be greater than the potential cost savings offered by a cloud-based solution today.

System complexity

The complexity of any ERP system is measured along three dimensions: the extent of integration, the amount of functionality, and the size of the footprint. Corporate environments that require basic functionality, minimal customization, and limited integration are particularly appropriate for cloud-hosted solutions. More complex organizations will likely find that cloud-based solutions are not the best option right now.

Some companies may benefit from so-called hybrid models, where some ERP functionality is retained in a traditional hosted environment while other applications are implemented through the cloud. A large company with complex supply chain requirements, for example, might continue to maintain its customized ERP solution while using a cloud provider for selected business processes, such as talent management. A business with multiple subsidiaries might keep a centralized, hosted ERP solution to run the enterprise while providing its subsidiaries with a cost-efficient cloud-based solution to run their local operations.
Is the cloud secure enough?

Cloud-based technology solutions require companies to loosen their control of critical data. Companies must take a comprehensive approach to the risks, from both the business and the IT security perspectives. Industry security standards are evolving rapidly, and cloud-based ERP providers have invested millions of dollars in building state-of-the-art security capabilities and information management processes. In response, IT security managers need to reevaluate how they classify applications and data based on level of risk, better identify specific security requirements and the controls required to manage risk, and more thoroughly understand the ability of cloud providers to meet their security requirements.

And although cloud-based ERP solutions offer distinct advantages in terms of business continuity and disaster recovery, companies still must conduct due diligence to ensure that any cloud-based solution meets their business continuity requirements. Even if the cloud provider has robust site-failover and other disaster-recovery capabilities, clients may lose access to critical business systems if the network path itself is compromised. Therefore, cloud solutions may force companies to place greater importance on ensuring network redundancy to provide continued access in the case of a disruption.

When is adopting a cloud-based ERP system the right choice? That depends. Providers are investing significantly in enhancing their offerings, expanding the functionality and availability of their services, and reducing the risks of adoption. Smaller companies that want to gain the benefits of scale, lower their costs, and drive standardization should consider this option now, as should larger companies looking to lower costs and drive standardization within divisions or functional units. ERP in the cloud is the future, and even companies that have good reason not to take the plunge yet should be monitoring developments and considering their longer-range plans.
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