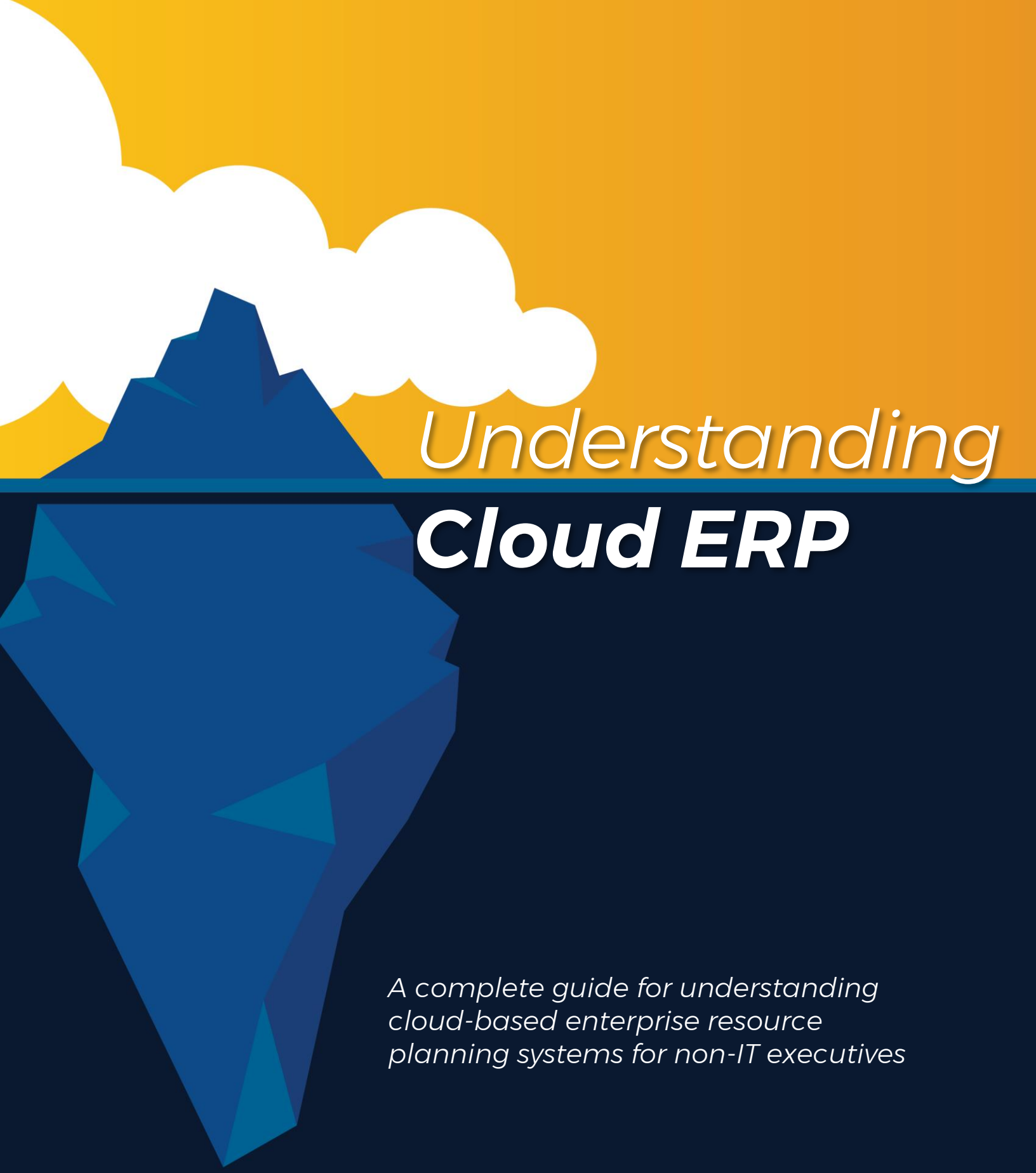

Understanding Cloud ERP

A complete guide for understanding cloud-based enterprise resource planning systems for non-IT executives

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Let's start with the basics.

Enterprise Resource Planning software (ERP) is the nerve center for a business. It manages, stores and reports on business processes across all major areas of an organization, usually including production, finance, procurement, human resources, distribution, supply chain and other areas, depending on a firm's needs. The software commonly operates as an integrated platform that standardizes, streamlines and analyzes company data as a unified whole.

The origins of ERP systems date back to the 1960s, when software engineers developed inventory management and control programs for tracking inventory, reconciling balances and reporting on production status. This industrial software grew into Material Requirements Planning (MRP) systems for inventory control in the 1970s and 1980s, and research firm Gartner coined the term "ERP" in 1990 as the software came to also encompass back-office functions such as human resources and accounting.

ERP was the sole domain of large enterprises and the epitome of expensive and unwieldy business systems until the advent of cloud computing. Now cloud-based ERP solutions have expanded the market to mid-sized and even small businesses thanks to the software-as-a-service model that reduces the required cost, complexity and software management of such systems.

The need for greater business agility, combined with market forces that reward operational visibility and big data insight, also have spurred widespread adoption of ERP systems in recent years.

The North American cloud-based ERP market will grow from $8.4 billion in 2018 to a predicted $11.1 billion by 2022, according to research firm, Statista, with the global cloud ERP market reaching $28 billion. The global market for ERP software as a whole was $34.4 billion in 2017.

The Difference Between ERP and CRM

ERP and customer relationship management (CRM) systems are related but serve different purposes.

Both ERP and CRM systems manage contact information in a centralized location, but CRM focuses narrowly on customer information while ERP manages the full range of business processes and data, including inventory levels, financial performance and product specifications among many others. CRM typically focuses exclusively on marketing, sales and customer service functions, and it ties into a larger ERP system for companies that use both.

Benefits of Using an ERP System

The advantages of using an ERP system to run a business are vast and wide-ranging, and they include both organizational and operational benefits.

Organizational Benefits

Enterprise-Wide Integration. ERP systems integrate various functions and business processes across an organization and store them in a single database. This enables employees in different divisions to use the same data for different needs. It also unifies operations. An example of this unification is having a new order initiate a credit check, check product availability, update a distribution schedule and send an invoice.

Standardized and Simplified Business Processes. Because systems and data are linked between departments, ERP systems simplify business processes and bring greater synergy across an organization through standardization. Businesses also benefit from best practices that are built into the system.

Improved Data Quality and Accessibility. As a single source for all business data, often collected, consolidated, organized and analyzed through automation, ERP systems improve data accuracy and reliability. Fine-grained access permissions can be set by user and job function, too, controlling data accessibility precisely so employees see everything that is needed to perform their job function and nothing else.

Better Organizational Visibility. With all business activity stored and accessed through a single system, businesses greatly improve transparency and operational visibility. Inventory levels and production output can be monitored on a daily basis or even in real-time, for instance.

Consistent User Experience. Instead of interfaces and logins that vary by system, ERP brings a unified software experience across all parts of a company. This brings consistency to an organization's software, and it improves usability while reducing software training.

Operational Benefits

Automation. Business processes can be linked and automated because all data flows into a single system or record. Sales orders can automatically flow into the financial system without manual re-keying, for instance, and it trigger both a work order and an inventory check.

Added Efficiency. Process automation within the system reduces time, effort and resources spent on daily, repetitive tasks, freeing up employees to focus on more meaningful work. ERP also eliminates redundant effort and promotes the adoption of industry best practices on a company-wide level to further boost productivity.

Reduced Costs. Efficiency gains, visibility, analytics and automation improve a company's resource utilization. Unification of business software also dramatically cuts down on IT-related expenses around administration, support, infrastructure needs, application licensing and training requirements because users only need to learn a single system.

Real-Time Operations. With business processes linked by a common database, and stored in a centralized and accessible location in the cloud, all operations within a company can be logged and adjusted in real time. All facets of the business also can be monitored in real-time.

Improved Reporting and Planning. Reports can be generated automatically for any part of the business, including financial, sales, operational, inventory, procurement, administrative and elsewhere. Analytics engines within ERP systems also can analyze operational data and deliver predictions for improved planning and forecasting.

Deeper Collaboration. Because data spans the company and is more easily shared through a unified system in the cloud, ERP improves collaboration and team processes by granting on-demand access to information across the company. Data can be selectively shared with partners, suppliers, and even customers, too.

Better Supply Chain Management. ERP can greatly improve a supply chain by linking supplier systems, automating key functions, and boosting responsiveness. This can lead to better demand forecasting, precise inventory management, efficient procurement and opportunities both for cost reduction and production innovation.

Greater Customer Satisfaction. By creating a single source of truth for all business data, ERP can improve customer service through better access to data around a customer's journey. Automation can improve production and delivery times, as well as shipment predictions. Analytics can uncover customer trends and offer solutions for increasing customer satisfaction.

Easier Regulatory Compliance. ERPs facilitates regulatory compliance processes by combining secure and validated data with built-in reporting and tracking capabilities. It also assists with producing information and spotting exceptions around federal, state and local regulatory requirements.

How Cloud ERP Differs from On-Premise Systems

The primary difference between the on-premise ERP systems that developed in the 1970s and cloud-based ERP today is that the hardware and software supporting the ERP solution are run in the cloud and managed by the ERP vendor of choice instead of the business itself. The business rents access to the ERP infrastructure instead of buying and maintaining it on its own.

This software-as-a-service model, now widely adopted in all areas of the software industry, comes with some characteristic traits: faster implementation and user onboarding times, less up-front investment, a complete outsourcing of hardware and software maintenance to the hosting provider, automatic updates to the most recent version of the software solution, a less complicated and more intuitive user interface, ubiquitous access regardless of device and operating system, and both easier connectivity and integration with other IT systems.

Initial concerns with cloud security, data control and customization led many businesses to adopt a hybrid cloud approach, which is a combination of on-premise and cloud-based ERP. Others chose a private cloud approach, which is the same as cloud-based ERP but with the ERP software purchased and installed on private servers in the cloud instead of the vendor's cloud infrastructure.

The concerns that led to these alternative deployment structures have largely been addressed by cloud ERP vendors, so today ERP operates in a variety of forms but the general trend is toward the model of vendor-run cloud ERP due to a lack of downsides and the significant upsides of simplicity and overall cost reduction.

Who Needs Cloud ERP

Most businesses can benefit from cloud-based ERP.

Almost every organization manages people, processes, products or services and is required to handle sales and accounting of those products or services. Each business and industry has specific needs, but there are basic functions that all businesses face. ERP can efficiently handle these basics as an integrated software platform, and through industry-specific configurations and customizations it also can effectively handle business-specific functions.

Cloud ERP is a good choice specifically for businesses that require low capital expenditure, fast implementation, and outsourced IT management. That's because as a hosted solution, cloud ERP avoids much of the software and infrastructure setup, investment and management required of on-premise solutions. Since ERP is a complex IT system that encompasses all areas of a business, the time and resource savings from having the solution managed by the vendor can be significant.

Businesses that have field service or highly mobile employees, a global footprint, complex or dynamic supply chains or a distributed workforce also typically benefit from the added accessibility that comes from ERP hosted in the cloud.

A third group that benefits from a cloud-based ERP are firms that require real-time integration with other businesses, marketplaces or online services such as payment gateways, supply chain networks and artificial intelligence or big data analytics engines. Because cloud ERP is accessible in real time and from anywhere through application programmer interfaces and direct connections, integration with other systems is significantly faster, easier and more complete.

Why Cloud ERP

There are few reasons why organizations might choose an on-premise ERP solution today; most factors favor cloud ERP adoption.

The benefits of cloud ERP over on-premise solutions are many, and some of the most important reasons include:

Reduced Cost. Instead of being purchased outright, cloud-based ERP systems are bought through a subscription model that typically includes not just the software but also hosting and technical support. This significantly reduces capital expenditure on hardware and software licensing, as well as implementation and IT support costs such as maintaining the system and applying patches, upgrades and other routine system maintenance. Research from Strategy& has found that the total cost of ownership can be as much as 50 to 60 percent less for cloud ERP than on-premise solutions over a 10-year period.

OPEX Instead of CAPEX. Because cloud ERP is based on a subscription model, it typically is counted as an operating expense for accounting purposes instead of a capital expense. Many businesses favor this for budgetary reasons, and purchasing ERP on the subscription model can deliver greater cost transparency and improve ROI and TCO calculations.

Rapid Implementation. With the hardware and software already in place and tuned as a result of the cloud model, implementation of cloud-based ERP is significantly faster than on-premise ERP implementation. While planning, configuration and customization are still necessary, as is employee training and testing, Strategy& research has shown that cloud-based ERP implementation typically takes 4-8 months compared with 12-36 months for on-premise ERP.

Reduced Maintenance. System upgrades and performance tuning, security patches, software and hardware issues and other typical IT maintenance tasks are handled by the cloud ERP provider instead of the business, reducing an organization's IT costs and allowing those resources to be deployed toward more business-specific IT needs.

Frequent Updating. The term "legacy software" often refers to older ERP solutions because the cost and technical challenge of upgrading ERP hardware and software leads many businesses to delay upgrades. One of the strongest benefits of cloud ERP is that a company's systems are automatically and continuously upgraded and improved by the vendor for better security and the latest functionality needs.

Real-Time Monitoring and Automation. Point-of-sale data, production equipment reporting, shipping information, inventory levels and hours worked are just some of the data that can be collected, analyzed and reported in real-time when an ERP system is available and accessible from anywhere. Visibility and automation opportunities are greatly increased when an ERP system can be connected with employees, devices and other systems in real-time.

Improved Integration. Because cloud-based ERP systems are always accessible, they connect easily both with internal and external IT systems through direct integration, application programmer interface (API) or custom integration. Since ERP serves as the nerve center for a business, this is an important benefit of cloud-based solutions.

Better Analytics. With an organization's data in the cloud, businesses can more easily use artificial intelligence systems and big data tools for more complete analytics and business intelligence, as well as better forecasting. Typically analytics and business intelligence (BI) systems are more robust in cloud-based ERP.

Accessibility. Cloud ERP is built for connectivity and system accessibility since the software and data are stored in the cloud. This enables easy access and updating from mobile devices, terminals in warehouses and the shop floor, as well as desktop systems in the office. It also facilitates greater accessibility by other systems in the cloud, and more easily connects with existing on-premise systems within an organization.

Intuitive User Interface. The cloud model stresses clean, simple, easy-to-use user interfaces that facilitate fast user adoption, so cloud ERP user interfaces are typically more intuitive than their on-premise counterparts and mimic consumer cloud services. Because cloud-based ERP systems are constantly updated and improved based on customer feedback, and these changes are automatically reflected in the product, less intuitive interface elements are more quickly improved.

Better Agility and Scalability. Since there is no hardware or software investment, businesses can adjust business processes and strategy more easily because adding or changing ERP functionality only requires a subscription package change or adoption of new modules already available in the system. Further, businesses only pay for the ERP resources they need, so they can scale their ERP infrastructure in either direction according to business needs.

Data Security

One concern that has slowed the adoption of cloud-based ERP systems is data security. Since ERP serves as the nerve center for a business, and contains both customer information and sensitive corporate data, many non-IT executives have favored on-premise systems that keep data in-house under the premise that data is more secure.

The irony is that cloud-based ERP systems almost always are more secure than their on-premise counterparts.

Since even a single security breach would compromise the entire business model of a cloud-based ERP system, vendors place great stress on rigorous data security and use the latest security technologies for protecting cloud ERP data. This includes encryption when data is transferred over the Internet and while it rests in the cloud system, multi-factor authentication for verifying a user's identity, fine-grained role-based access permissions so users only can view data within the system they are meant to see, detailed system logging and security auditing, and real-time monitoring for detection of anomalies and suspicious activity, among other security measures.

Beyond technical considerations, cloud ERP is typically more secure than on-premise ERP or a collection of disparate business systems because it is a single software system protected in real-time by the vendor. A dedicated ERP security team maintains and monitors the overall system security for all customers, applies security updates as they are developed, hardens security on a continuous basis, and regularly audits the system for any security flaws that might exist.

To underscore the general security of cloud computing, Amazon's cloud platform is able to offer governments classified cloud-based solutions including systems for "Secret" and "Top Secret" classifications.

Industry and Business-Specific Needs

ERP systems support the needs and best practices of business processes that are common across most industries, including production, distribution, accounting and human resources, among many others. ERP systems also have been developed for the particular needs of specific industries such as manufacturing, retail, food and beverage, financial services and healthcare.

ERP vendors and implementation partners also offer custom solutions for micro-verticals such as apparel or medical device manufacturers. This can get as specific as several cloud-based ERP solutions tailored for the baking micro-vertical, for instance.

Organizations have two main options for industry-specific ERP solutions and business-specific functionality and processes. They can either adopt an industry-specific solution that is custom-made for the needs of their industry, such as Navigator Business Solution's Bio Pharma ERP solution, which takes ERP vendor SAP's Business ByDesign cloud ERP and tailors it for the specific needs of pharmaceutical companies. Or, a business can adapt a cloud ERP through configuration and customization.

There's a large community of certified implementation partners for most major ERP platforms that can add functionality through add-on modules or adapt processes within ERP for the specific needs of a business.

Customization adds cost and complexity, but most businesses find that they need at least a few custom additions to fully meet the requirements of their organization.

Customization Within Cloud ERP Systems

There's a misconception among non-IT executives that cloud-based systems are inflexible, one-size-fits all software solutions. That was the case during the earliest days of the cloud services industry, and this misconception is reinforced today by consumer cloud services that often are built on a micro-services model that offers a handful of specific functions that operate in the same way for all users.

ERP and other business systems such as enterprise CRM cannot meet the varying and often critical needs of business with a one-size-fits-all approach, however, so enterprise cloud services such as cloud ERP are adaptable both in terms of configuration and customization.

Through an ERP vendor or a certified implementation partner, organizations can configure cloud-based ERP solution around the specific needs, processes and integrations of an organization. This could include configuring how automated processes perform, how modules such as accounting and supply chain interact, or which data fields are used and exposed to users, among hundreds of other configurations.

Businesses also can customize cloud-based ERP systems through the addition of industry- or business-specific modules and integration with third-party cloud services that add specific functionality. These modules and integrations can be off-the-shelf additions from an ERP vendor or third-party developer, or created from scratch by an implementation partner.

Regulatory Considerations

Cloud-based ERP solutions exist for most regulated industries such as healthcare and financial services, and most ERP systems also support more general regulatory requirements such as the European Union's General Data Protection Regulation (GDPR) that specifies how a business must store, control and report customer data.

ERP systems not only support regulatory needs, they also often are essential for meeting those requirements.

That's because ERP centralizes organizational data within a single system, making reporting and compliance monitoring easier. Automation within the system can be configured to automatically flag potential compliance issues and monitor quality control such as nonconforming products or customer complaints.

The auditing and traceability functionality baked into ERP systems also assists with tracking business processes and production precisely, which can help with compliance monitoring, verification and remediation.

Cloud-based ERP systems developed for regulated industries further assist with compliance because changes in regulations are automatically updated in the ERP solution and reflected in the system.

The Role of Implementation Partners with Cloud-Based ERP

While cloud-based ERP solutions are far less complex and expensive than on-premise ERP, the planning and setup still are considerable given that the software encompasses all areas of a business and requires migration from previous business systems. Vendor and certified implementation partner support are recommended in most cases, especially if a business is migrating from a legacy on-premise system.

Moving to a cloud-based ERP solution requires porting and translating business processes from the old system to the new, configuring and customizing the solution for the particular needs of the business, assessing the role of existing legacy systems and how they will relate to the new cloud-based ERP, and formatting data going into the new system.

The migration to a cloud-based ERP solution also is an opportunity for businesses to reassess or reengineer existing business processes, increase coordination among business units, and both review and cleanse the data a business is storing.

Implementation partners can play a key role in facilitating a cloud-based ERP implementation and assisting businesses with the issues and opportunities around the new system.

Top Cloud-Based ERP Solutions

There are literally hundreds of cloud-based ERP solutions that cater to various industries and needs.

The starting point for selecting the appropriate system is evaluating the needs, priorities and budget of your organization, then looking at industry-specific solutions that cater to the needs of your industry. Because most ERP implementations are significant time and resource investments, even cloud-based ERP, it also is worth talking with an ERP consultant who can assist with the selection process.

While the cloud model has opened the door for niche ERP solutions, some of the strongest cloud-based ERP options remain the big ERP vendors that dominate the on-premise ERP market. These larger providers have some of the deepest experience with implementation and functional needs, and they both have massive infrastructure for their cloud operations and a history of supporting the ERP needs of a business.

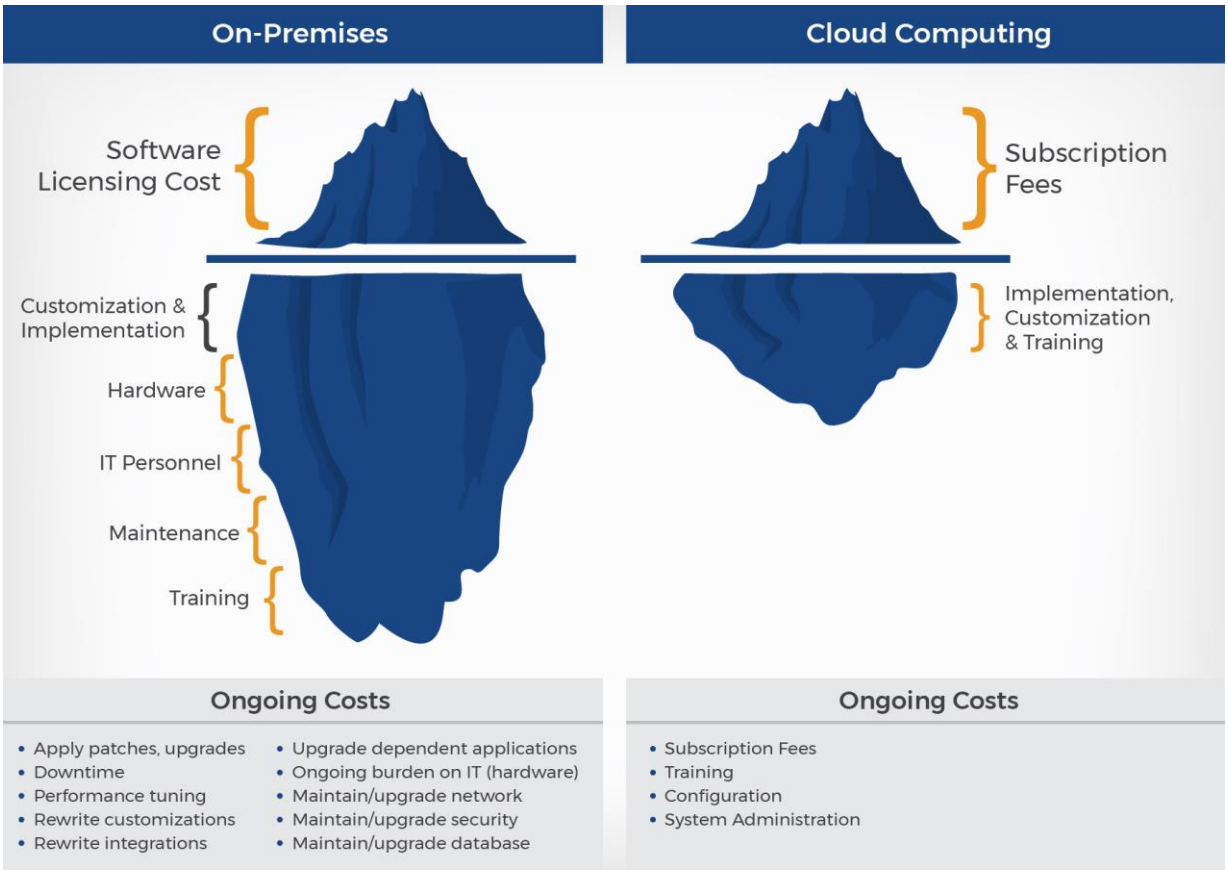
Some of the larger ERP vendors include SAP, NetSuite/Oracle, Microsoft and Workday, along with slightly more niche ERP vendors such as QAD, Infor, IQMS and others.

Often businesses will choose a certified implementation partner that has an industry-specific solution built on top of one of these established ERP vendors, marrying a niche solution with the stability of a large vendor.

Costs Typically Associated with Cloud ERP

The cost of a cloud-based ERP system will vary considerably depending on the size of the company, the platform and implementation partners selected, the scope of customization and other factors such as how much a company invests in training and change management associated with a new ERP system.

Both implementation and operating costs will be lower for a cloud-based solution than an on-premise ERP system, however. Cloud-based ERP bypasses the hardware investment and software licensing of on-premise systems, significantly reducing implementation costs. Operating costs also are typically lower for cloud-based ERP. Annual subscription costs for cloud ERP over the lifetime of an implementation are higher than the initial and annual software licensing costs of an on-premise system, but this is more than offset by the savings from not having to buy and maintain the hardware and software associated with the system.



Implementation

Regardless of whether a cloud-based or on-premise ERP system is chosen, there will be a significant initial implementation cost associated with planning and organizing an implementation, configuring and customizing it, adapting business processes, porting data and both testing the new system and training employees.

Typical implementation costs range between $50,000 and $500,000 for small to medium-sized businesses. Medium-sized businesses to large enterprises can expect to pay between $500,000 and $2 million for an ERP implementation.

Operating Costs

After the initial cost of implementation, the main operating cost for cloud-based ERP is the annual subscription cost, often determined by the number of users in a company that are accessing the system.

Cloud-based ERP subscription costs will vary based on the system selected, but they typically range between $20,000 and $35,000 for 20 users, and anywhere from $250,000 and $400,000 per year for large enterprises with more than 100 users.

ROI Timeline

Typically, an organization sees a return on investment between two and four years after ERP implementation.

The speed that an organization recaptures its initial investment, and the total ROI of a cloud-based ERP solution over its lifetime, varies wildly and depends on several factors particular to the business.

Three of the most important factors include:

1. **Quality of Current Business Processes and Software.** If business processes have not been reviewed in years, an ERP implementation can open the door for dramatic gains in efficiency and optimization. Likewise, the move to a cloud-based ERP system brings faster ROI for businesses that need an IT systems refresh.

2. **Organizational Adoption.** One of the most important factors in the ultimate success of an ERP system is how well a business onboards employees and drives adoption of the new system. Businesses will realize ROI faster if employees are fully using the system instead of working around it and leaning on other systems such as spreadsheets and homegrown or manual solutions.

3. **Implementation Team.** A cloud-based ERP implementation that is managed competently, takes into account a company's actual business processes and avoids common implementation pitfalls will significantly cut initial costs and deliver a solution that drives actual efficiency and competitive advantage for a business.

Rarely do businesses regret ERP implementation, especially with cloud-based ERP that has lower implementation costs.

Major Phases in a Cloud ERP Implementation

Implementing an ERP system is a complex and company-wide project that typically takes anywhere from four months to a year for completion, depending on the scope and needs of the organization.

There are seven major phases involved with a typical cloud-based ERP implementation.

Planning and Selection. Arguably the most important phase for an ERP implementation, in the planning phase a business evaluates solution options, brings on implementation partners and key stakeholders for consultation, assesses existing business processes, reviews legacy systems for how they will connect with the new system, looks at current and future data use, and plans all the phases of implementation, among other planning tasks.

Configuration. During the configuration phase, the vast functionality of the cloud-based ERP solution is set up to meet the specific security requirements, workflows and preferences of the business.

Customization. Most businesses need some customization. In the customization phase, the vendor or implementation partner adjusts settings and core configurations in the ERP system by altering the underlying code, and custom-coded modules are programmed for specific business functionality that is not available by default.

Data Conversion. Existing business data from legacy systems is formatted, converted and loaded into the new ERP system. Often this is a complex and time-consuming phase that is underestimated in the planning phase.

Integration. The integration phase establishes how the new ERP system will communicate with a company's existing software platforms and third-party solution providers such as other cloud-based software or on-premise systems.

Testing. Once the new system has been installed and set up, a testing environment is created for ensuring that the implementation performs as expected and the system is ready for production use.

Training. The final phase is training management and employees on the new system. ERP solutions are complex, wide-ranging business information systems. Training and practice on the new system before go-live is critical, and ongoing training boosts adoption and proper utilization.

Implementation Time Estimates

The time it takes a business to implement a new ERP system is largely a function of business size, number of modules used, scope of process change within an organization, the amount of customization, and organizational readiness. The larger the business, the more time should be allocated for implementation.

If working with a certified implementation partner, expect an implementation timeline of between four and eight months for a cloud-based ERP solution deployed for a mid-sized business. For larger firms, implementation can run between one and two years from planning to go-live.

Four factors commonly increase implementation times, however:

1. **Messy and Incomplete Data.** Before ERP implementation, businesses often have overlapping databases and weak data validation rules that create messy data requiring standardization and cleanup. This can significantly lengthen time during data migration.
2. **Custom Code.** Most ERP implementations require some custom code for specific business processes or connectivity with legacy systems. The volume of customization that must be developed can play a large in deployment time.
3. **Business Process Change.** Improving business processes is a key part of the ERP value proposition, but determining and migrating to new processes can lengthen implementation time considerably for a company if there has not been due diligence around proper planning and consultation with key stakeholders within each department of a company.

4. **Organization Change Management.** Rolling out a new ERP system is only part of a successful implementation. What sometimes takes significantly longer than technical implementation is training and adjusting an organization's culture so new business processes and ways or working are adopted. An often overlooked phase of ERP implementation is getting employees embracing and fully utilizing a new system.

The Future of ERP

ERP vendors are actively growing their cloud offerings and deepening the level of sophistication and usability of these offerings. Increasingly specialized cloud-based ERP solutions also are emerging for micro-segments within specific industries.

Inclusion of artificial intelligence capabilities is one area where ERP feature sets are expanding at a rapid pace, as is greater support for Internet-connected devices and sensors embedded in field equipment, industrial devices on the shop floor and in products manufactured by businesses themselves.

On the more distant horizon, ERP vendors and consultants have been talking about the promise of blockchain technology within ERP, a form of digital ledger that is shareable and secure. In the future, a network of networks might develop where supply chains or whole industries connect and interrelate through their ERP systems using distributed ledger technology as a backbone.

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