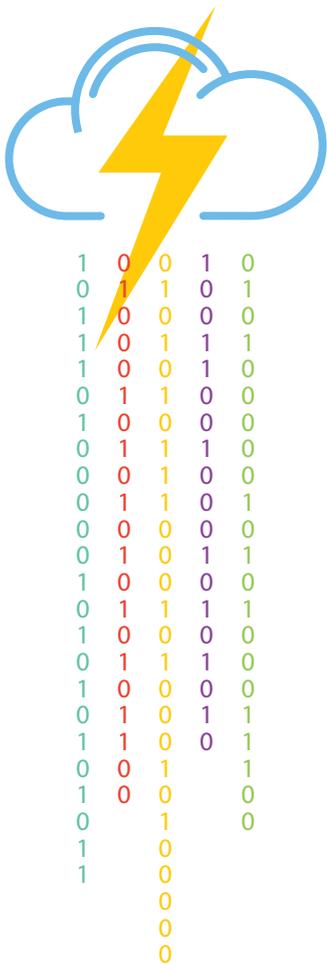


How the Cloud Empowers Digital Transformation



Digital transformations are performed with a range of justifications.

Some stem from a need to replace IT systems that have reached the end of their useful life; others from a reluctance to spend on a refresh. These companies' often complex IT infrastructures can't keep up with the pace of service demands. That leads to lackluster service levels for customers, and for mobile workers seeking help with creaky legacy systems and applications that often are fragile, prone to breakdowns, and neither scalable nor flexible enough to take on new service demands. In some cases, a company lacks the skills required to tend to its legacy systems, creating the risk that it will have trouble keeping them running. And, as technology vendors move their systems to cloud-enabled platforms, enterprises that have the on-premises versions of those applications eventually will find their vendors' support withdrawn.

Other companies embarking on a digital transformation seek a reset; they wish to establish a greenfield on which to build a fresh IT infrastructure for new ventures and innovative business models. Often, this happens when a company goes through a merger, acquisition or divestiture. While these

events provide a chance to start a fresh computing environment, the new entity in all likelihood will be accessing existing data. This means that the new entity and its predecessors must ensure the disparate data sets, once held by parts of an organization that were together, can be managed separately.

Whatever the reason, a digital transformation will require any enterprise to shift much of its computing infrastructure from its own data centers to those operated by private or public cloud providers.

A cloud-based digital transformation strategy offers great opportunities:

- Reduced costs
- The chance to capitalize on far greater computational resources provided by cloud providers that run data-intensive computing chores
- Replacements for aging back-office applications
- The flexibility to ramp up or down according to business needs
- The ability to handle the enormous volumes of data coming from Internet of Things-related digital sensors (from machines in the field, products in customers' hands and places of business)
- Resources to support the use of artificial intelligence and other systems that identify business opportunities, solve operational problems and provide winning digital customer experiences.

The cloud *is* full of promise. But while straightforward in theory, the switchover of systems from a company's data centers to the cloud must be planned carefully. If the planning isn't sound, it will risk major disruptions to the information systems that the business depends upon every day. Thus, in the absence of considerable forethought, a company's digital transformation initiatives are likely to falter.

Because a digital transformation is about the future of the business, the planning to support it should hinge on the business's strategy, not on IT-centric concerns. Executives must focus first on what is relevant to the growth of their business, and how a cloud deployment can support that strategy. Decisions on the technology resources to support that strategy come afterwards. And while it shifts systems to the cloud, the organization must keep a laser focus on those who will experience the systems that the cloud supports—both internal users and customers.

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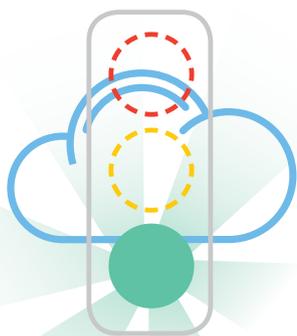
The Cloud Beckons

The debate about whether to join the cloud computing trend is history. A survey of nearly 1,000 IT professionals found 96% of their organizations have active cloud implementations, and 81% have more than one.¹ The cloud is an integral part of digital transformations, just as it is central to most modern IT programs.

The move to digital transformation—to serve customers better and faster and bring new products and services to market more quickly and frequently—requires access to new applications like advanced analytics. Without them, a firm's ability to gain needed insights from the data it collects about customers and its own operating performance will be constrained. And without the processing power of a public cloud vendor, companies will find it difficult to analyze the enormous volume of data that will be generated by Internet of Things (IoT) sensors.

Traditional IT systems are not suited to digital transformations. They are not flexible enough. They are not responsive enough. They are costly to maintain. And technology vendors are moving away from supporting their on-premises applications.

Corporate leaders can't justify spending more on the IT systems they have in place. That's pouring good money after bad. And so, for digital transformations, the cloud beckons. The question for companies is how to answer the call.

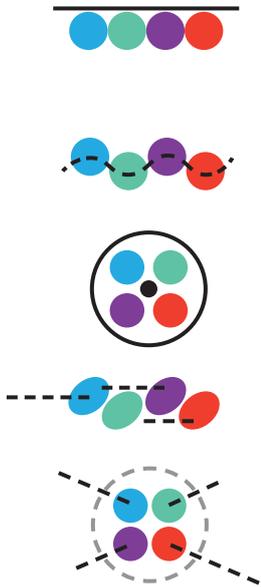


Business Strategy Guides Cloud Implementation Approach

Incorporating a cloud computing infrastructure into a company's digital transformation initiative starts with making the business case. Executives must explain how a cloud infrastructure can support the digital transformation. This includes stating how the company's digital transformation will reshape the business for the better, how it will empower the company to innovate and grow, and how cloud computing will serve as a catalyst.

¹ RightScale, "State of the Cloud Survey, 7th edition," February 13, 2018, accessed at: <https://www.rightscale.com/blog/cloud-industry-insights/cloud-computing-trends-2018-state-cloud-survey>. Fifty-three percent of 997 survey respondents were IT professionals at firms with more than 1,000 employees.

The capabilities of a cloud infrastructure should address these questions:



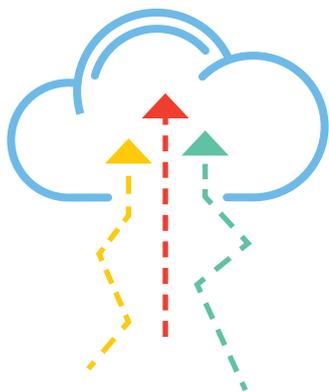
- **Stability**—to access resources where and when they are needed. A cloud computing provider can ensure the stability of fragile legacy systems.
- **Flexibility**—to scale computing resources up or down as demand requires.
- **Security**—from private clouds that connect legacy systems via corporate wide-area networks, and ensure the data security of IoT implementations.
- **Agility**—a readily accessible test bed for new products and services.
- **Access to innovative technologies**—cloud providers host the latest applications, updated automatically, along with computing resources to gain new insight into data and pursue new initiatives.

After determining the benefits of a cloud strategy, a company's leaders must assess their current environment. How ready is the organization's current computing environment? What is required to reach the desired future state? For each issue below, executives need to identify current requirements, project future requirements and determine the difference between those desired states and the company's existing conditions. Issues include:

- **Business considerations**, including the company's industry and its existing digital processes. For example, an industrial manufacturer may be building out an IoT system to embed sensors to monitor performance and predict problems in the machines it sells and fix them before they occur. That company is likely to have different requirements than a retailer revamping its omnichannel customer experience to reach consumers using smartphone and smart speakers like Amazon's Alexa. Each company will have a list of contingencies for its cloud infrastructure to ensure its ongoing operations run smoothly, its existing applications are maintained, and new capabilities can be accommodated.

- **Applications**, including legacy enterprise applications (like ERP, CRM, supply chain), office systems including call center and other communications, as well as analytics and other applications that support the business. The company needs to understand the specific ramifications for supporting these applications with a new cloud infrastructure, and how to ensure continuous service to employees and customers.
- **Infrastructure**. The company should outline its existing capabilities, and what it will require for the digital transformation.

This exercise is about laying the foundation for a future in which infrastructure requirements can support future growth. By identify gaps between today's reality and the company's vision, executives can pinpoint how to close those gaps.

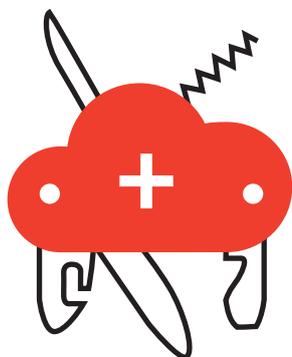


Determining a Migration Path

With a vision articulated and an understanding of the business contingencies a cloud infrastructure must include, the next step is to determine a path forward.

The choices executives make—whether to go with a public cloud provider, a private cloud host or a hybrid model—will depend on the business. Private cloud models, such as infrastructure as a service (computing resources provided on an as-needed basis) and platform as a service (tools hosted on a cloud platform that enable teams to develop and test new applications, products and services), are often better suited to companies moving deliberately toward the cloud. In addition, public cloud providers such as Amazon Web Services, Microsoft Azure, and Google offer scalability for “dynamic burst”—the ability to handle processing chores during peak volume times (such as a retailer’s holiday season e-commerce orders). Software-as-a-service providers, such as Salesforce.com’s customer relationship management applications, host specific business capabilities and related data.

Executives should also consider whether hybrid clouds, a model that combines elements of public and private cloud resources, are right for their digital transformation. The model is a popular choice because companies can run versions of their existing systems while taking advantage of the best of additional resources and technologies.



For every migration path a company evaluates, executives should perform a total cost of ownership analysis that includes the costs of labor, technology and other expenses—compared to existing conditions—as well as calculating projections for the expected returns.

The Swiss Army Knife Nature of Cloud Infrastructures

The digital transformations ongoing at two very different businesses show how the versatility of cloud infrastructures can support a range of initiatives.

Private cloud stabilizes company at risk, sets stage for rebound

The story of a delivery and logistics company shows how a successful cloud migration plan can enable a digital transformation. The company, which serves large but sparsely populated regions, faced complaints about poor service. The company's creaky systems had trouble dealing with seasonal demand spikes. Competition from other logistics firms ate into the company's business. The firm saw its orders drop 15% during the first 15 years of the 21st century. It was in danger of going out of business.

At issue was the company's legacy systems, which could not change as the environment around the company changed. Somehow, it had to stabilize its legacy systems while its executives planned a larger digital transformation to meet new market demands.

With a private cloud, the company's users could access important applications that previously were prone to breaking down. The private cloud also drove an early victory: the launch of a digital platform on which business transformation applications could be built in an agile model. The system added new functionality while improving customer service.

The company continued to plan for the future as it built on this early success. It created new value-added services, like booking online appointments for collection and delivery services. Now the company is more agile than before. It can meet seasonal spikes. And its existence is no longer in doubt.

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Creating the conditions for a successful cloud migration requires collaboration among decision-makers, those implementing changes, and employees.

Discrete cloud environments establish integrity of parent company and its spinoff

The second example illustrates the opportunity a cloud implementation presents when a large industrial company decides to spin off a business. When executives at the manufacturer decided to split off part of itself into a new company, each entity needed to have its own IT infrastructure complete with separate systems and independent data stores.

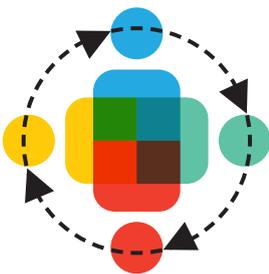
The scale of the original company's systems made this complicated: more than 1,300 business applications, including business analytics and financial management systems; systems for critical business processes including manufacturing, supply chain, finance and HR, and legacy systems including multiple regional instances of Oracle E-Business Suite for ERP, CRM and supply chain management. The original company had 1.6 petabytes of data that had to be segregated and moved during the divestiture process. And the migration to two new computing environments had to meet a tight deadline (one business quarter), while complying with government financial regulations and security requirements.

The company relied on TCS Enterprise Private Cloud to make the divestiture work. It established separate infrastructures for the two companies. Each company set up its own instance of Oracle E-Business Suite. Each unit also established control of all data relevant to its business.

The divestiture transaction was completed on time, with each company beginning operations on the planned date, each supported by its own cloud computing infrastructures.

Finishing Touches Required

As the examples of companies using cloud infrastructures to enable dramatic changes illustrate, cloud implementations alter the workings of every important system that employees and customers touch. Creating the conditions for a successful cloud migration requires collaboration among decision-makers, those implementing changes, and employees who will be working in new digital environments.



Some of the challenges that need to be overcome in successful transformations include:

- **Regulatory compliance.** Like the divestiture noted above, cloud infrastructure implementations must follow applicable accounting rules relating to financial data, as well as privacy rules for customer information. This requires close collaboration between business stakeholders and cloud infrastructure partners. The parties must validate compliance before the systems go live. For example, they need to confirm the datasets that correspond to each business entity are stored properly in the correct systems and applications.
- **Security compliance.** In the transition to a cloud infrastructure, the company and its cloud partner must confirm that data is handled in compliance with government rules, corporate policies and customer agreements. For example, security features can include data encryption and monitoring data access in addition to the network and system security features that a cloud provider should provide.
- **Change management.** The migration to a cloud infrastructure should incorporate all the training and change management efforts that go into any successful IT implementation influencing business processes and the work of end users.



A Host for Transformations

Digital transformations are a boardroom imperative. The issue is one of the top three priorities for 2018 in 11 out of 15 industries, according to a Gartner survey of 3,160 CIOs across 98 countries.² International Data Corp. predicts spending on digital initiatives will grow to close to \$1.3 trillion in 2018 and surpass \$2.1 trillion by 2021.³

But while digital transformations are a priority, success is elusive. Only 5% of global companies had met or exceeded their digital goals, according to a 2017 Bain and Company survey of more than 1,000 companies—less than half the success rate for conventional transformations.⁴

² Gartner, "Is Digital a Priority for Your Industry?" March 6, 2018, accessed at <https://www.gartner.com/smarterwithgartner/is-digital-a-priority-for-your-industry/>.

³ "IDC Forecasts Worldwide Spending on Digital Transformation Technologies to Reach \$1.3 Trillion in 2018," December 15, 2017, accessed at <https://www.idc.com/getdoc.jsp?containerId=prUS43381817>.

⁴ "Orchestrating a Successful Digital Transformation," November 22, 2017, Bain Brief, accessed at <http://www.bain.com/publications/articles/orchestrating-a-successful-digital-transformation.aspx>.

Companies using cloud can run their business on it, change their business through it, connect with customers and improve the lives of their employees.

One thing that *is* certain: the ability of cloud infrastructures to support transformation initiatives. The cloud provides the agility, access to innovative analytics applications and ready-made testing environments in which to create and test new products and services. Companies can run their business on it, change their business through it, connect with customers and improve the lives of their employees.

There are so many choices for moving forward that the biggest challenges are specifying the reasons for adopting a cloud infrastructure, determining how you will integrate your business with it, and then implementing it. Your transformation is out there. The cloud is ready for it.

Authors

Indu Malhotra

Head, Cloud Strategy and
Global Cloud Command
Centre, TCS

Satishchandra Doreswamy

Vice President & Global Head—
Cloud Infrastructure, TCS

Experience certainty.

IT Services
Business Solutions
Consulting

Contact

Visit the unit page for more information: <https://sites.tcs.com/bts/cloud-infrastructure/>

Email: BusinessAndTechnologyServices.Marketing@tcs.com

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