



# Cloud Computing: The Essential Platform for a Machine First™ Digital Transformation

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The cloud is the catalyst for pursuing a Machine First approach to digital transformation. It enables a company to automate the business processes that make such transformations possible. Rather than maintaining its own cumbersome data centers and expensive infrastructure, an enterprise can leverage cloud computing resources to plug into enormous, on-demand computing power, data-analysis, and other capabilities for a lower total cost of ownership than traditional computing architectures.

Famously, the cloud is the foundation that digital natives like Amazon, Uber, Spotify, Airbnb, and Netflix, among others, have used to build disruptive business models, taking advantage of its flexibility, scalability, and affordability. But even in companies established long before the Internet was commercialized, the cloud has been critical:

**In pharma, Johnson & Johnson (\$82 billion in revenue) uses a hybrid cloud as a computing platform that is more flexible and less costly to maintain. It allows J&J to do complex data modeling better and less expensively than in the past.<sup>37</sup>**

**In automotive, (\$265 billion in revenue) Toyota Motor Corp. appointed a chief digital officer this year to accelerate its development of a 'connected car' digital ecosystem.<sup>38</sup>**

**In the supermarket industry, Kroger Co. (\$121 billion in revenue) since 2017 has been using cloud-based analytics software to create new digital and in-store customer experiences.<sup>39</sup>**

**In financial services, HSBC (\$54 billion in revenue) has gone 'all-in' on cloud to accelerate time-to-market for consumer payments services.<sup>40</sup> The global bank also plans to launch an anti-money laundering program built on the cloud.<sup>41</sup>**

**In hospitality, the \$1.9 billion Wyndham Hotels and Resorts chain has migrated 'a hodgepodge of core systems that had grown unwieldy' to a public cloud as a key element of its digital transformation, designed 'to remove friction' from its business processes.<sup>42</sup>**

In our view, it will not be possible for most companies to transform their businesses digitally unless they move some of their IT applications and infrastructure into public or hybrid clouds. There are two reasons for this.



First, cloud computing is a crucial platform for accomplishing compute-intensive tasks such as:

- Providing highly interactive digital customer experiences (especially those that use streaming video, audio, and other data-intensive resources).
- Continuously monitoring the performance of key digital business processes, such as demand creation and customer support, especially when such efforts use artificial intelligence-fueled analytics technologies to track and adjust those processes in real time.
- Tracking a company's IoT-enabled products in the field, such as

<sup>37</sup> Amazon Web Services, Johnson & Johnson case study, accessed at: <https://aws.amazon.com/solutions/case-studies/johnson-and-johnson/>.

<sup>38</sup> Peter High, "Zack Hicks Is Defining The Future Of Driving For Toyota," Forbes, March 18, 2019, accessed at: <https://www.forbes.com/sites/peterhigh/2019/03/18/zack-hicks-is-defining-the-future-of-driving-for-toyota/>.

<sup>39</sup> Deena M. Amato-McCoy, "Kroger Co. goes all in on its cloud strategy," Chain Store Age, November 9, 2017, accessed at: <https://www.chainstoreage.com/technology/kroger-co-goes-cloud-strategy/>.

<sup>40</sup> "HSBC goes cloud-first," Dig Fin, April 2, 2019, accessed at: <https://www.digfinngroup.com/hsbc-cloud/>.

<sup>41</sup> Trond Vagen, "HSBC set to launch cloud-based AML system next year, says senior official," Reuters, November 28, 2018, accessed at: <https://www.reuters.com/article/bc-finreg-hsbc-data-cloud-aml-idUSKCN1NX1KU>.

<sup>42</sup> Clint Boulton, "Wyndham Hotels checks into the cloud," CIO.com, January 9, 2019, accessed at: <https://www.cio.com/article/3331845/wyndham-hotels-checks-into-the-cloud.html>.

products that customers are using, or the self-operating vehicles now under development.

- Continuously monitoring customer satisfaction (as expressed through social media and other channels).



The second reason is that shifting on-premise systems to public or hybrid clouds creates new capabilities and flexibility. Companies can shift their business models faster by leveraging the latest technologies. Just as importantly, the cloud enables them to connect their systems seamlessly with those of their ecosystem partners: customers, suppliers, distributors, and others. Instead of managing connections among multiple systems, they can use cloud-based systems as a common medium.

This means companies can use the cloud to experiment with new business models that require advanced or different computing resources available through cloud platforms, such as artificial intelligence (AI) and machine learning. The cloud also allows businesses to launch new services faster because they can offload much of the IT development work. They can integrate acquisitions faster with the cloud as a digital meeting place of sorts for combining IT resources, rather than having to build bridges and migration paths from scratch. The same holds true for companies that divest businesses. If a company's business units run their systems in the cloud, it will be much easier to divest those businesses than it would be if those systems were running on proprietary, on-premises hardware and software.

Achieving these and other cloud benefits requires first understanding your strategic goals for the cloud.

## When Capabilities Are More Important Than Costs



Cloud computing's presence continues to grow in the enterprise. For the first time, organizations last year spent more on cloud-based IT infrastructure than on traditional infrastructure, according to IDC.<sup>43</sup> It forecasts overall spending on public cloud services and infrastructure will grow 23% this year to \$210 billion.<sup>44</sup> IDC found that private cloud implementations also grew 23% in 2018 and would continue to climb, though at a slower rate.<sup>45</sup>

Traditionally, many leaders have viewed the cloud as a way to reduce IT costs rather than to build new digital capabilities. For example, deploying cloud-based versions of enterprise applications like enterprise resource planning (ERP) and customer relationship management (CRM) software (in a technique known as 'lift and shift') has been a go-to solution for managing expensive and difficult-to-maintain legacy systems.

This, of course, can reduce costs. However it misses a bigger benefit from shifting to the cloud: enabling a company to digitally transform its business. In determining the right cloud adoption path, leaders should think beyond short-term cost-cutting. They should focus on transformational goals such as adopting new business models, changing how IT operates, powerful new digital customer experiences, and more efficient relationships with businesses partners. The cloud's potential is bounded only by an organization's imagination. Business leaders need to drive their cloud-based digital transformations with such goals in mind.

Moving systems from on-premise computers to public or hybrid clouds is complex. It requires deep technological capabilities. Companies must also adopt common technology standards such as cloud application programming interfaces, or APIs.

<sup>43</sup> IDC press release, "Cloud IT Infrastructure Revenues Surpassed Traditional IT Infrastructure Revenues for the First Time in the Third Quarter of 2018," January 10, 2019, accessed at: <https://www.idc.com/getdoc.jsp?containerId=prUS44670519>.

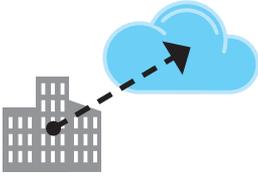
<sup>44</sup> IDC press release, "Worldwide Public Cloud Services Spending Forecast to Reach \$210 Billion This Year," February 28, 2019, accessed at: <https://www.idc.com/getdoc.jsp?containerId=prUS44891519>.

<sup>45</sup> IDC press release, "Cloud IT Infrastructure Revenues Surpassed Traditional IT Infrastructure Revenues for the First Time in the Third Quarter of 2018," January 10, 2019, accessed at: <https://www.idc.com/getdoc.jsp?containerId=prUS44670519>.

We see three major technical challenges in shifting to the cloud:



- 1.** Thoroughly understanding current IT operations, data management maturity, and how existing systems support the company's business strategy. How easy will it be to shift from current systems to the cloud?
- 2.** Determining how to shift on-premises business applications (of which there are likely dozens or hundreds) to the cloud, including whether to shift to their cloud-based versions or equivalents; whether they need to be re-engineered and rewritten, and if they can (or should) remain on-premise.
- 3.** Identifying the cloud destinations for enterprise-critical applications. Options include platform-as-a-service, software-as-a-service, infrastructure-as-a-service, public cloud, hybrid model, and private cloud.



Addressing these issues in these ways has helped a number of companies take a Machine First approach to digital transformation. In the next section, we'll explain how they did it.

## The Critical Role of Automation

Along with AI and analytics, cloud computing is a key technology enabler of the Machine First approach to digital transformation. A Machine First approach seeks to automate every aspect of a business that can be automated, including its products and services, how it develops those offerings, how it supports customers, and more. Automating as many business processes as possible lets a company shift people to higher-order tasks that machines are as yet unsuited to perform.

A company pursuing a Machine First vision can apply the same emphasis on automation across the cloud journey—from automated cloud assessments to automated cloud migrations, and autonomic cloud operations. Key steps include:



### **Articulate the business drivers and benefits from cloud computing.**

It's important to clarify exactly how the company will benefit from migrating its systems to the cloud. For example, how will cloud-based systems drive the business model? One financial services firm we worked with realized the cloud was critical to developing and taking to market a new payments platform in six months. In no way could the company have done it as quickly if it had built the platform on its on-premise systems.

Another organization we worked with identified improving collaboration among its researchers around the world as key to its digital transformation strategy. Using a cloud-based hub for sharing data enabled tight collaboration.



### **Examine the organization's value chain for additional opportunities.**

Because the cloud can help companies improve the way it does business with customers, partners, and employees, it's worth evaluating every business process and activity for its potential to be cloud-supported.

These could include presenting new services or product features to customers faster; leveraging the Internet of Things to analyze product performance data; optimizing back-office business processes; improving manufacturing operations through more intensive data collection and performance analysis; and automating the collection and analysis of that data.

One organization we worked with aimed to digitally transform its shipping and logistics by leveraging Internet of Things services on a cloud-based model. By doing so, the firm was able to handle enormous shipping volumes during peak seasons, which improved the customer experience significantly.



### **Conduct a pre-migration assessment.**

A Machine First approach in the assessment phase helps a company prepare a migration roadmap. This includes business cases for specific cloud migration moves. To do so, company leaders must assess the existing state of its IT operations, particularly its platforms, business applications, and the data in its data centers.

A Machine First approach allows a company to automate this work. Software assesses the details of its IT landscape, including applications and infrastructure. Based on pre-built mapping rules, the software suggests a future architecture and cloud migration roadmap. This work includes:

- Identifying the best 'future landing zone' for a company's existing technology components, including applications, infrastructure, and data layers.
- Mapping existing application technology layers to identify which are best suited to infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS), and which providers are the best fit based on the company's needs and the appropriate cloud vendors.
- Recommending the best choices for technology architectures on cloud platforms, whether it is a hybrid or some other configuration.
- Recommending the sequence and chronology of moving applications.
- Estimating the costs of the migration.



### **Monitor the migration.**

A Machine First approach enables leaders to monitor progress in real-time and quickly evaluate the results of the migration.

## **Careful Planning to Avoid Pitfalls**

Many companies will find they need to keep some of their computing chores on on-premise systems. These can be due to regulations that require customer data be kept in the country in which those customers live. In other cases, legal agreements in mergers and acquisitions will demand that data sets be kept separate. It is important to isolate these processes and activities before beginning a cloud migration program. The goal is to ensure compliance with all relevant regulatory requirements, which can vary by country and region.

## The cloud is fundamental to taking a Machine First approach to digital transformation.

Companies must also safeguard data they will transfer to cloud-based systems—before, during, and after a migration. While leading cloud providers offer robust security, companies must still evaluate how their services will protect data during and after migration.

The cloud is fundamental to taking a Machine First approach to digital transformation. But shifting on-premises to the cloud is a delicate operation, one that requires careful planning long before the company begins moving its systems.