WHITE PAPER

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THE CLOUD AS A CATALYST FOR BUSINESS TRANSFORMATION

Organizations are finding that cloud computing delivers far more than just cost savings.

Executive Summary

Cloud computing has rapidly evolved from a disruptive innovation to a pervasive reality. Organizations of all kinds now use the cloud for everything from data backup to core systems such as enterprise resource planning (ERP) and customer relationship management (CRM). And use of the cloud keeps growing.

Many IT and business leaders, however, still view the cloud primarily as a way to reduce costs. This is understandable, because often cloud adoption was initially motivated by a desire to avoid capital expenses and by the cloud's attractive economies of scale.

But the cloud has emerged as much more than just a way to save money. In fact, organizations that leverage the cloud strategically are achieving sustainable competitive advantage by transforming how they operate internally and how they deliver value to customers.

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The Ascent of Technology

At one time, businesses could succeed simply by offering customers the right products or services at the right price. And once they established a customer base, they could count on repeat business, year after year.

That's no longer true. Digitally connected customers now spend their money on whichever company they find most appealing at any given moment. And when they find a business they like — or have a buying experience they don't like — they can instantly share their feelings with the rest of the world.

Cloud computing is a key element in this tech-enabled world. A 2013 IBM study, *Under cloud cover: How leaders are accelerating competitive differentiation,* found that organizations embracing the cloud report nearly double revenue growth and nearly 2.5 times higher gross profits than that of companies that are more cautious about cloud computing. Further, the study found that the cloud's strategic importance to business is expected to double over the next three years.

These results have gotten the attention of business leaders, who are focused on finding ways to deploy the cloud and deliver business value. Line-of-business (LOB) leaders in organizations are recognizing the potential that cloud computing can deliver, so they're involving themselves in cloud decisions and looking for innovative ways to deploy cloud solutions.

The fact that technology is no longer the sole province of the IT department is an important aspect of its ascent in business strategy. In fact, the tech research and analysis firm Gartner predicts that 90 percent of all enterprise technology spending will take place outside of IT departments by 2020.

The increasing ownership of technology by line-of-business decision-makers, rather than by IT departments, is in part due to the fact that cloud providers — such as Software as a Service (SaaS) vendors, as well as managed service providers and others — have made it easy for organizations to implement technology solutions without the involvement of their internal IT departments.

Some IT leaders feel threatened by this loss of control and by the difficulty they have competing with the economics and speed-to-benefit offered by external service providers. Others, however, recognize that reliance on external providers can deliver a win-win — because it enables the business to get the capabilities it needs quickly and affordably, and it frees IT staff to focus on a higher-

value role as the orchestrator of externally and internally sourced technologies for maximum business advantage.

These aspects of today's technology all point to the strategic value of the cloud. The cloud, after all, includes the various "as-a-service" offerings that enable lines of business to acquire technology directly.

The cloud also provides ready access to advanced mobile, social, Big Data and analytic resources. These technologies, in particular, are rising to preeminence in today's hyper-connected world:

- **Mobile** — Smartphones, tablets and other devices allow users to engage in digital interactions at any time they choose. And they're taking full advantage of that fact. Nearly 80 percent of those ages 18 to 44 years old reach for their smartphones within 15 minutes of waking up. And mobility is rapidly becoming a fact of life for the enterprise as well.

- **Social** — Individuals and organizations are taking advantage of pervasive connectedness to interact with each other via social networks that bring together communities of common interest. Facebook, Twitter, LinkedIn and other social sites have become intense hubs of activity that impact critical business activities, from marketing to recruiting.

- **Big Data** — The constant digital activity of today's users generates a wealth of useful information, adding to the tremendous volume of transactional

What Is the Cloud?

The term "cloud" is used in different ways by different technology observers. Some use it strictly to refer to fully virtualized, multitenant technology environments. Others distinguish between public, service provider clouds and private clouds that function within an enterprise.

In general, cloud technology is any external IT resource that is provided on an on-demand basis. Under this definition, the cloud includes:

- **Software as a Service (SaaS)**
This includes applications, transaction processing systems and analytic engines hosted by a service provider and typically delivered via a web browser interface, requiring little or no modification of an organization's existing IT environment.

- **Infrastructure as a Service / Platform as a Service (IaaS/PaaS)**
These are hosting services that give companies flexible access to processing, storage and database capacity on which they can run their own applications.

- **Data and content services**
These are value-added information resources that companies can use to better understand everything from markets and customers to weather patterns and shipping costs.

data and unstructured content already flooding the enterprise. Tech-enabled cars, appliances, manufacturing equipment and more — often referred to as the "Internet of Things" — now generate useful data too. Combined, this assortment of Big Data is a rich source of insight for tech-savvy organizations.

- **Analytics** — To make sense of Big Data, organizations need sophisticated analytics. These tools allow decision-makers to pinpoint actionable "needles" in massive "haystacks" of data available to the enterprise. Analytic capabilities range from predicting trends based on historical inputs to real-time alerts that let stakeholders capitalize on immediate opportunities.

The cloud is essential for any organization seeking to deploy these technologies to gain a competitive advantage — and to avoid being disrupted by new market entrants who are aggressively leveraging the cloud's power.

How the Cloud Delivers Competitive Advantage

When the cloud first emerged as an alternative approach to IT provisioning, many viewed it as merely a way to reduce costs. Cloud solutions were usually less expensive than internal IT operations due to cloud providers' economies of scale. Further, early cloud solutions tended to be less robust and customizable than their in-house counterparts, so buyers were essentially sacrificing functionality for economy and ease of deployment.

This is no longer the case. Cloud providers have been able to aggressively evolve their solutions because they don't have to worry about the support issues associated with traditional on-premises software upgrade cycles. They've also gotten better at making their solutions highly customizable. As a result, cloud solutions are often more advanced than their traditional counterparts.

The cloud has therefore become a powerful means of leveraging technology innovation to transform business. Advantages offered by the current generation of cloud solutions include:

- **Faster access to advanced technology** — Cloud vendors offer some of the most sophisticated technology on the market for everything from Big Data analytics to social and mobile collaboration. By tapping into the cloud, organizations can leverage these new technologies to achieve their strategic objectives with unprecedented speed and agility.

- **The freedom to start small and scale as needed** — Before the advent of the cloud, organizations had to

make substantial capital commitments to new technologies before being certain about their benefits. With the cloud, organizations can now quickly pilot new solutions on a limited scale — and then progressively expand deployment over time as necessary. This approach reduces risk while accelerating innovation.

- **Better analytic insight** — The scalability and sophistication of the cloud enables organizations to process much larger volumes of more diverse data more quickly and in more advanced ways than they could using the limited capacity of their internal IT infrastructure alone. The cloud thus provides an excellent means of gaining actionable analytical insight from ever-expanding data sources — including in-house applications, cloud applications and third-party databases.

- **Easier data-sharing and collaboration** — Security and performance issues historically made it difficult for organizations to provide contractors, suppliers, customers, partners and other third parties with access to internal IT resources. Cloud solutions, however, are designed for secure remote access — and they don't directly expose the data center to unauthorized intrusion. The cloud, therefore, helps entities extend collaboration beyond the organization's four walls to tap a broader talent pool.

Cloud Pacesetters Outperform the Pack

A study of more than 800 cloud decision-makers by Oxford Economics and the IBM Center for Applied Insights, *Under cloud cover: How leaders are accelerating competitive differentiation,* reveals that organizations aggressively leveraging the cloud substantially outperform their peers. The study polled business and IT executives across 24 industries and 13 countries, splitting respondents into three groups: Pacesetters (those deploying cloud strategically), Challengers (those deploying the cloud primarily for efficiency) and Chasers (those still in the early stages of cloud adoption).

Here are the study's key findings:

- Pacesetters achieve 160 percent profit growth compared with Challengers, and 240 percent profit growth compared with Chasers.
- Pacesetters are 170 percent more likely than Chasers to get insights from Big Data.
- Pacesetters are 136 percent more likely than Chasers to reinvent customer relationships.
- Pacesetters are 79 percent more likely than Chasers to locate and leverage expertise within their business ecosystem.

The study also reveals that Pacesetters are more adept at leveraging today's key technologies — mobile, social, Big Data and analytics — to achieve competitive advantage. Plus they're twice as likely to say that they're strengthening the relationship between IT and line of business (LOB).

- **Better security and business continuity** — In many ways, the cloud is more secure than most on-premises data centers. For one thing, data centers typically accumulate diverse hardware and software over time. This results in a wider range of vulnerabilities than are found in cloud providers' generally homogeneous environments.

Further, cloud data centers are located in facilities with much greater physical security than the typical enterprise data center. Cloud providers usually also mirror their environments across multiple locations to ensure uptime. This makes them highly resilient in the event of a localized disaster.

Simply put, the cloud removes the "friction" from technology implementation and ownership, thereby freeing IT managers to nimbly and cost-efficiently mix and match technologies as required to meet the needs of the business. So, rather than being a threat, the cloud is actually a major boon to IT staff — empowering them to contribute more to the business than ever before, just when that contribution is needed most.

Customer-facing Innovation

Customer engagement is of paramount importance today, because customers have so many options to choose from — and can choose to do business only with businesses that fulfill their expectations regarding responsive, personalized service. Firms that deliver a differentiated level of service across engagement channels therefore outperform their less customer-centric competitors.

The cloud is a powerful tool for transforming customer engagement. Three key characteristics of cloud computing enable this transformation: By standardizing an organization's infrastructure, the cloud promotes security, scalability and flexibility. Virtualizing an organization's resources results in more efficient use of IT. And the automation of cloud processes allows for improvements in management and speed to market.

By strategically implementing the cloud, IT leaders can maximize these benefits and make a quantum leap in how their organizations are able to serve customers. Early adopters have found the cloud to be especially valuable with regard to three aspects of customer engagement:

Omni-channel customer interaction — Customers interact with businesses across multiple channels — including phone, web, email, mobile apps and social media. All of these channels require a high degree of technology enablement. Contact center operators, for example, need rich applications that allow them to quickly access relevant customer information. Interactive voice response (IVR) applications are also useful for enabling customers to get answers to their questions via self-service.

When it comes to mobile apps, organizations are discovering that they need to do a lot more than just develop good smartphone software. They also have to connect that software to back-end IT resources such as databases and transaction processing systems. In fact, successful mobile apps often drive more traffic to those back-end systems than anticipated.

Few companies can afford the kind of infrastructure it takes to support uncertain mobile app workloads or seasonal spikes in contact center volume. The cloud, on the other hand, is ideal for dynamically sizing capacity to align with ever-shifting demand — and for supporting temporary contact center operators working from remote locations.

The cloud is also useful for unifying the customer experience across multiple communication channels. Customers don't want to re-explain their issue every time they use a different channel. But with the right cloud solution, they don't have to — because all interactions can be captured in a common system to create a seamless experience.

Deep customer insight — To consistently deliver a great experience, it's essential to understand the customer. That's why market leaders make customer insight a strategic imperative.

Customer insight can be classified into four categories:

	INDIVIDUAL	COLLECTIVE
REAL TIME	Enables companies to capitalize on immediate cross-sell and up-sell opportunities to individual customers. Also alerts companies when they may be about to lose a customer, so they can engage in recovery behaviors before it's too late.	Enables companies to quickly respond to positive situations (such as a sudden surge in demand for a product) and negative situations (such as a sudden flood of complaints about a product or service).
HISTORICAL	Enables companies to make personalized recommendations to customers based on past preferences and detect trends that may represent new opportunities to provide value.	Enables companies to anticipate and respond to fluctuations in demand, as well as discover correlations between customer attributes (such as location, age and gender) and purchasing patterns.

The cloud facilitates effective analysis of customer data in two key ways. First, it provides scalable capacity for gathering and performing sophisticated analysis on large volumes of data. The computing, storage and network capacity this requires can be cost-prohibitive for most entities — especially because analysis workloads tend to be highly sporadic. The cloud solves this problem by making the necessary capacity available on a cost-effective, as-needed basis.

Second, the cloud gives organizations access to the latest advances in analytical technology. These advances provide even technically unsophisticated business users with increasingly sophisticated ways of gleaning actionable insight from Big Data.

An individual company may find it difficult to acquire and implement these ever-evolving tools internally. But with the cloud, they can tap into state-of-the-art analytical technology as soon as it becomes commercially available.

Delivery of differentiated value — It's not enough to communicate well with customers and understand them deeply. Companies also must offer them competitively differentiated value. Increasingly, companies are using IT to accomplish this.

For example, credit card companies alert cardholders about changes in their credit scores so they can better manage their finances. Entertainment companies analyze customers' viewing habits to recommend other books or movies they might enjoy. Healthcare suppliers help hospitals reduce costs by better managing their inventories.

In all these cases, information enables companies to deliver greater value to their customers, so they don't have to compete on price alone — and so they can build better relationships with customers over time. The cloud facilitates this through the deployment of new value-added IT capabilities. It also helps organizations to securely extend these capabilities to customers via web, mobile and social channels.

Just as important, the cloud can provide organizations with access to the information they need to enhance their value proposition. A video-on-demand company, for example, might not have enough historical viewing data on which to base accurate recommendations to its customers. It could succeed, however, by tapping into a cloud service that based its recommendations on a much larger historical database of viewer behavior — as well as more sophisticated prediction algorithms and richer content metadata.

Any company seeking to differentiate its customer experience and its value proposition should consider leveraging the cloud as a resource for technology infrastructure, applications, data and analytics.

What's Holding Companies Back?

Despite the empirically demonstrated advantages offered by the cloud, many organizations are still moving slowly when it comes to cloud adoption. According to a study of 300 CIOs commissioned by NTT Europe, entitled *Growing Pains in the Cloud,* several factors are inhibiting broader, more strategic use of the cloud:

- 56 percent see the complexity of their IT environments as the main barrier to broader adoption of the cloud.
- 28 percent are unwilling to abandon the significant financial investments they have already made in their legacy systems.
- Security was a concern that varied by industry, with public-sector CIOs (89 percent) citing it more than their peers in financial services (69 percent).

While these results explain why many organizations are behind the curve in cloud adoption, the survey also showed that the cloud is being widely embraced as a tactical solution — with only 6 percent of CIOs saying they have no plans to use the cloud at all.

Smarter, Faster Decision-making

In addition to transforming the way companies interact with their customers, the cloud can help dramatically improve how decisions are made internally. The types of decision-making that organizations enhance with cloud-based solutions include:

- **Resource allocation** — By tracking trends and making more accurate predictions, companies can optimize a wide range of resource allocation considerations — from the purchase of raw materials to line-of-business budgeting.
- **Risk management** — The cloud helps companies more accurately assess and mitigate all types of risks, including fraudulent transactions, supply-chain disruptions and compliance failures.
- **Product/service strategy** — By enabling companies to better understand market dynamics and to model "what-if" scenarios, the cloud helps them better align product and service offerings with real-world demand.
- **HR management** — Companies are leveraging the cloud to enhance hiring and recruiting, optimize retention of high-value employees and otherwise improve workforce management assessments.
- **Mergers and acquisitions** — Senior managers use cloud-based analytic and modeling tools to evaluate complex factors that affect strategic management decisions,

such as efficiency gains, workforce redundancies and product or service synergies.

In fact, by effectively leveraging the cloud, companies are increasing the accuracy and speed with which individuals and teams make the full range of operational, tactical and strategic decisions on which business performance depends.

The cloud supports this kind of business transformation in several ways:

Broader data access — The cloud gives users access to more and better data. In some cases, the cloud is the direct source of raw data (as with consumer credit–rating databases or actuarial statistics services). In other cases, data may be provided as part of a higher–level service (such as media recommendation engines for online entertainment). The cloud enhances knowledge by providing access to richer and more timely data than individual companies typically have within their own data centers.

At most companies, high–value data is scattered across multiple systems and even multiple locations. The cloud can help here too by integrating dispersed data in multiple formats into a unified data repository that can be comprehensively analyzed.

Accelerated data intake and analysis — Because many business opportunities are transient — and many business problems need to be addressed immediately — time is often of the essence when it comes to decision–making. Limited IT infrastructure, however, can create bottlenecks that slow down Big Data intake and analysis. The cloud overcomes these bottlenecks by providing on–demand access to essential processing capacity, allowing managers to act with greater immediacy.

Earlier access to innovative analytic and decision–support tools — Intensive technological innovation is taking place in areas such as analysis of unstructured data, data visualization and self–learning heuristics. It is almost impossible for companies that depend exclusively on internally deployed systems to keep up with these innovations. That's why forward–thinking organizations are tapping into the cloud — where they can quickly capitalize on advances in data science.

Better empowerment of nontechnical users — The software industry is also innovating when it comes to making analytics and business intelligence technologies more intuitive for nontechnical users. The cloud allows LOB users to experiment with these user–friendly innovations at a relatively low initial cost — without waiting for IT to implement them internally. The cloud thus puts the power of technology directly into the hands of those who need it most.

Greater availability — Managers must make smart, fact–based decisions whether they're in the office, at home or on the road. Here, too, cloud solutions provide an important advantage by facilitating mobile access to relevant information, data visualization and modeling tools. Many cloud–driven solutions also use virtual session management to maintain responsive performance even over limited–bandwidth mobile connections.

Lower cost — Better decision–making requires more data, better tools and faster processing. The cloud delivers all of these elements at lower cost. This cost efficiency is an important consideration as data volume and analytic processing requirements keep growing faster than technology budgets.

Pressures on management staff are likely to keep escalating as business becomes more competitive,

Top Cloud Starting Points

Organizations that are just starting on their journey to the cloud have several excellent entry points that can deliver immediate business benefits while paving the way for more strategic long–term cloud adoption. These include:

- **Backup** — Using the cloud for data protection makes good business sense. Offsite storage helps protect data from local disasters such as floods and fires. It also makes data readily available to alternative sites so business operations can continue on a contingency basis.

- **Email** — Cloud–based email offers a great way to reduce costs while enabling access from any location on any device. Enterprise–class cloud solutions also offer rich features for classifying and searching email messages — an important consideration, given how users often treat their inboxes as an information storage–and–retrieval system.

- **Office productivity** — Cloud–based application suites such as Microsoft Office 365, Google Apps or IBM SmartCloud allow companies to give users the productivity tools they need for an affordable fixed cost. This approach also ensures that users enjoy the benefits of the latest features — something companies with overburdened IT staffs usually miss out on because they tend not to keep up with the latest versions of their software.

- **Security** — In addition to being affordable, cloud–based security solutions help organizations protect themselves from the newest security threats right away, because vendors can update software running in the cloud faster than most organizations can update what they have installed on–premises.

- **Web conferencing** — Cloud–based web conferencing makes it easy and affordable to bring teams together across multiple locations. Useful features such as screen and file sharing make it an especially powerful tool for collaboration — and for reducing travel costs.

complex and dynamic. Companies looking to expand globally, for example, have to take into account a whole range of factors — from fluctuating currency exchange rates to differences in local tax and compliance policies — that they never worried about when they operated only in one domestic market. These challenges make it imperative to provide business decision-makers with better analytical tools.

Companies looking to compete successfully in today's increasingly complex and fast-moving markets should therefore avail themselves of the compelling managerial tools available via the cloud.

Frictionless Collaboration

Effective collaboration is more important than ever for business success. Reasons for this include:

- **Productivity pressures** — Few companies can afford to increase their payrolls in proportion to the growing demands on their business. This requires employees to become more productive. But it's difficult for them to do so if they spend a lot of time searching for information in documents and from co-workers. By improving collaboration, companies can greatly reduce this drag on staff productivity.

- **Responsiveness pressures** — Demanding customers and turbulent markets are forcing companies to respond with unprecedented speed to new problems and opportunities. But companies can't respond quickly if employees and managers require too much time to share relevant knowledge and decide on the right course of action. Improved collaboration accelerates these processes so companies can become more agile and responsive.

- **Innovation pressures** — Companies must aggressively innovate to retain customers and fend off the competition. To innovate, though, companies must get better at exchanging ideas and insights across organizational boundaries. By facilitating these exchanges, next-generation collaboration tools foster a culture of innovation and help accelerate time-to-market for new products and services.

- **Risk and compliance pressures** — Poor communication among employees often results in costly mistakes, which can result in alienated customers, faulty products, regulatory violations and erosion of brand value. Better collaboration significantly mitigates these risks by helping to ensure that the right information gets to the right people at the right time — and by giving managers better visibility into team activities.

- **The extended enterprise** — To minimize overhead and maximize their access to talent, companies engage an ever-changing cast of contractors and partners. And they increasingly allow valued employees to work from outside a typical office environment. These companies must therefore also ensure that geographically dispersed internal and external team members can collaborate as easily as they could if they were all in the same place.

Companies seeking to improve their collaboration capabilities can do so by taking advantage of cloud solutions that include:

- Document or content-sharing that makes it easy for geographically dispersed teams to share documents and collaboratively edit them while maintaining version control.

- Unified communications that allow teams to communicate via phone, chat/instant messaging and video — and to share calendars, computer screens, whiteboards and documents as necessary.

- Social business software that enables teams to securely share news, knowledge and needs using Facebook-like "walls" and communities. Social tools can also make it easier for people to find colleagues with expertise or experience on a particular subject.

- Workflow management that ensures that repeatable processes run smoothly and that any bottlenecks or flaws in process design or execution can quickly be discovered and remediated.

- Brainstorming tools designed to stimulate team creativity, challenge assumptions and help managers zero in on ideas with the greatest potential.

The cloud is particularly well-suited for implementation of these types of collaboration solutions because it is extensible (facilitating the participation of team members regardless of location), adaptable (especially when it comes to activating or deactivating solution features as needed), rapidly deployable (so that new teams or projects can be immediately supported) and cost-effective.

By adopting cloud-enabled collaboration, companies can achieve several high-value benefits:

Better use of available expertise and experience — Most companies use only a fraction of the information trapped on their hard drives and within employees' institutional memory. As collaboration improves, this information can more readily be applied to challenges and problems.

Excellence of execution — When companies consistently bring the right people and the right knowledge to bear on every given situation or issue, execution of everything from product manufacturing to market campaigns improves. This has a positive impact on the customer experience, brand reputation and — ultimately — the bottom line.

Market-driven innovation — Innovation requires more than just one person having an "inspired" idea. It requires an entire organization that generates a lot of ideas, and that refines and nurtures those ideas so that they can make it in the market. Innovation therefore requires both a culture of collaboration and the tools to make it happen.

Fewer mistakes — When users have better information and more visibility into each other's work, they are more likely to avoid the mistakes that upset customers, result in financial losses and expose the company to legal and regulatory consequences.

Greater organizational agility — Phone and email are no longer sufficient for doing business at the speed the market demands. To achieve differentiated agility, companies must make it easier for executives, managers, employees and partners to get answers from each other at any time.

Lower cost of operations — When employees can collaborate more quickly and efficiently, companies can run leaner and keep payroll costs down — even as they grow. Cloud-based collaboration tools also enable companies to save money on software licenses, IT infrastructure and IT operations.

For these reasons and others, every company looking to increase its competitive edge should consider making the use of cloud-based collaboration solutions a strategic imperative.

CDW: A Cloud Partner that Gets IT

CDW is the ideal partner for any organization seeking to optimally leverage the cloud for strategic business transformation and sustainable competitive advantage. By uniquely combining both cloud and on-premises IT expertise, CDW provides technology decision-makers with balanced, requirements-driven advice about how to best achieve near- and long-term business objectives. This yields better outcomes, on time and within budget.

Our cloud client executives use the power of the cloud to boost productivity, regulate IT costs, enhance flexibility and drive innovation. And we offer a cloud portfolio that includes more than 200 high-profile products spanning 36 categories.

Let us help you with the entire cloud computing lifecycle, from selecting which cloud models are best for your organization to simplifying the challenging process of moving applications and data from your existing infrastructure to the cloud.

CDW has worked with organizations of every size in every industry to transform their customer engagements, gain next-generation analytical capabilities and improve collaboration while driving down costs and increasing agility. CDW's cloud implementation services include:

- Best-practices discovery and assessment to clearly define business goals, technical requirements, budget constraints, current environment and other relevant project parameters

- Detailed evaluation of available cloud solutions, design recommendations and proof-of-concept demonstrations

- Procurement, phased implementation, configuration and integration of a complete end-to-end solution — including both cloud and on-premises components

- Solution lifecycle support with defined service level targets

- Ongoing management and operations, if required

To learn more about leveraging cloud computing, contact your CDW account manager, call 800.800.4239 or visit <u>CDW.com/cloud</u>