



Utilities In The Cloud

A Realistic Approach

A ClickSoftware Business Paper

The Cloud Awaits: Utilities' Cloud Computing Opportunity

Cloud computing continues to gain traction in businesses of every kind. Seventy-two percent of companies have at least one application (such as a CRM) or a portion of their computing infrastructure (such as application development and testing) hosted in the cloud, according to a 2015 survey of IT professionals by IDG Enterprise.¹ That's up from 57 percent in 2012. The survey found more enterprises are moving from planning and testing to deploying applications and computing resources in the cloud, with investments among large firms tied to benefits such as replacing legacy technology, improving business agility, gaining capabilities faster, lowering costs and saving on capital expenditures.

While enterprises broadly cite these gains to justify investments in cloud computing capabilities as part of their IT strategy, the utilities industry has been slower on the uptake, experts note. When asked by Tata Consultancy Services to project the number of cloud-based applications they expected to deploy, executives from the utilities and energy provision industry were among those citing the fewest (leaders included technology, financial services and industrial manufacturing).²

U.S. utilities have been reluctant to adopt cloud computing technologies, and their hesitation is understandable. Because their business operations are regulated, utilities have a well established practice of treating IT investments as capital expenses (CapEx) to comply with regulations, which enables the utility to directly recover the CapEx cost as the major part of the rate base which dictates the allowable rate of return on capital expenses. Cloud computing capabilities including software-as-a-service (SaaS) applications are based on a subscription model which typically become operating expenses (OpEx), and are a lesser component of the rate case formula.

Until the regulators allow utilities to pass along more operating expenses to customers through rates – or permit utilities to treat SaaS payments similar to a capital expense – companies in the utility market will be hesitant to implement SaaS solutions for major projects.

Data security is also an obstacle. Regulators express concern that application data and 'backdoor' access to the energy grid are both vulnerable to hackers, even as cloud security experts report the risk is lower than on-premises deployments, and major cloud providers conduct audits to validate their operations' compliance with ISO security standards³.

However, there are those bucking the trend in specific areas. One cloud vendor in mobile workforce management, (MWF) ClickSoftware – who sells to mid-sized and large utilities – notes that more than 40% of potential utilities customers in 2016 are looking for cloud-based solutions. ClickSoftware also brought on more cloud-based utility customers than on premises in 2015, the first year that cloud outpaced on premises for utilities. One factor appears to be that the customer satisfaction benefits. Delivered via a cloud MWF solution provide sufficient quantifiable gains that permit rate increases to recoup the OpEx investment by the utility.

According to J.D. Power and Associates, there is a strong positive correlation between customer satisfaction and approved Rate of Return on Equity (ROE).⁴ J.D. Power's analysis of trend data over a 14 year period reveals that a 10-point improvement in the customer satisfaction index (100 to 1,000) yields a 0.04% increase in ROE. In other words, a utility requesting a rate change on a \$1Billion equity base could expect to receive an additional \$400,000 for every 10-point improvement in the customer satisfaction index.

¹ "2015 IDG Enterprise Cloud Computing Survey: Insights into the Advancements of Enterprise Cloud Adoption," online survey of 962 technology decision-makers. <http://www.idgenterprise.com/report/2015-cloud-computingstudy>

² "The State of Cloud Application Adoption in Large Enterprises," Tata Consultancy Services Global Trend Study, 2012. <http://sites.tcs.com/cloudstudy/differences-in-cloudadoption-across-global-industries>

³ Marc Clark, Teradata, "Why Cloud Security and Privacy Fears Are Completely Misguided," Forbes.com, May 7, 2015. <http://www.forbes.com/sites/teradata/2015/05/07/why-cloud-security-and-privacy-fears-are-completelymisguided/>

⁴ Federico, Lillian, Heath, Andrew, and Seldin, Dan Ph.D. How Customer Satisfaction Drives Return on Equity for Regulated Utilities, J.D. Power, McGraw Hill Financial, October 2015

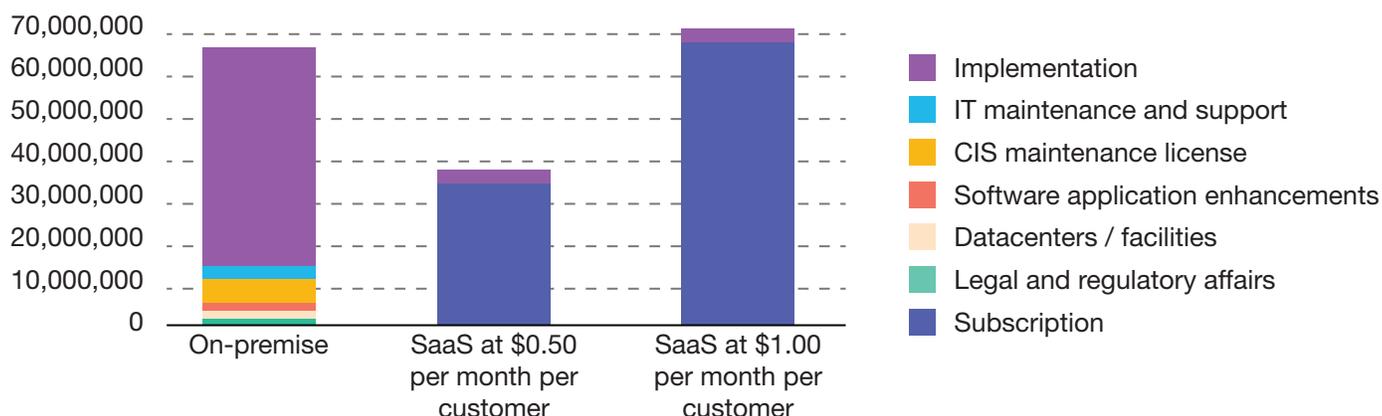
Moreover, Utilities in the top quartile of the index were able to yield an ROE increase of 0.6% compared to those in the bottom quartile which translates into a \$6M increase in earnings available to shareholders on an equity base of \$1B.⁵ These findings demonstrate that a utility's ability to achieve positive customer satisfaction ratings leads to a positive regulatory environment that supports investments in new technology which further enhance customer satisfaction levels.

In spite of these early adopters, if regulation and fear continue to block utilities' move to the cloud, they risk losing out on the business benefits that cloud computing can deliver, including:

- **Business agility:** the cloud provides the ability to rapidly deploy new applications to optimize business processes.
- **Flexible staffing:** SaaS applications can reduce IT staffing devoted to legacy systems as those systems are replaced.
- **Cost savings:** Depending on the subscription fees charged, SaaS applications can cost significantly less to own than on-premises systems (see Figure 1).

Figure 1: Five-Year Total Cost of Ownership of a Customer Information System: On-Premise Versus SaaS The subscription rate for a SaaS system can make the cost of a SaaS system comparable or less than on premises systems.

Five-Year Total Cost of Ownership of a CIS by Category: On-Premise Versus SaaS



Sources: IDC Energy Insights. 2015

But changes are coming. As more markets get deregulated, more players enter the arena, utilities offer new services in response to competition and as customers demand better service, utilities will find it makes sense to take advantage of the benefits that cloud-based systems offer. It's already happening. "As deregulated markets take hold, and as regulated utilities move more into the non-traditional commodity services, the use of cloud technologies is becoming more prevalent," says

Stuart Brown, managing director of technology and utilities at Accenture.⁶

And even if the competitive landscape was not shifting, investments in systems that strengthen customer service pay off, researchers at J.D. Power and McGraw Hill Financial have found (see Figure 2). "Providing customers a better experience yields improved rate case outcome via faster turnaround, higher percentage of

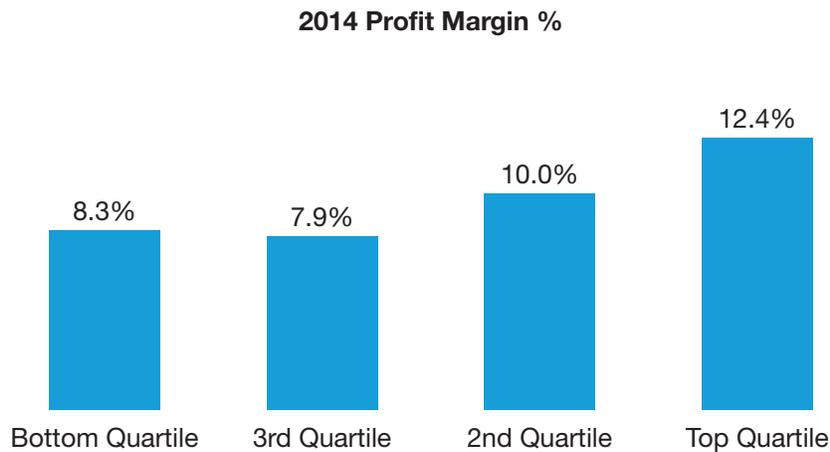
⁵ Federico, Heath, and Seldin

⁶ Stuart Brown remarks in video at Accenture website, "Digital Utility: Transforming for value and growth," 2015. <https://www.accenture.com/us-en/insight-cloud-power>

requested amounts granted and an elevated allowed rate of return,” the researchers note⁷. Cloud enables the business agility that it takes to elevate customer service to that expected by consumers based on what they see in more customer-facing industries today. Cloud-based systems are such investments. Demonstrating the additional value of cloud deployments, ClickSoftware SVP Products Sassildan states, “An on premises

upgrade requires a significant effort because our customer has to test everything and take responsibility for the infrastructure to do so. With cloud, we can now deliver updates automatically multiple times throughout the year without disrupting our customers’ business.” Mobile workforce management is a strong example for an area of the business that is customer-facing and thus must move quickly to keep up with other industries.

Figure 2: Utilities with Higher Customer Satisfaction Report Higher Profits J.D. Power found a positive relationship between customer satisfaction levels and profit margins among utilities.



Sources: J.D. Power 2015 Electric Utility Residential Customer Satisfaction and Federal Regulatory Commission (FERC) Data, 2014

A Response to the Changing Utilities Landscape

In short, the changing operating environment for utilities will require them to be more nimble and customer-centric. Deregulation in many markets invites new competitors and pressures incumbents to improve their operations and strengthen customer service. Renewable energy sources, including wind and solar are coming on-line, increasing their role in the power grid and introducing additional competitors. New players are not bound by constraints in IT resources and operating costs embedded in legacy systems.

This increase in competition means that utilities need to look at ways to diversify their business, and offer additional services to customers such as appliance repair, insulation services and home energy audits. It also means that they must become more responsive to consumers, who are more empowered and demanding than ever. Consumers own smartphones and other connected devices with access to real-time traffic and weather reports, they can order groceries with the push of a button, and can video chat with family

⁷ Lillian Federico, Andrew Heath and Dan Seldin, “How Customer Satisfaction Drives Return on Equity for Regulated Utilities,” McGraw Hill Financial, October 2015.

overseas; they expect their utilities will, at a minimum, meet the experiences provided by other service providers. Utilities are largely invisible to many consumers unless there is a problem, so every moment of every customer event is critical. This is why agility to adopt new best practices and improve is critical.

These factors will press utilities to invest in systems that enable them to be more customer-centric, says Navigant Research analyst, Richelle Elberg. Navigant estimates the global market for billing and customer information systems (CIS) for electric utilities, will reach \$4.9 billion by 2023, up from \$2.7 billion in 2014.⁸

Utilities today must engage with their customers and provide real-time usage and billing information via multiple platforms, including the web and mobile devices,” Elberg says. “In order for utilities to successfully engage in these new activities, a modern, robust customer information system is paramount. So while implementation of a new CIS is an expensive, risky undertaking, we expect demand for modern, modular solutions to accelerate throughout the next decade.

Given these conditions, utilities – even those that cannot commit to a broad deployment of cloud-based applications – should begin making plans to do so. As Robert Eastman, Research Manager at IDC Energy Insights notes, the reasons are clear. More software applications are moving to the cloud. Software vendors are investing their best talent to developing applications for the cloud, and debuting their most innovative features and functions on cloud platforms. Customer service systems, MWFM applications and other applications are moving to cloud-based deployments that offer web-style views in the office and on mobile devices. And the expense of these peripheral service modules are significantly less expensive than the cost to replace a core system such

as CIS. Thus, the implementation of peripheral services modules such as MWFM can become the entry point for utilities of cloud services.

Another important factor to consider: Even employees, accustomed to smartphone apps and consumer-style user interfaces, will expect to use applications at work that resemble the easy-to-access consumer applications. In this context, the web-ready and mobile-enabled design of successful cloud applications typically more user-friendly than legacy applications – serve their needs. Nowhere more than in field service is the use of mobile so intense, with expectations from the workforce to do more than ever from the field; from seeing job and customer details to editing asset information from a tablet or laptop. “The speed of mobility in field service, and especially in utilities is too fast for a standard product release schedule. To keep ahead of the general competition, customers are asking for new capabilities almost every month,” according to Mr. Idan from ClickSoftware.

These conditions apply to every enterprise. But there are also benefits specific to the utilities industry that IT executives evaluating SaaS applications should consider.

Six Core Cloud Computing Benefits for Utilities

Analysts at IDC Energy Insights cite six core benefits for utilities adopting SaaS applications.⁹ They include:

- **Strategic agility:** SaaS applications greatly reduce need for CIOs and IT executives to deal with capacity and location planning. Application vendors are responsible for ensuring they provide capacity for computing, to meet the demands of business users by their number and their geographical location – including accommodation of seasonality and storms. Because SaaS vendors must meet these requirements, the applications can be more responsive to unforeseen events and business demands than on-premises systems. IDC analysts also note that depending on the vendor, SaaS applications receive regular functionality updates – a benefit for utilities dealing with uncertain business conditions.

⁸ Navigant Research press release, “Spending on Utility Customer Information Systems and Analytics is Expected to Reach Nearly \$5 Billion Annually by 2023,” February 2, 2015. <https://www.navigantresearch.com/newsroom/spending-on-utility-customer-information-systems-and-analytics-is-expected-to-reach-nearly-5-billion-annually-by-2023>.

⁹“Making the Case for SaaS in Utilities,” by Jill Feblowitz, Robert Eastman, Marcus Torchia and Erik Berggen, IDC, September 2015.

- **Better use of IT resources:** SaaS applications free up resources including labor that were devoted to legacy systems. By moving applications to the cloud, utilities can focus less staff time and attention to supporting on-premises systems and can focus on more strategic initiatives, IDC analysts point out.
- **Frequent Application updates:** Many cloud-based application vendors update their solutions several times a year without charging extra – the updates are included in the subscription fees. “In many cases customers are offered the latest updates as a matter of policy,” IDC analysts write. Many vendors offer testing in ‘sandbox’ environments before new versions are released, enabling utilities to identify which new capabilities to enable.
- **Modern user interfaces designed for end-user adoption:** Web-style interfaces offered by cloud-based applications mimic the design principles of popular consumer applications such as Yahoo! And eBay, the IDC analysts note. This serves to minimize training for end-users and encourage adoption of the applications. It also provides an enhanced user experience for an employee population that has now, or will have, a growing percentage of younger workers.
- **Improved security:** Countering the concerns that regulators and others have noted about cloud-based applications presenting a security risk, IDC analysts argue that security is a reason to adopt cloud solutions. “Strict International Standards Organization standards and regular security audits have proven that SaaS can be implemented to the highest security standards,” the analysts write. “This means companies can only gain by eliminating the risk of lost laptops containing sensitive information, not to mention other even more malicious threats from hacking organizations.”
- **Time to value:** The time required and resources needed to deploy cloud-based applications are “significantly lower than those with on-premises solutions,” IDC analysts report, adding that cloud-based systems often go live in two to three quarters, while on-premises systems can take two or three years. While the benefits for SaaS applications are clear, challenges remain – including the issues related to constraints in utilities activities due to regulatory restrictions. But there are ways to manage these challenges and mitigate their associated risks.

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Managing the Regulatory and Security Challenges

When utility leaders start working to adopt cloud-based systems, they have to manage both regulatory and security concerns.

Because the technology industry is shifting its offerings to the cloud, and because the benefits are clear to both utilities and their customers, it is prerequisite that the parties involved – utility industry regulators, accounting standards bodies, and utilities themselves – reach a consensus on how to account for, and pay for, cloud-based services, explains IDC’s Eastman.¹⁰ The delay in resolving this issue “is hurting the ability for utilities to adopt a beneficial technology,” Eastman says. “It will take some time to address this,” he adds, but he expects the parties to find a resolution.

In the meantime, utilities can gain experience with SaaS systems by adopting applications that serve lines of business that are not part of regulated operations (for example, a customer service application that supports a new service to repair home appliances). When the results of those cloud deployments are measured by customer satisfaction and cost savings, the utilities should have a powerful case for the customer-centric, agile SaaS solutions. Some applications, directly impact and lower the operating expenses of the utility, like field and back office labor or fewer faults (and thus truck rolls). In these cases, even as an operating expense, the return on investment (ROI) makes it a great to start with cloud.

While both regulators and utilities executives express concern about the risks of hackers and other data breaches, Eastman points out that SaaS developers are devoting significant resources to managing these security risks and their efforts can help bolster the information security programs in place at utilities. “Data security should not be a reason to not move to the cloud.” Eastman adds.

The Path to the Cloud

For regulated utilities, the move to the cloud is not as straightforward as other industries. Still, there are actions utilities can take to prepare their organizations for cloud adoption so they can gain the benefits that cloud computing offers. In his presentation, Eastman offers these recommendations:

- **Develop a cloud adoption strategy** with the knowledge that many applications are moving to the cloud and it is vital to develop the capabilities and skills to realize their benefits. As an interim step, consider looking at hybrid and private clouds as well as applications in the public cloud. Private cloud refers to a system dedicated to one organization, with a single, hosted infrastructure. Another alternative is a local cloud, hosted behind an organization's firewall. In this arrangement, the cloud vendor performs systems upgrades to give customers the latest application version, while the organization's IT staff manages a dedicated infrastructure. Hybrid clouds use a mix of on-premises, private cloud and public cloud services. Public cloud computing offers IT capabilities as a service via Internet-enabled technologies.
- **Educate the organization** about the benefits of cloud computing. Explain why it makes sense to consider SaaS applications given the technology industry's move to the cloud. Business systems are adopting the same design elements and user-friendly functions as the apps they like to use on their smartphones – and both customers and new employees expect the same capabilities when doing business with the utility or performing work tasks. Include the impact that a customer-centric SaaS can have on customer satisfaction scores since this is one of the main drivers of regulation-approved rate increases.
- **Pilot cloud applications** in areas of the business not subject to regulation. New lines of business can provide a proving ground for SaaS applications that track work orders and schedule customer appointments, for example. They also give IT staff a chance to gain experience with implementing cloud-based applications helping prepare the organization for the eventual move to the cloud.
- **Negotiate strong agreements with cloud vendors.** Include service-level specifics in the terms of the agreement, and details about what is covered by maintenance, support and subscription fees. Make sure these agreements are in place before moving any work to cloud-based systems.
- **Develop contingency plans in case of an emergency.** IT leaders and utilities risk managers should include SaaS applications in their disaster recovery and business continuity plans. SaaS applications can also provide a backup to those hosted by the utility, but as before redundancy is a necessary part of deploying utility systems on premise or on the cloud.
- **Invest in training of IT staff.** Prepare them for adopting new SaaS applications and migrating existing ones to the cloud in the future. Move toward a more business-oriented IT staff that can leverage their knowledge of cloud applications to bring value to the business.

While many customers and industries are adopting cloud computing systems, utilities face real regulatory hurdles and perceived security concerns that are hindering their adoption. The opportunities presented by cloud systems and SaaS applications – including greater responsiveness, improved customer service and functionality, strengthened security and user interfaces designed for ease of use and brisk adoption – make it vital for utilities to make plans now for cloud adoption.

Changes in the industry, including deregulation in many markets, the introduction of alternative energy sources, and increased competition make it a competitive imperative for IT leaders at utilities to investigate what cloud-based systems can do for the businesses they serve. In fact, their future depends on it.

When it comes to utilities and the cloud, analysts, leaders in the utility industry, and vendors have reached a consensus recommendation to other utilities: “It’s ok to not be on the cloud yet, but it’s time to start moving in that direction.”

¹⁰ Lillian Federico, Andrew Heath and Dan Seldin, “How Customer Satisfaction Drives Return on Equity for Regulated Utilities,” McGraw Hill Financial, October 2015.

About ClickSoftware

ClickSoftware is defining field service engagement, empowering the world's most demanding, customer-centric organizations to optimize the full potential of every service interaction. With ClickSoftware, field service becomes the new competitive lever to drive differentiation and business value. The Click Field Service Edge Platform arms field service leaders with the smartest technologies, a limitless technology-forward platform, and the knowledge gained from a global community of best practices.

Exclusively focused on field service since creating the market, ClickSoftware has managed billions of service engagements and is relied upon by nearly a million field service professionals every day. The company is the recognized market and technology leader by analyst firms including Gartner, Forrester and IDC. And, Click is the field service solution of choice for Salesforce, SAP and top systems integrators. More than 350 global enterprises across 20+ industries tap into ClickSoftware for the world's smartest thinking in field service. ClickSoftware. The field service leader.

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