To Cloud or Not?, Part 1

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Cloud technology is proliferating throughout corporations around the globe, and manufacturing companies have been among the earliest adopters of cloud-based solutions. According to the July 2012 IDC Manufacturing Insights report, *Business Strategy: Cloud Computing in Manufacturing*, 22 percent of manufacturers worldwide have already implemented cloud-based computing systems, and an additional 45 percent of those surveyed are actively evaluating cloud deployments to replace internally managed information technology (IT) infrastructures over the next 24 months.

For the large number of manufacturers considering moving to the cloud, this article will provide a clear analysis of how cloud-based systems differ in their capabilities and costs from the traditional on-premise and hosted IT alternatives.

The manufacturing industry’s move towards the cloud mirrors the prevailing trend towards cloud adoption in the broader IT market. According to Gartner research, the global cloud services market has tripled in size during the last five years, with an accelerating growth curve that is expected to continue well into the next decade. Merrill Lynch calculates that the 2012 annual global market for cloud technology will surge to $95B from $20B today.

New technologies are fueling a rapid decline in storage and bandwidth pricing, important economic factors that drive the selection of cloud-based solutions over on-premise solutions for manufacturers of all sizes.

Evolution

The Internet has been publicly available for approximately 25 years. The first servers on the Internet were storage devices intended for data and applications to be shared globally. These servers offered easily available multi-location access, plus efficient scalability, yet they were very costly, and the applications were limited in their scope; pricing was relatively inflexible. By utilizing new technology, today's cloud services improve on the original Internet model by offering lower and more flexibly priced access to a broader range of applications.

The Choices

Companies must evaluate the operational and economic benefits of different IT models for application and data management in order to determine whether the cloud best serves their business requirements. The three IT models discussed here differ in how their underlying software and hardware systems are designed and delivered. From the customer standpoint, these distinctions in design and delivery amount to a trade-off between the level of up-front monetary investment required for a given IT model and the amount of control over customization that each model allows.

On one end of the scale, on-premise solutions require the largest up-front investment and the most effort to maintain, while offering clients the greatest amount of control over their infrastructure; true cloud solutions, on the opposite end of the scale, offer the most cost-effective hardware and software investment at the expense of customizability and control.

The following sections provide a more detailed breakdown of each IT model's cost structure: on-premise solutions, hosted solutions and true cloud (software-as-a-service) solutions.

On-Premise Solutions

Traditional on-premise IT solutions have high initial fixed costs, usually classified as a capital expenditure (capex) for hardware and software license purchases. In addition to the purchase of these assets, there is a large and often escalating variable cost, classified as operating expense (opex). The opex component comprises system installation and setup, ongoing patch and configuration management, version update and deployment, software maintenance fees, power and cooling costs, plus salaries for IT personnel to perform all of the management tasks.

According to a 2012 IDC report, *The Cost of Retaining Aging IT Infrastructure*, costs for server maintenance and management have soared during the last decade. The costs for maintenance and management have grown four times faster than server acquisition costs, while power and cooling have grown eight times faster.

Moreover, hardware and software assets age, and usually become obsolete after a three-year lifespan. Obsolescence mandates additional capex investment to replace aging assets with new technology in order to assure maximum operational

efficiency and productivity. Lastly, both the capex and opex costs of on-premise solutions escalate as the solutions are scaled to meet the growth requirements of the business.

Hosted Solutions

A hosted solution is a hybrid IT model that reduces or eliminates some capex by utilizing cloud infrastructure or a software vendor's own infrastructure. Hosted solutions generally provide off-site, third-party ownership and administration of the hardware infrastructure and data storage resources. Hosted solutions offer lower capex costs by eliminating the hardware purchase element of on-premise solutions; the software licensing, upgrade and maintenance costs, however, remain a corporate responsibility, along with application and data management, which consume precious IT resources.

Third-party hosted solutions are available in two forms: platform as a service (PaaS) and infrastructure as a service (IaaS). PaaS offerings allow companies to deploy developed or acquired applications on third party-hosted cloud infrastructure using programming languages and tools supported by the infrastructure provider. The third-party provider manages and controls the underlying cloud infrastructure including network, servers, operating systems or storage, and the client IT staff is responsible for management of the deployed applications and possibly application hosting environment configurations.

IaaS offerings require additional client IT resources because they also allow companies to provision processing, storage, networks and other fundamental computing resources, and then themselves deploy and run software, which can include operating systems, applications and even network software, such as firewalls.

In both cases, the third-party provider manages the underlying cloud infrastructure or hardware, but the client business has control over and incurs both capex and opex expenses for operating systems, storage, deployed applications, and sometimes, select networking components. User fees can also be a component of hosted solutions.

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