Cloud Manufacturing

THE BENEFITS OF A CLOUD MIGRATION STRATEGY
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Cloud computing has been around long enough now that it is no longer considered an unproven risk, technologically-speaking. The cloud is here, and companies across all industries are turning to it in increasing numbers to help them address a wide range of challenges and issues.

Three things makes the cloud attractive to virtually every organization that relies upon it to deliver computing power and data management: flexibility, efficiency, and cost savings.

This Executive Guide will examine the cloud from a manufacturing perspective. We’ll discuss the various aspects of cloud manufacturing and migrating the computing tasks used by manufacturers, such as enterprise resource planning (ERP), to the cloud. We’ll look at the possible risks that organizations face if they wait too long to initiate a cloud migration strategy and what it can mean for business innovation and agility.
Increased flexibility and control is perhaps the number one benefit of cloud manufacturing and migrating ERP computing functions to the cloud. In a traditional on-premise computing scenario everything is managed by IT. If manufacturing wants to make a change, they have to go to IT first, which checks the requested change against the budget, creates a value statement associated with the change request, and prioritizes it so it may or may not get done.

The cloud takes control away from IT and puts it in the hands of the user. It is the user who can quickly see if a software change offers good value and return-on-investment (ROI). This direct control enables the user to actively participate in continuous improvement, which increases both operational agility and efficiency.

Moving to cloud manufacturing provides a number of benefits across the enterprise, including:

**IMPROVED APPLICATION INTEGRATION AND PERFORMANCE**

The responsibility of application development and updating for cloud-based software rests squarely on the shoulders of the software provider. Cloud-based systems are turn-key, with all the components necessary to perform the desired task included and optimized. Purchasing, installing, and properly integrating the various IT elements and components of an on-premise system; however, is entirely the responsibility of the manufacturer owner.
Think of it like acquiring an automobile. Putting together your own on-premise IT infrastructure is like selecting and buying an engine, transmission, frame, body, and wheels separately and assembling them to create a complete car. You don’t have to be concerned with what’s under the hood with a cloud-based system -- you’re buying a fully-finished car, ready to drive. Everything’s integrated and optimized for maximum performance at less cost in time and money.

EASY SCALABILITY

As manufacturing needs can fluctuate with seasonal or marketplace demands, so can the amount of computing power you utilize in the cloud. No need to buy more servers or expand your datacenter – the cloud-based software-as-a-service (SaaS) provider will take care of that automatically.

LOWER RISKS AND COSTS

If your company is adding business units or opening new locations, integrating them into your IT ecosystem is easier in the cloud. No need to add networks, purchase new hardware, or upgrade software. And should an acquisition not work out, you’re not left holding a lot of extra infrastructure and added expense.

In short, the cloud provides manufacturers with enhanced functionality and the agility to take full advantage of it by minimizing infrastructure and maximizing flexibility. Still, there are plenty of organizations that are delaying migration to the cloud for various reasons. And they do so at their own risk.
There are any number of reasons why companies delay migrating to the cloud. Some cite security concerns. Others claim their business or manufacturing processes are so unique or proprietary that they can’t see how the cloud could possibly provide the same level of customized functionality they have with their internal legacy system.

They unknowingly suffer from “terminal uniqueness” – a condition that paralyzes business owners or managers and prevents them from moving to the cloud because they are convinced their IT situation is singularly unique and impossible to duplicate.

Cloud adoption, however, is making significant advances in some business areas such as human resources, customer relationship management (CRM), and marketing. Where cloud migration lags is in finance, order entry/execution, and production. Some of this can be attributed to security concerns. A larger issue is that ERP and supply chain management (SCM) software developers have not yet delivered comprehensive SaaS applications for complete ERP/SCM functionality. This is perhaps the greatest current obstacle to cloud manufacturing adoption. However, there is a footrace going on right now between the major software developers to bring SaaS solutions to market, so this situation will change quickly as SaaS ERP and SCM solutions become more readily available and manufacturers quickly adopt them to reap their significant benefits.

The risks are substantial for those enterprises that hold back from migrating to the cloud, from both an operational and competitive standpoint. Five major risks of delaying migration to the cloud include:
1. OPPORTUNITY LIMITATIONS

Companies tied to legacy on-premise systems are transformationally hamstrung. The cloud provides the agility to take advantage of sudden business opportunities. The cloud makes finding and retaining the best possible human capital easier as well. The most talented workers want to use the latest tools and not waste time and energy learning a legacy system limited by whatever technology runs it. The cloud enables enterprises to adapt and utilize the latest technologies to gain new efficiencies and encourage continuous improvement.

2. ONGOING INFRASTRUCTURE COSTS

An on-premise IT infrastructure keeps the opportunity to grow the business in the hands of the IT department. And once an investment has been made in infrastructure, it’s hard to let it go. Networks and data centers are expensive, and IT is loathe to give them up. But expenses continue with every passing day, including electricity, software and hardware upgrades, maintenance, and staffing, to name a few. The cloud alleviates all those issues and enables management to invest elsewhere, where the money can do more good.

3. DELAYED COMPETITIVE RESPONSE

The Internet and social media have fundamentally altered the commercial landscape. Facts and opinions crisscross the Web instantly. Consumer trends come and go with lightning speed. Disruptive technologies can blindside an unsuspecting brand and turn it from being a market leader one day into a has-been the next. To maintain a competitive edge, no matter what your business, requires the agility, flexibility, and scalability that can only be found in the cloud.

4. BUSINESS CONTINUITY ISSUES

The business world runs on data. Nothing is more dangerous than service disruptions that can cause an IT ecosystem to grind to a halt because an on-premise data system has been compromised in some way. The cloud provides a safe, efficient, and flexible way to disperse IT assets and redundancy across the country — even around the world — minimizing the possibility of service disruptions.

5. RESOURCE DRAIN

The modern, successful manufacturing environment is all about efficient use of resources. Operating an in-house IT infrastructure, especially in a larger enterprise, can be a considerable drain on resources, including personnel, space, power, heating, cooling and the money required to maintain it all. Moving on-premise IT systems to the cloud is a quick and economical way to save resources.

Clearly there are more advantages to cloud migration than drawbacks, and the sooner done the better. So what’s the real cost of migrating to cloud manufacturing?
To understand the real costs of migrating a manufacturing business to the cloud, you have to put it in context with on-premise system costs.

Three basic elements comprise an on-premise IT system:

1. **INFRASTRUCTURE**
   This is the hardware of an IT ecosystem, including such components as servers, routers, cabling, workstations, and firmware. To use a house-building analogy, it is the system foundation.

2. **PLATFORM**
   This is the database and middleware that forms the IT plumbing and wiring, helping to pump data through the infrastructure.

3. **SOFTWARE**
   Applications are the furnishings and appliances that run the household and make it functional.

Moving to a cloud infrastructure (in this case, we’re referring to the entire, integrated IT system, not just the foundation of it) provides savings across all three elements. Utilizing SaaS ERP can save as much as 75 percent of out-of-pocket infrastructure and platform expenses when you look at the cost of purchasing and upgrading the hardware necessary to install, operate, and support an on-premise IT system.
Software costs, however, are approximately the same when compared over a five-year period. The overall cost of the initial license and support fees for on-premise ERP software and the subscription and support costs of SaaS ERP, over five years, are generally a wash.

Where there is considerable additional savings, though, is in implementation. Manufacturing enterprises that utilize SaaS ERP often save as much as 50 percent in implementation costs over on-premise software. Further savings, especially for larger enterprises, can be realized in reduced headcount as datacenter functions move off premise and into the cloud.

As cloud computing frees manufacturers from the burden of implementing, upgrading, and operating an on-premise IT ecosystem, the newfound flexibility and agility provided by the cloud leaves them poised for innovation and new business opportunities.
Today’s highly competitive markets demand innovation in manufacturing in order for manufacturers to succeed and grow. And innovation is not possible without agility.

Manufacturers looking to gain a competitive edge are turning to the cloud in increasing numbers as a principal means for gaining the agility to drive innovation and growth.

The cloud enables turn-on-a-dime responses to changing market trends and conditions, accelerating the product development lifecycle and streamlining supply chain management. The cloud fosters innovation in manufacturing by reducing burdensome IT costs, freeing up resources, and removing organizational and geographic boundaries. Collaboration becomes easier, process improvement faster, and the manufacturing environment more flexible and dynamic in general, priming the pump for innovation.

In this modern economy, data drives everything. For manufacturers embracing a Lean methodology or other efficiency-based business strategy, collecting, analyzing, and utilizing ERP data is critical. The cloud provides the virtually unlimited storage space and scalable computing power necessary to make the most efficient use of data and mine its potential for fueling innovative product development.

On a more tactical level, the cloud takes operational control out of the hands of the IT department and places it directly with business and shop floor managers who can quickly change and enhance functionality. Cloud-based APIs and modules can be added and removed to accommodate changes and support on-the-fly innovation and improvement. In fact, the ability to integrate, manage, and monitor all the resources on the shop floor through the cloud can have a dramatic impact on virtually every aspect of manufacturing.

Managers and workers can directly see improvements in information and process flows that can lead to improved operations and product quality. Real-time data and instructions are managed in the cloud to run processes, improve utilization, and reduce energy consumption. In short, the cloud becomes a core platform for integrating new technologies, driving process efficiency and innovation in manufacturing operations and the finished goods they produce.
The concept of agile manufacturing has become popular because it’s the ideal business strategy for companies in highly competitive markets, enabling them to respond quickly and efficiently to market changes.

Companies that have embraced agile manufacturing typically have strong supplier relationships and empowered employees focused on delivering quality products to meet customer demands.

The cloud is the next logical step for manufacturers who have come to the agile concept recently or are just now considering it and still using an on-premise IT infrastructure and ERP system.

The real power of the cloud is the way it enables manufacturers to spend less time and money managing their IT and more time growing their businesses. The cloud supports closer, easier collaboration with suppliers and customers without proprietary IT walls between them.

Cloud computing improves business agility by:

**EMPOWERING EMPLOYEES**

The cloud enables workers to do their jobs better, faster, and with greater flexibility by removing the handcuffs of proprietary on-premise systems. Workers today are already used to living in the cloud, so to perform their jobs there as well is an intuitive extension requiring minimal training, unlike having to learn an arcane legacy system. Employees are better able and more inclined to fix problems on their own if they no longer have to constantly enlist IT’s help to program process changes.
FUELING GROWTH

Cloud-based solutions enable companies to rapidly establish new business units or expand existing operations virtually anywhere without having to expand or integrate IT infrastructure, substantially minimizing both capital investment and risk. They also offer better business results by making it easier to share information with new or existing partners and suppliers regardless of where they are located -- around the corner or around the world.

SIMPLIFYING COMPLIANCE

Rapidly evolving markets and industries can often cause compliance headaches for manufacturers. Aligning processes and products with regulatory requirements can be a daunting task, but migrating to a cloud-based SaaS strategy offers a number of benefits over a legacy on-premise model, enabling enterprises to reign in the complexity, cost, and risk of compliance. Cloud computing supports automatic updates to simplify the process of keeping systems current. It also ensures that everyone in the company has access to the most current information and tools to do their jobs effectively and efficiently.
Software developers continue to improve cloud-based SaaS ERP functionality. As they develop more comprehensive, end-to-end solutions to better meet the evolving needs of discrete manufacturers, the benefits of moving to the cloud are becoming clearer:

**FASTER IMPLEMENTATION AND RETURN-ON-INVESTMENT (ROI)**

The flexibility and scalability of the cloud means ERP implementations can be tailored to meet a variety of immediate and long-term needs, speeding up initial implementation and achieving ROI faster. Since cloud ERP requires no additional hardware, your business doesn’t have to waste time procuring and installing IT infrastructure. Cloud ERP can be easily implemented across multiple regions, subsidiaries, and divisions with minimal cost and significant time savings -- cloud ERP deployments typically take only 3-6 months compared to the typical 12 months for an on-premise solution.

**FASTER, MORE FLEXIBLE CONFIGURATION**

With on-premise legacy manufacturing ERP systems, every customized manufacturing or business process change has to go through IT or perhaps an external supplier or consultant, making change slower and more costly. The cloud gives the power of custom configuration to the actual user, bypassing IT and outside providers to achieve faster results while saving time and money. Hosted SaaS ERP solutions are continually upgraded by the provider so employees are assured of working with the latest ERP application version and having previous custom modifications carried forward with it.
BETTER ENTERPRISE-WIDE ACCESS TO DATA

On-premise manufacturing ERP systems tend to silo transactional data, making it difficult to share between departments and business units. Cloud-based ERP eliminates silos and makes it easier to share data across platforms and the entire enterprise, providing real-time, accurate data that can be accessed via the Internet anywhere, any time on workstations, desktops, laptops, smartphones, and tablets.

With cybersecurity a real and growing concern for manufacturers, cloud-based ERP provides better security in addition to improved accessibility. Many cloud-based ERP solution providers prioritize securing their systems and provide strong, industry standard data security certifications such as PCI DSS and SAS 70 standards compliance.
Success in modern manufacturing depends on collecting, managing, monitoring, and analyzing large amounts of data and using it to fuel business and operational processes. To accomplish this, businesses turn to complex ERP systems that must be managed and maintained to function accurately and effectively.

Manufacturers are now faced with deciding whether to utilize on-premise or cloud-based ERP systems as a key element of their IT ecosystem. While an argument can be made for each, companies increasingly are turning to the cloud for IT solutions. In most situations the cloud offers substantial savings in time and money while significantly increasing system flexibility and business agility. More convenient and comprehensive collaboration becomes possible between internal teams and external suppliers, partners, and customers.

Although the many benefits of a cloud migration strategy have become readily apparent, the debate continues around the feasibility of cloud manufacturing. Most of the backlash against cloud ERP systems comes from traditionalists who invested in on-premise ERP and are simply unwilling to kick their proprietary solution to the curb and reinvest in what seems to them a still-unproven solution.

The ‘if it ain’t broke, don’t fix it’ attitude has many organizations still clinging to on-premise software. As a result, many legacy on-premise ERP systems continue to age and become more difficult to maintain, negatively affecting business and limiting growth and profitability.

However, the benefits of moving to the cloud are rapidly changing attitudes, and discussions are quickly evolving into evaluations of the risk associated with not adopting a cloud migration strategy sooner rather than later.