

Supply chain management in the cloud

How can cloud-based computing make
supply chains more competitive?

A close-up photograph of two dandelion seed heads against a clear blue sky. The seed heads are white and fluffy, with some seeds beginning to disperse. The stems are green and visible at the bottom.

High performance. Delivered.

New cloud computing technologies are enabling breakthrough innovations in supply chain management (SCM) applications delivered via SaaS (software as a service) models.



1. What new capabilities does cloud computing bring to supply chain management?

Digital supply chain networks come of age

Most supply chain strategies originate from earlier times when the business environment was more stable. With predictable business cycles, competent management teams could navigate the challenges and still focus their supply chain strategies on cost reduction. They did so in part by establishing low-cost manufacturing in locations far from core markets, rationalizing the supplier base, reducing inventories by integrating partners into "ecosystem", and applying lean principles to their processes.

Now, as every business becomes a digital business, digitization has the potential to transform the supply chain by making services more valuable, accessible and affordable. For digital technologies to create new supply chain opportunities, a new perspective is needed. Organizations should reimagine the supply chain as a digital supply network that unites not just physical flows of products and services, but also talent, information and finance. In an abstract sense, people and data—as well as materials, products and supplies—must travel together across the extended enterprise.

As a key enabler in this new digital world, cloud computing can have a transformational impact on the business and the supply chain operating model by enabling data and analytics, mobility and social media functions (see Figure 1).

Cloud computing helps organizations to realize major benefits from key marketplace trends that are redefining traditional supply chain networks:

1. Volatility is the new normal

Although unstable conditions are familiar terrain to supply chain professionals, few supply chains can accommodate the relentless speed and amplitude of volatility today. Cloud computing facilitates enhanced responsiveness to supply chain disruptions.

2. Data volumes are surging

Because most data technologies have been adopted in piecemeal fashion, enterprise data is vastly underutilized. To unlock the value of external and internal data, companies must start to treat it

as a supply chain, enabling data to flow through the entire organization—and out to its ecosystem of partners. By leveraging this data, cloud solutions facilitate the actionable insights that make digital supply networks intelligent.

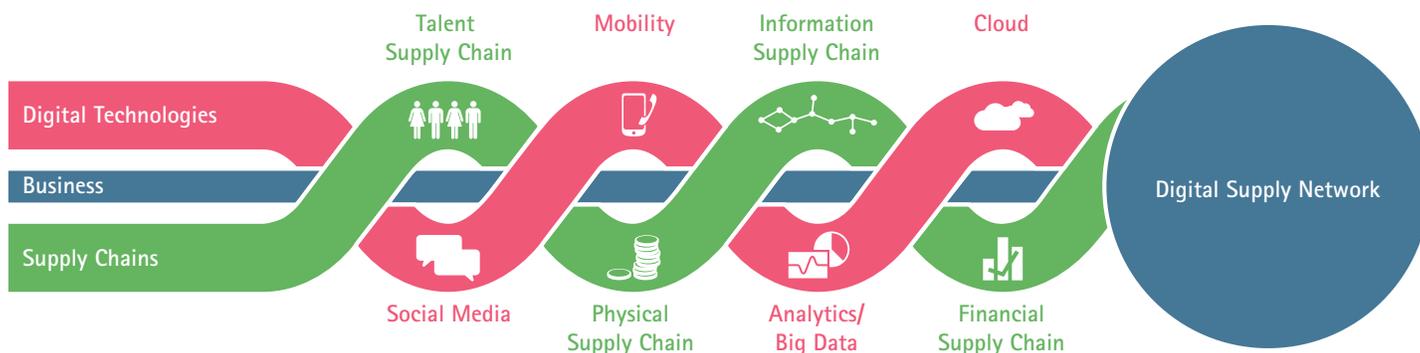
3. Digital technologies are industrial grade

The flow of goods can now be managed with digital tools that leverage high volumes of data from multiple sources, connect resources (machines and humans) in real-time, and embrace social media to collaborate beyond organization boundaries. By moving to the cloud, organizations can operate with increased flexibility and mass-customize their products and services.

4. End-to-end visibility has arrived

New technologies and service providers make it possible for companies to turn their supply chains into end-to-end business operating strategies. The connected cloud enables the real-time collaboration that makes this possible.

Figure 1: Convergence of supply chains



Cloud computing: the engine that makes supply chains talk to each other

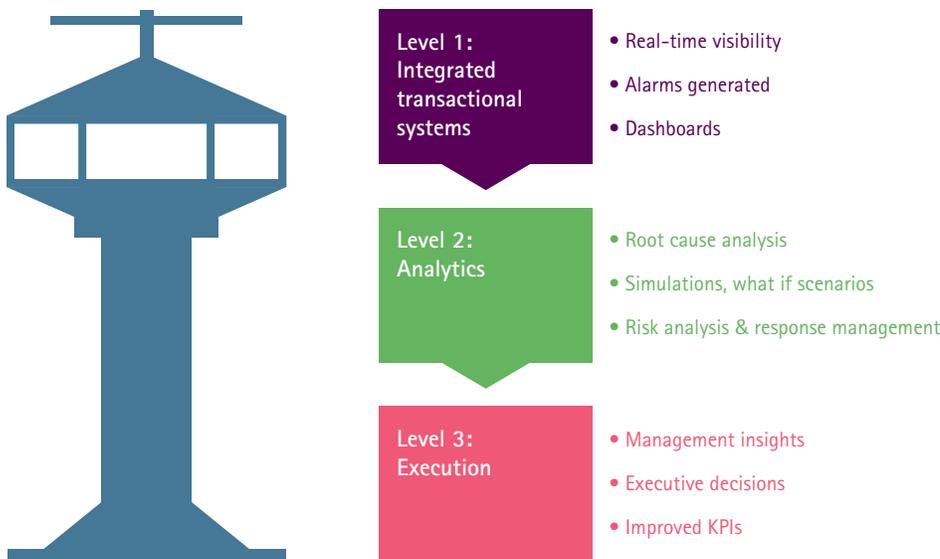
Supply chains face a common challenge. Detailed knowledge of operations is held locally creating silos—organizational, functional and cultural—and these undermine effective collaboration between different elements of the supply chain, increasing the likelihood of problems emerging at a late stage, and limiting options for response.

By enabling a 'network' view, digitization can help companies capture huge savings and competitive advantages by fostering networked processes; optimizing the complete enterprise instead of individual functions; and driving new ways of thinking and working by enhancing visibility, collaboration and innovation.

As supply chain managers target even greater efficiencies, one overarching cloud-based strategy can be used to enhance cost improvements and performance: establishing a "control tower" to coordinate and orchestrate the elements that make up the supply chain.

Control tower systems connect trading partners and service providers to create a vibrant, "always on" electronic community. The data network spans the globe and must be capable of integrating with the proprietary systems of hundreds of partners. This is a long list of "conversations"—all of which must be tapped, translated and understood. Which is why the cloud is so essential.

Figure 2: Understanding the benefits a control tower brings to the supply chain



Understanding what cloud computing can do for supply chains

Digital supply networks, enabled by the cloud, have four distinct advantages which, together, drive unprecedented visibility, insights and flexibility—while operating rapidly and at scale (see Figure 3). These advantages are summarized below.

Connected

Connectivity provides unprecedented visibility and the real-time ability to touch/influence, resulting in an intelligent supply network and evolved operating models. Leveraging this advantage, companies can easily connect with their suppliers, vendors and customers. Connectivity also provides infrastructure advantages such as dynamic provisioning, multi-tenancy, improved server utilization, and datacenter efficiency. Past studies have shown cloud solutions can reduce energy use and carbon emissions by more than 30 percent when compared to their corresponding applications installed on-premise.¹

The connected supply chain advantage means:

- Real-time visibility: supply chains become more dynamic, secure and interactive
- Seamless collaboration: supply chain capabilities are harmonized beyond physical boundaries
- Highly evolved operating models: product/service delivery is exponentially improved to meet customers' evolving demands.

Intelligent

Once the supply network is connected, it leverages analytics, cognitive equipment and smart apps to provide the right information for decision-making, at the right time. These "intelligent" technologies mean that supply chain managers can make proactive decisions "on the go", while enabling set-up of rule-based decisions for basic tasks. Predictive analytics can spot potential risks and provide alternative options for decisions on proactive actions and damage limitation. One example of cloud computing-enabled intelligence is Taleris (a joint venture between GE Aviation and Accenture). Taleris uses predictive analytics technology to analyze data from the various sensors installed on multiple aircraft parts, components and systems and make predictive recommendations on aircraft maintenance and operations.²

The intelligent supply chain advantage means:

- Actionable insights: innovative data analysis supports advanced decision-making
- Automated execution: seamless human-machine interaction increases operational efficiency
- Enhanced, accelerated innovation: digital inspires and supports creative advances in design, personnel, operations and customer relationships.

Scalable

Now connected and intelligent, the supply network is able to scale—as well as "plugging in" different partners and suppliers as needed, companies can scale down their operations to target niche markets/segments/customers, and/or target newer markets. Because cloud-based computing supply chain solutions operate on a flexible, usage-based model, network, storage, and capacity can be quickly changed to take account of the volatility of customer demands and market conditions.

The scalable supply chain advantage means:

- Maximum efficiency: integration of people, process and technology
- Organizational flexibility: digital plug-and-play enablers provide natural "configure and re-configure" capabilities
- Personalized experiences: channel-centric supply networks help foster individualized products and services.

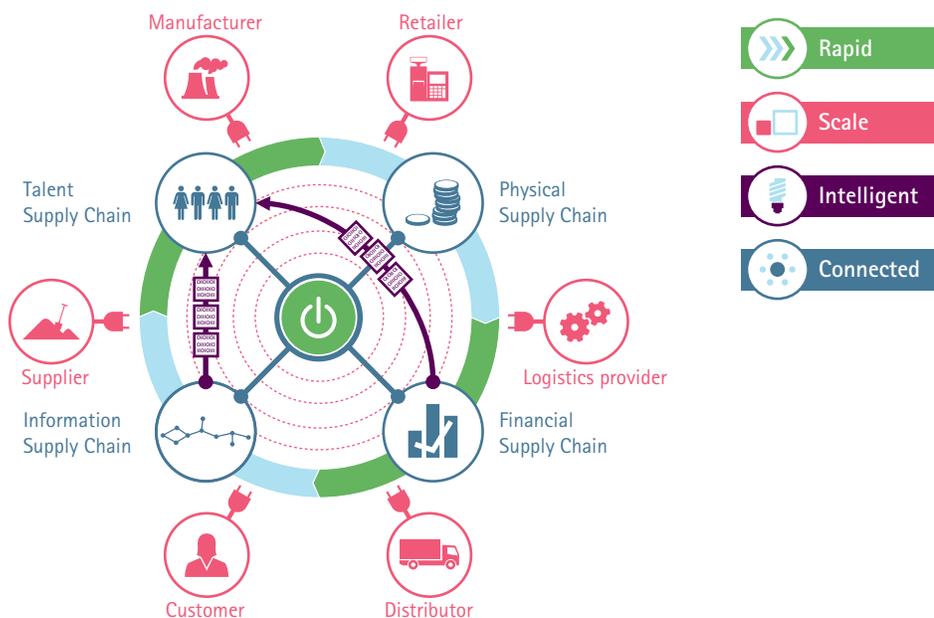
Rapid

Building upon the first three advantages, companies can now operate their supply chain networks at speed—successfully executing in the midst of permanent volatility. Faster planning and execution capabilities (supported by advanced analytics and in-memory computing) result in reduced time to market, while enhanced flexibility and responsiveness to market conditions comes from better access to resources and/or quick shifting of resources within the company, as well as across the extended enterprise. For enterprises using private cloud computing solutions, software-defined networking (SDN) enables integrated bursting to public cloud computing infrastructure when business demands on computing capacity overwhelm internal capabilities.

The rapid supply chain advantage means:

- Enhanced responsiveness: using better information and sophisticated analytics to interpret and react speedily to disruptions, including demand and supply signals
- Proactive prevention: decision support, driven by predictive analytics, helps to confirm reliability and rapid adaptability
- Last mile postponement: swift repurposing of organizational assets at short notice helps to ensure that supplies always meet changing demands.

Figure 3: Four distinct advantages of digital supply networks



Realizing immediate tactical benefits

Alongside these core strategic advantages, the replacement of on-premise solutions with SaaS-based SCM models have the potential to deliver four immediate tactical benefits, with quick wins helping to support buy-in:

Speed

Much faster to deploy than linear on-premise ERP implementations, SaaS-based SCM solutions facilitate rapid demonstration of ROI and avoid long IT project queues. In addition, upgrades can be delivered more timely with limited manpower.

Single source of truth

By enabling a single source of the truth—accessible anywhere/anytime and easily shared on a real-time basis—SaaS-based solutions can quickly lead to the connectivity that turns traditional supply chains into supply networks.

Cost

SaaS-based SCM solutions enable low cost-of-entry for fast-growing companies to build a business case and gain executive buy-in. Because they can support highly distributed operational processes at a low cost, they provide an attractive alternative to on-premise solutions for supply chain managers confronted with limited IT resources and tight budget constraints. These solutions also help reduce the need for substantial upfront capital investment—integration and configuration costs can be transferred into operating costs.

Business value

Ideally suited to facilitate rapid, flexible implementation of SCM capabilities in small and mid-sized companies, SaaS-based solutions allow these organizations to build the competencies they need prior to investing, as well as providing a route to experiment with innovation at a lower cost, without long-term commitment.

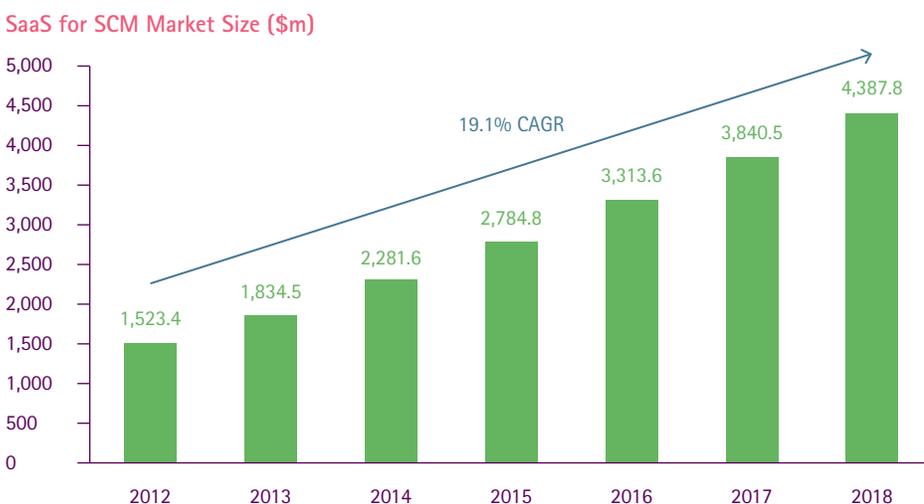
2. Why is now the time for action?

Cloud computing is now recognized as a real game-changer, providing a route through which supply chain executives can rapidly and efficiently access innovative supply chain solutions—delivered through a SaaS model—and deploy them at scale. Driven by growing realization of the benefits these solutions provide, the SaaS for SCM market is predicted to grow by 24 percent in 2014, and reach a 19 percent compound annual growth rate to become a US\$4.4 billion opportunity by 2018.³

SaaS-based approaches work well when collaborative processes are involved. In today's complex, global supply chain networks, effective business-to-business (B2B) collaboration is essential—and this is where SaaS-based solutions can deliver real benefits.

We are also seeing capabilities such as in-memory databases, analytics and performance management increasingly being combined with the cloud to address many of the challenges arising from the mass of data that must be managed and mined for insights to provide new sources of business value.

Figure 4: SaaS for SCM Market Size



Copyright © 2014 Accenture. All rights reserved. © Copyright Gartner, Inc. Source: Forecast: Public Cloud Services, Worldwide, 2012-2018, 2Q14 Update, 25 June 2014

3. Considerations for adopting cloud computing in SCM

Taking a strategic approach

A strategic approach to implementation is essential. This should recognize that not all supply chain processes are suitable candidates for migration to the cloud. Two categories of process in particular may prove to be unsuited to cloud computing. First, complex and/or unique processes that require a heavy degree of customized processing are less likely to be delivered as cloud computing-based services, at least in the near future. And second, processes that require heavy integration with either a physical flow or with other information systems—particularly those requiring ultrafast response times—are currently not well-suited to cloud.

So which capabilities should be considered for deployment in the cloud—and how best to get underway? Companies are flocking in ever-increasing numbers to cloud's "everything-as-a-service" promise. But it is important to recognize that a reliance on traditional, in-house IT systems and applications still exists. What has emerged is a more complex hybrid-technology landscape—one in which multiple emerging technologies must be assimilated with legacy systems. To transition effectively and manage in this hybrid world, organizations need deep knowledge, experience and insights into both cloud and legacy technologies. Moreover,

they need the know-how, solutions, assets and implementation firepower to take optimal advantage of the unique opportunities that a hybrid model provides. The ways in which Accenture is helping organizations to embrace cloud computing are showcased in "Putting the cloud to work with Accenture".⁴

Which functions should take the lead?

As the SCM application market expands, we are seeing different rates of adoption across the four core elements of the supply chain:

SaaS for Supply Chain Planning

Although levels of adoption in this segment are low, especially in large enterprises, the supply chain planning (SCP) market is expected to grow rapidly as current concerns—such as data security and ERP/cloud integration—are overcome.

SaaS for Sourcing and Procurement

There are high levels of adoption in this segment, largely because of the rapid implementation, low cost and innovation provided by SaaS solutions.

SaaS for Manufacturing

On-premise is the dominant software delivery model for manufacturing management. However, there are alternative delivery models for software supporting environmental, health and safety activities, quality management, and business intelligence.

SaaS for Logistics

Cloud computing is rapidly maturing to support collaborative transportation management solutions (TMS) along with other aspects of transportation management, such as sourcing of network capacity, robust visibility and event management and ancillary functions, including freight pay and audit. These capabilities allow companies to "close the loop" on procure-to-pay processes and verify that improved performance can be delivered in carrier selection, track/pay/audit and spend analytics. In addition, SaaS solutions provide a central repository of global trade content that can be accessed on demand.

Understanding the organizational impact

As we have seen, cloud computing has the potential to create great value for supply chain organizations in every industry. At the same time, however, it is important to recognize how the centrifugal force of cloud computing pushes greater IT power out to the entire business. Accordingly, more and more non-IT groups within an organization are now involved in IT purchasing decisions. According to a 2012 Everest Group study,⁵ 64 percent of stakeholders involved in cloud-solution purchases were from outside the IT function.

So what's needed to more effectively manage this new and more complex IT reality? The very term IT "governance" may be outdated. Note that in an automobile engine, a "governor" is something that exists to limit the power and speed of the machine. It's about control. What's really needed today is a way to increase speed, not throttle it, to manage IT toward greater efficiency in its new role as a service delivery function.

And that requires a set of capabilities focused on areas that are generally not part of traditional IT governance:

Value

A value-creation function—which in some cases is an actual responsibility, akin to a program management office—works in concert with the business to assess and realize value from an IT initiative, drive innovation and provide an enhanced level of insight for stakeholders.

Architecture

To manage complex solution designs that may include combinations of private cloud, managed cloud, virtual private cloud and public cloud, a business architecture capability is required—one that pools resources and provides knowledge across key business functions and delivery needs.

Delivery

The service delivery environment today is highly complex in part because the architectural environment is more complex—a hybrid of legacy and cloud computing technologies. In response to that complexity, there is a growing need for management skills outside the traditional sweet spot of IT managers. These skills will need to span service integration, an informed buying capability, contract facilitation and monitoring, and vendor development.

These capabilities are discussed in length in Outlook, Accenture's journal of high-performance business.⁶



4. Cloud computing in supply chain management: what does the future look like?

Organizations are increasingly taking advantage of cloud solutions for specific activities such as network collaboration, back-office support, as well as transport and logistics management. Looking ahead, we expect to see a number of key technologies enabling further innovation in the SCM application marketplace—from in-memory databases and powerful analytics, to product lifecycle management (PLM) solutions:

Cloud computing-based product lifecycle management (PLM)

Cloud-based computing applications are expected to transform the PLM market in the medium-term, with these solutions being used to enable field force product support, as well as facilitating Marketing in collecting/analyzing customer data.

Analytics

Basic supply chain analytics will increasingly devolve into tactical departmental analytics, while a more strategic usage of supply chain performance management (SCPM) will, over time, replace this with a robust view of supply chain management.

In-memory databases

New next-generation applications and real-time data platforms are coming to market, with the first wave of cloud computing-based applications for SCM already available. Processing that used to take hours can now be executed in seconds with in-memory database technology.

Pfizer's supply chain moves into the cloud

Leading companies are building a track record for cloud computing-driven delivery. After over 25 acquisitions in two decades, Pfizer needed to re-engineer its complex supply chain to enable greater agility and responsiveness to unexpected events, while providing the company and its partners with a "single version of the truth."

To achieve these objectives, Pfizer set about transforming its supply chain to "device independence", by moving to one common cloud-based platform for management of the supply chain network. As part of this process, the company required its 500 suppliers to implement a cloud computing-based, common-information-exchange framework on which each supplier was represented as a node on a virtual supply chain. Although the shape and scope of the network may change over time, the "cloud layer" isolates Pfizer from any underlying physical changes and allows supply chain network participants to be added or removed rapidly. Pfizer's vice president of supply network services, Jim Cafone, traced the progress over a year and a half—from "'zero shipment traceability' to a device-independent platform that has already handled more than 40,000 shipments." This new visibility is essential to expanding global markets. Cafone pointed out that the virtualized infrastructure has made it possible for Pfizer "to land products into portions of the world where before we and the rest of the industry were flying blind. For example, we know when a product lands in Kenya or anywhere else in the world, because we have that traceability."⁷



References

- ¹ Accenture and WSP, "Cloud Computing and Sustainability: The Environmental Benefits of Moving to the Cloud", 2010
- ² "Etihad Airways and Taleris Implement New Technology to Predict Aircraft Maintenance Faults, Reduce Flight Delays", http://www.businesswire.com/news/home/20130618005809/en/Etihad-Airways-Taleris-Implement-Technology-Predict-Aircraft#.Ut_G4xC6bVQ
- ³ Gartner, Forecast: Public Cloud Services, Worldwide, 2012-2018, 2Q14 Update, June 2014
- ⁴ www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Putting-Cloud-Work-Accenture.pdf
- ⁵ "Evaluating Cloud Service Providers," Everest Group, 2012
- ⁶ www.accenture.com/us-en/outlook/Pages/outlook-journal-2013-information-technology-governance-spinning-into-control.aspx
- ⁷ Paul Taylor, "Pfizer moves supply chain to cloud," September 11, 2012 (www.ft.com/cms/s/0/1608e5d6-fc59-11e1-ac0f-00144feabdc0.html?siteedition=uk#axzz31gZlsVem)

For more information

Saideep Raj

Emerging Platforms Lead
saideep.raj@accenture.com

Aditya Sharma

Global Digital Operations Lead
aditya.e.sharma@accenture.com

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 293,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US\$28.6 billion for the fiscal year ended Aug. 31, 2013. Its home page is www.accenture.com.

About Accenture Cloud

Accenture is uniquely positioned to help organizations use the cloud for competitive advantage within a complex digital marketplace. With a full range of cloud services, from strategy and implementation to migration and a cloud brokerage, we help clients plan for, integrate and manage in a hybrid world where cloud and legacy systems co-exist. We combine those insights with our industry knowledge, delivery experience and diverse ecosystem to drive innovation and transform complex environments into high-performing digital businesses. Accenture has worked on more than 8,000 cloud computing projects for clients, including nearly 70 percent of the Fortune Global 100, and has more than 10,000 professionals trained in cloud computing.

Follow us: [@AccentureCloud](https://twitter.com/AccentureCloud) and
visit us: www.accenture.com/cloud

Copyright © 2014 Accenture. All rights reserved. Accenture, its logo, and High Performance Delivered are trademarks of Accenture. This document is produced by consultants at Accenture as general guidance. It is not intended to provide specific advice on your circumstances. If you require advice or further details on any matters referred to, please contact your Accenture representative.

This document makes descriptive reference to trademarks that may be owned by others. The use of such trademarks herein is not an assertion of ownership of such trademarks by Accenture and is not intended to represent or imply the existence of an association between Accenture and the lawful owners of such.