

# SaaS Supply Chain Management Systems



**C3 Solutions**

WHITE  
PAPER

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# In Brief

## Can you trust cloud-based supply chain systems?

This is a question that an operations manager needs to answer when deciding to upgrade or adopt new software. While software selection often falls to the IT manager, it is important for the people with operational responsibility to play a deciding role in the choices made. After all, they are the ones who have to make it work for the business every day.

This whitepaper will explore arguments in favour and against using systems based in the cloud, with the goal of offering benchmarks related to cost, security and functionality when deciding what type of system to implement.



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# Types of System

There are several ways to get the software you need, from buying it and running it on your own premises, right through to using a cloud-based application. Cloud-based systems are nothing new. In fact, they've been around for 20 years. But they are still not all-pervasive and there is considerable competition between Cloud-based and licensed software that a company buys and installs on its own servers.

## SaaS System

Cloud-based or Software-as-a-Service (SaaS) systems are hosted by a service provider and customers access them over a network.

Cloud-based software can be subdivided into single- or multi-tenant systems.

In a multi-tenant system there is one version of the system that is used by all the clients. All of the data—from all the users—resides in a single database, with tags identifying whose data is whose.

In a single tenant system there are multiple versions of the software—one for each customer—and each customer has their own database. [1]

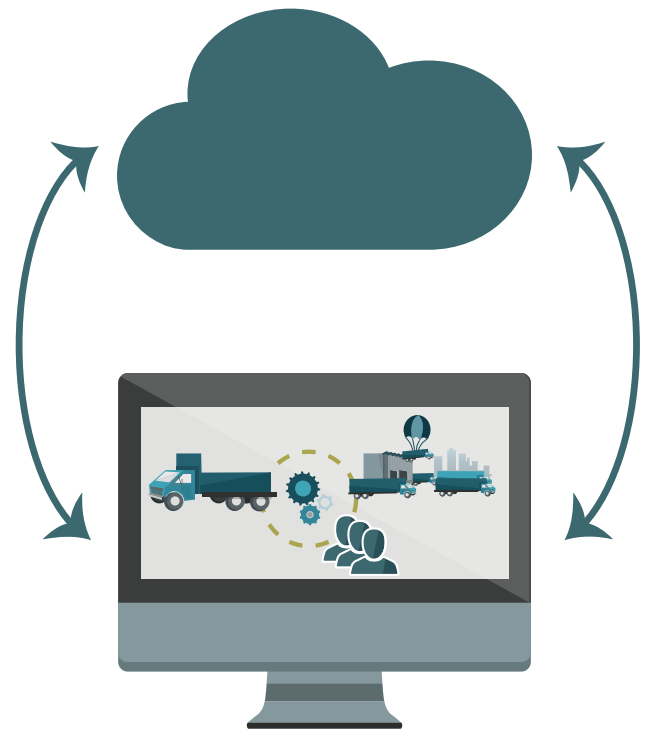
There are also hybrids in which parts of the system are single tenant—the database, for example—while others are shared—the web server, in some cases.

When the network being used is the Internet, the service is referred to as Cloud-based (also known as Web-based), but SaaS can also be made available over a private network.

## Hosted Software

“Hosted” software is essentially purchased as licensed software would be, but the buyer then rents out space on a third-party’s or the vendor’s servers, where the software then resides. This option frees up the buyer from needing to have on-site IT support and facilities.

When evaluating different systems it is important to understand what you will be getting for your investment, as each has its own pros and cons.



## Licensed Software

At the other end of the spectrum is licensed software that is purchased from the vendor and installed and operated on the user’s premises. This is also called “on-premise”.

# Cost Aspects

When selecting a supply chain system the main driving considerations should be the features and functions it performs. What the software does for your business is ultimately what drives the ROI. However, when you get the point of deciding between comparable systems, that's where relative costs must enter the equation.

## Cost Structure

The most relevant point to remember about the cost of software is that the cost structure is largely dependent on the scale of the deployment. With a large-scale (usually very high cost), enterprise deployment, there can be long-term benefits to a licensed software option. Given that these are usually core business systems, such as ERP or WMS, they tend to have a longer product life cycle. This allows the acquisition cost to be amortized over the life of the product (typically up to 10 years).

For a SaaS solution, the upfront fees are minimal, making it an easier buy for companies that may want to avoid capital costs associated with upfront licensing fees. With SaaS you pay monthly service fees. It also represents a shorter time commitment, with frequent updates. It's akin to renting rather than buying your home.

## IT Resources

What IT resources does your company already have on hand? If you do not have a full-blown IT department with significant implementation experience, choosing SaaS might be the better choice. But if the company is prepared to devote IT resources, then implementing a licensed system can offer more control. But in an age when IT departments are being expected to do more with less, the latter scenario is less and less likely.

IT departments' average budget allocation for new applications is only about 11 percent [2].

Thus SaaS is an easy deployment and an effective use of IT resources.

## Timeline

What are your timelines? SaaS has a much shorter implementation window than licensed systems. You can be up and running with a cloud-based system in a couple of weeks, and many vendors offer assistance in migrating the data over.

## Software's Strategic Positioning

How does the software implementation fit into the company's strategic planning? If it's a major component or core system, then going for the licensed system may be a better match with its longer horizons. But you also need to balance that against scalability. With a licensed system it may cost you a lot more to scale up than it would with SaaS.

## System Type

The importance of the system to the overall functioning of the business needs to be taken into consideration. A major operational piece like an ERP system may require a different approach than software such as TMS or Yard Management.

You will need to weigh all of these factors in making a recommendation to go with either a SaaS or licensed system.

# Cost Aspects

COST CONSIDERATIONS	SAAS	LICENSED SOFTWARE
Hardware (including licensing fees, which are multiple times more than hardware costs, plus performance monitoring tools)	Included	User Responsibility; either 3rd party hosting or on-premise
Upgrades	Upgrades are included with subscription. SaaS provides dynamic and systematic upgrades.	User pays but can cut costs in the short term by not opting to keep up with current versions.
Mobile technology	Is available for both, with equivalent resource demands	
Internal IT / support	Vendor responsibility	User responsibility
Fee structure	Flexible, multiple structures in marketplace	Upfront license fee, plus annual maintenance and support fees
Implementation Effort	Can be extremely simple and fast	Longer timelines, significant planning required
Scalability	Increased monthly fees	Possible system overhaul required with attendant costs

# Security

With any new system it is extremely important to ensure that security concerns are met. These involve the vulnerability of your data as well as the stability of the system as a whole against attacks or failure.

With supply chain systems, it is inevitable in the increasingly connected world that external parties will need access to your system and data. Whether it's customers or suppliers, business now requires a degree of openness that must be built in without putting information systems at risk. And it's because of this growing trend and awareness that the concern of an external threat to the network has become a top priority.

## External Threats

**With licensed software** that's internally hosted, it's easy to secure if there's no connection needed with the outside. However, once you require a connection, your system's security against external breaches will then depend on the competence and trustworthiness of either your internal IT staff or the contractor managing a web-based portal for you. You need to be certain that those tasked with ensuring security are skilled enough—and motivated—to do the job.

**With SaaS application** the scenario is a little different. Because it is the service provider's own business at stake, they should have taken extreme measures to ensure their system is secure. This includes measures such as firewalls, encrypted logins, and an audited data centre, just for starters.

If an external breach happens in a SaaS environment, the hacker will be directed to a dead end inside the dedicated application. Because the SaaS application operates independently of the client's main systems the client's systems and data are protected.

If your supply chain management systems require allowing access to outside parties—for example to permit scheduling or TMS integration—then a SaaS system may provide even better security. Since the outside users are

not accessing your internal systems, but only those of the SaaS provider, your own core systems are protected.

The argument is that given what is at stake, the SaaS vendor may be the more reliable security partner.

## Internal Threats

Unfortunately, external breaches are not the only threat that companies face. There is also the potential for an “inside job”—someone with permission to access sensitive data and systems who steals information or sabotages the system.

Recent research has found that “lost or stolen devices account for 31 percent of all data security breaches, while accidental misuse by an employee accounted for another 27 percent of incidents. In addition, 12 percent of breaches were caused by malicious insiders, making internal vulnerabilities in some form or another responsible for a total of 70 percent of breaches.” [EA5] Since the perpetrator of this security breach is an insider with access to company systems and data, there is likely little difference in the threat to either SaaS or licensed software users. However, with the licensed software, the malicious employee would be able to access both the front end and back end of the system. With SaaS, the client's employee would only have front-end access, and would likely not be able to bring the whole system down.

## Disaster Recovery

The third area where relative security needs to be assessed is in disaster prevention and recovery. Just as with breaches, this is extremely important for your business.

In fact, recent research shows that 93 percent of companies that lost their data centre for 10 days or more due to a disaster filed for bankruptcy within one year of the disaster, and 50 percent of businesses that found themselves without data management for this same time period filed for bankruptcy immediately. [4]

For the SaaS provider, preventing a disaster equates to keeping their business alive. For your enterprise, keeping a mission critical system going would require essentially the same calculation.

But if the application in question is not the main one, but a smaller system, the risk to your company is not the same and the incentive to protect it will not be as strong. Thus you can argue that the SaaS provider may do a better job of protecting their systems since no matter how marginal they might be to you, they are that company's core system.

SECURITY BREACHES	SAAS	LICENSED SOFTWARE
External breach	Highly secured data centre; firewalls etc. Core system therefore highly protected	Internal data centre; do you have personnel or contractors with the required skills?
Internal breach	If SaaS provider is breached by internal perpetrator there's no difference in the risk. If the client's employee tries to breach the SaaS, the risk is smaller, as they won't have full access to the provider's system.	Active directory login allows access to many files; front end and back end access possible
Disaster recovery / redundancy	Protecting the core system is paramount. Must ensure business continuity.	Small apps aren't as important as core systems therefore may not receive priority

# Functions and Features

This paper is not intended to determine which of SaaS or licensed software offers more or better functionality for supply chain applications. What is important to remember, however, is that some types of features may be delivered better by one platform or another. Which one is best suited to your operation is the million dollar question that you—the operations manager—are trying to answer.

There are **four major areas that stand out as key** to determining the most suitable functionality for your business. These

Scalability



Connectivity and integration



Mobile friendliness



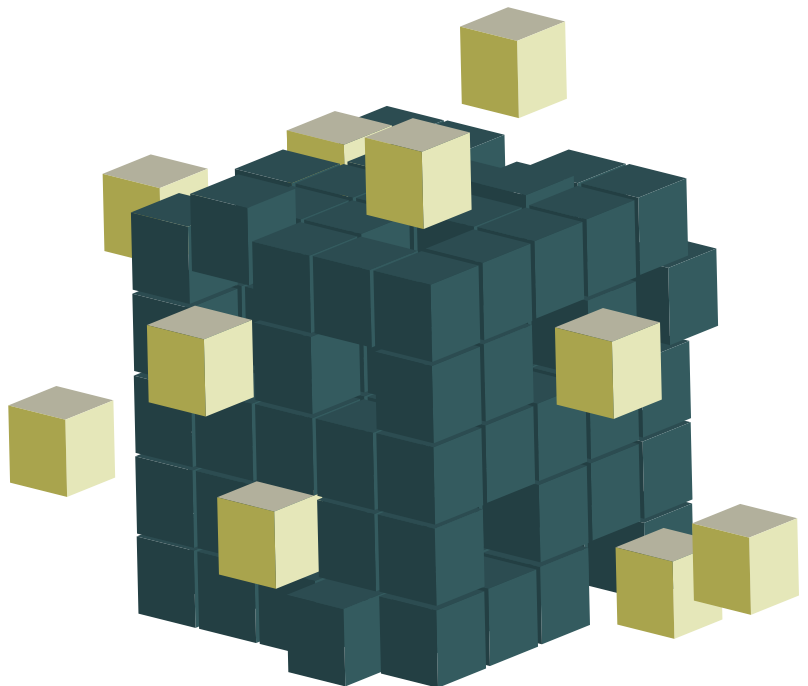
Collaborative features such as external portals



In theory, SaaS and licensed software both offer the same opportunity to realize all the above. The risk with licensed software is the potential for outdated technology. Technology that has not kept up will offer only limited functionality in all these areas. With SaaS, because it is constantly updated, it can keep up with changes and advances in the technologies that surround and interact with it.

For these reasons, it would be smart to consider a SaaS solution under the following circumstances:

- You require Internet portal access outside your main site(s)
- The system in question is not a core system (like ERP). Outsourcing a mid-level specialized system to a SaaS provider can allow your staff to focus on core IT needs.
- The five-year cost of ownership for the SaaS is lower.
- Your assessment of the features and functions was made independently of the consideration of whether the software is SaaS or licensed. In other words, don't reject a system simply based on the method by which it is provided. Get the most productive tool.





# Vendor Selection

Selecting a SaaS vendor for your SCM system is not quite the same as choosing a licensed software provider. Because you will have a continuing, day-to-day relationship with this company, and will continuously rely on its systems being up and running, you really need to do the due diligence in your vetting process.

Here's where getting your own IT team on board will be really helpful. They can help to craft some of the technical questions you need to ask, and analyze the answers. To aid in this process we have compiled a list of questions you need to ask prospective providers.

(See C3 Solutions' blog: "[To SaaS or not to SaaS](#)", for more thoughts on this.)

1. Could you survive if there were issues with the supplier? What would you do in the case of service outages?
2. What is the supplier's track record? How long have they been in business? Do they have great references?
3. If something happened to them how hard would it be to retrieve your data? Or, do you have a regular need to retrieve your own raw data from the vendor? If so, how long would it take the vendor to provide it, and in what format would you get this data?
4. What security do they have in place? Do they have an audited data centre, a disaster recovery policy and plan, password encryption and so on?
5. What service level agreement (SLA) do they offer?
6. How do they manage software maintenance and upgrades to ensure minimum disruption?
7. How does the vendor handle the multiple clients and environments they have to host? Is it a single-tenant, multi-tenant or hybrid set up? Do they share computing resources, or have their own dedicated resources?  
Ask your IT staff to help frame what the implications of these choices may be.



# SaaS SWOT

Opting for a SaaS solution for your supply chain system should not be a headache-inducing project. This chart is intended to give an overview of many of the points made above.

	S	W	O	T
SAAS	<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>- Up to date</li> <li>- Less up front cost</li> <li>- High motivation for security</li> <li>- Easily scalable</li> <li>- Integrates</li> <li>- Allows for collaboration</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>- Reliance on external provider can create risk</li> <li>- Fees may fluctuate</li> <li>- Most SaaS applications are off the shelf and less receptive to software code</li> </ul>	<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Make IT a centre of innovation</li> <li>- Tailored solutions allow for rapid development</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Rapid turnover in vendors/industry consolidation</li> </ul>
LICENSED	<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>- Closed/secure in own enterprise</li> <li>- You own it</li> <li>- Licensed software vendors usually allow for customer specific software code modifications</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>- Integration with external resources is less obvious.</li> <li>- Requires internal resources, capital and operating</li> <li>- Easily stale dated</li> </ul>	<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Longer amortization</li> <li>- Allows development of internal skill set/ expertise</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Big, long-term investment in a potential dinosaur</li> </ul>

# Conclusion

Traditional supply chain management systems like ERP, WMS and TMS have long relied on the privacy of their data. This is a model that is being superseded in a world where connectivity is king.

The pervasive availability of supply chain data, thanks to the Internet of Things, is changing the paradigm for SCM systems. So much information is available that can be relatively cheaply leveraged to streamline supply chains and improve the bottom line.

*In fact, in a recent study by SCM World, 93 percent of respondents said that greater collaboration leads to faster resolution of supply chain problems.*

*“Cloud computing platforms are becoming more pervasive in large-scale supply chains as enterprises look to gain agility and speed in resolving complex problems through more effective collaboration.” [2]*

Now is not the time to put your head in the sand and pretend that the old ways will continue to work just because they always did before. Avoiding connected business practices is becoming impossible, and those who lag behind will get left behind. Failure to adapt to this new world is rapidly becoming a costly mistake.

So many of the newer logistics applications, like transportation management systems, yard management and dock scheduling, to name only a few, require collaboration. They are the new wave of SCM, taking connectivity between business partners to new levels that create very real savings in time and cost for all parties. They offer scalability, ease of integration and speed to implementation that are dictated by the new environment.

It is these vanguard applications that are available as SaaS. Because of the connectivity they enable, they are most logically deployed from SaaS platforms. As we rely more and more on global visibility into supply chain operations, whether across carriers, modes, or continents, cloud-based SaaS applications will become the standard.

To take advantage of the bottom-line opportunities afforded by running a connected, integrated business it is important to both understand and leverage the new technologies that are now available. SaaS is one good example, and we are confident that there will be many more to come.



## About C3 Solutions

C3 Solutions is an information technology company specialized in yard management (YMS) and dock scheduling (DSS) systems. Since its founding in 2000, C3 has gained the confidence of clients around the world and across many industries including retail, grocery, distribution, manufacturing and parcel post. Headquartered in Montreal (QC), Canada and privately owned, C3 is dedicated to developing, implementing and supporting the most complete yard management and appointment scheduling products on the market today.

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# References

- 1 “Single Tenant vs Multi Tenant Business Software”, Tim Eisenhauer, Axero Solutions.  
<https://axerosolutions.com/blogs/timeisenhauer/pulse/146/single-tenant-vs-multi-tenant-business-software>
- 2 “Where Cloud Computing Is Improving Supply Chain Performance: Lessons Learned From SCM World”, Louis Columbus, Forbes.com, Feb 12, 2014. <http://www.forbes.com/sites/louiscolumbus/2014/02/12/where-cloud-computing-is-improving-supply-chain-performance-lessons-learned-from-scm-world/#52ce2be86a91>
- 3 “Most data security threats are internal, Forrester says”, Trend Micro.com, September 28, 2012.  
<http://blog.trendmicro.com/most-data-security-threats-are-internal-forrester-says/>
- 4 ADLAN Disaster Prevention & Recovery. [http://www.adlan.com/disaster\\_recovery.html](http://www.adlan.com/disaster_recovery.html)

## Additional Resources

- 5 “5 Big Benefits of Cloud-Based Supply Chain Management”, Adam Robinson, Flash Global, June 19, 2015.  
<http://flashglobal.com/blog/cloud-based-supply-chain-management/>
- 6 “Cloud Computing Is Transforming Supply Chain Management”, Anthony Clervi, Supply and Demand Chain Executive, Oct 12, 2015.  
<http://www.sdexec.com/article/12125647/cloud-computing-is-transforming-supply-chain-management>
- 7 “Cloud, SaaS and Hosted...What’s the difference?”, ERP Software Blog, May 23, 2011.  
[www.erpsoftwareblog.com/2011/05/cloud-saas-and-hosted-whats-the-difference/](http://www.erpsoftwareblog.com/2011/05/cloud-saas-and-hosted-whats-the-difference/)
- 8 “Cloud versus SaaS for Supply Chain Software and the Ability of Applications to Scale”, Staff, Supply Chain Digest, Nov. 17, 2010.  
[www.scdigest.com/assets/on\\_target/10-11-17-1.php](http://www.scdigest.com/assets/on_target/10-11-17-1.php)
- 9 “How Cloud Technology Can Transform Supply Chain Performance”, Brooks Bentz, CIO, June 10, 2013.  
[www.cio.com/article/2385117/supply-chain-management/how-cloud-technology-can-transform-supply-chain-performance.html](http://www.cio.com/article/2385117/supply-chain-management/how-cloud-technology-can-transform-supply-chain-performance.html)
- 10 “Supply Chain Technology: Cloud computing breakthrough”, Bridget McCrea, Logistics Management, November 01, 2012  
[www.logisticsmgmt.com/article/supply\\_chain\\_technology\\_cloud\\_breakthrough](http://www.logisticsmgmt.com/article/supply_chain_technology_cloud_breakthrough)
- 11 To SaaS or not to SaaS, Gregory Vial, C3 Solutions, Jan 13, 2014.  
<http://info.c3solutions.com/blog-c3/to-saas-or-not-to-saas/>