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The Warehouse of the Future Runs on Cloud

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Questions posed by: Infor

Answers by: Jordan Speer, Research Manager, Global Supply Chain

Q. What are some of the key warehousing use cases that IDC sees, both today and into the future?

A. Cloud systems play a significant role in enabling connectivity, mobility, collaboration, visibility, and real-time accessibility. In thinking about the role that a cloud warehouse management system (WMS) can play in an evolving organization, one should consider the escalation of ecommerce (both pre- and post-COVID-19) and the complexities it has driven into the supply chain. Organizations are under acute pressure to balance an increasingly broad number of SKUs and fulfillment options with speed and accuracy, which can exact a heavy toll when it comes to the costs of maintaining high levels of customer satisfaction in an environment of bountiful individual customer orders.

The transition demanded by the explosion of ecommerce requires greater flexibility in the warehouse to adapt to changing workflows. The warehouse also needs real-time visibility into orders and inventory, increased automation for efficiency and speed, and the ability to analyze data across its facilities to optimize processes and human resources. Its vital role in speeding product to the consumer is transforming the warehouse from a center of operations to a source of competitive advantage and a key factor in a happy customer experience.

The sharp rise of ecommerce also necessitates moving closer to the consumer. The warehouse space shortage is escalating dramatically as organizations vie for real estate near population centers to speed product to the customer. This need for localization is one of the drivers behind the growth in the fulfill-from-store delivery model. As micro-fulfillment centers and stores as mini-warehouses move into the mainstream, they will need to work in tandem with distribution centers and warehouses — all enabled with one view of enterprise inventory — operating with high levels of efficiency to fulfill ecommerce orders while considering the needs of in-store customers.

In this fulfill-from-anywhere era, cloud becomes critical. A cloud WMS offers faster setup and deployment than a traditional on-premises installation. In addition, a cloud WMS not only can be maintained securely with fewer IT resources at lower up-front costs but also offers greater scale, flexibility, and mobility as well as access to real-time data. Inside the serverless and fully managed environment of a cloud WMS, an organization can easily scale up and down as needed.

Q. What are the best practices in transitioning from on-premises to the cloud?

- A.** Switching from on-premises to cloud should be done with an eye on minimizing disruption to current processes and people so that inventory continues to flow as needed and employees are able to complete their tasks. More than a quarter of respondents to IDC's 2020 *Industry CloudPath Survey* identified business interruption from downtime as a key concern of implementing cloud. Moving from an on-premises WMS to the cloud also involves contending with legacy systems and massive amounts of data. With that in mind, organizations should follow a few key best practices as they move into the cloud:
- » Ensure buy-in from all key stakeholders, evaluate WMS cloud technology vendors thoroughly before selection, and pick partners that fit both technologically and culturally. More than 30% of respondents to IDC's *Industry CloudPath Survey* worry about internal stakeholders throwing up barriers to cloud implementation.
 - » Make a migration plan; decide what will be moved as well as when and in what order; and determine which employees will be affected and how. Be clear on what functionality is or is not fully replicated from on-premises to the cloud. Make clear where there will be periods of system overlap and when operations will shift entirely into the cloud. Ensure that your processes are good.
 - » Manage expectations by preparing employees for each change along the way. Train staff early.
 - » Enlist vendors and systems integrators (SIs) to handle tasks such as transferring data to the cloud, auto-scalability, and load balancing. More than 30% of survey respondents said they don't have the IT skills to implement or manage cloud services.
 - » Remember that even though a cloud WMS will require fewer workloads and resources than an on-premises WMS, the cloud WMS will still need to be monitored.
 - » Make sure to document everything after migration. Set benchmarks for measuring key performance indicators (KPIs) and test applications to ensure that everything runs according to plan.
 - » Conduct thorough research on security and compliance issues. While cloud computing services are generally more secure from effective attacks and hackers than private on-premises servers, organizations should still follow due diligence when it comes to data security.

Q. For distributors and retailers that have moved from an on-premises WMS to the cloud, what have been the key drivers?

- A.** Many factors are driving organizations to move to a cloud WMS. Chief among them is the rise in ecommerce and the various methods of fulfillment it is spawning, each of which adds more complexity to the supply chain and ups the ante on the need for fast, accurate, scalable, and agile operations. Some organizations have told IDC that they are concerned about keeping pace with the shifts in order management and fulfillment required to meet changing consumer expectations for faster delivery or for the option to pick up in the store or curbside — and to do it profitably. As a result, organizations are leasing or building micro-fulfillment warehouses closer to large population centers to locate

merchandise closer to the consumer, fulfilling more orders from the store, and enlisting a growing number of last-mile delivery services. Each of these changes adds nodes to a spreading supply chain matrix.

Keeping pace with these changes at the front end of the supply chain is driving the need for more visibility into inventory and its whereabouts. A WMS in the cloud can offer a real-time view from anywhere in the organization into available-to-promise inventory and location.

For warehouse employees, a cloud WMS can enable faster and more efficient picking, packing, and shipping via mobile handhelds that allow connection to centralized systems from inside or outside the facility, providing real-time views into inventory and orders. Additionally, connecting employees to the cloud supports digital transformation (DX) initiatives that enable further efficiencies and features as various technologies work in tandem.

For example, combining software automation with robotic automation, warehouse control, and artificial intelligence (AI) allows an organization to analyze incoming orders as well as prioritize their orchestration and match that to available handling resources while optimizing routes, inventory placement, and even selection of shipping-box size. By embracing technology, the warehouse can live up to its potential as a competitive driver versus a source of risk. More than 35% of organizations responding to IDC's 2020 *Industry CloudPath Survey* identified DX as a driver to cloud services.

Q. What is an example of a company that has made the switch from an on-premises WMS to the cloud?

A. IDC heard from a large U.S. retailer that, like many others, was caught off guard by the sudden rise in ecommerce orders brought on by the pandemic. With fewer customers in stores and online orders escalating rapidly, the retailer, which has more than 500 stores but just one distribution center, realized it required more agility in its distribution center to automatically scale up and down to meet shifts in demand. Faster and more efficient movement through the warehouse had already been a topic of discussion, but the pandemic kicked plans into high gear: The retailer decided to move from an on-premises WMS to a cloud-based solution.

Beyond the ability to scale, other advantages of a cloud WMS influenced the company's decision. Cloud would enable the organization to move swiftly without getting bogged down in laborious, time-consuming, and expensive upgrading processes. Without the need to execute those upgrades, the company could eliminate the expense and training that on-premises applications require. Moving into the cloud also offered a lower total cost of ownership.

The retailer is already experiencing the flexibility and ease of switching to cloud. The cloud WMS is real time and upgrades are automatic, so the company benefits from new features released frequently by the tech provider, many of which address the acceleration of ecommerce orders. The move to cloud enabled the retailer to better adapt, scale, and innovate, ultimately pleasing the end consumer and building brand loyalty.

Q. What does the future warehouse look like, and how does cloud enable it?

A. Online shopping and omnichannel fulfillment, accelerated by the pandemic, are bringing the warehouse of the future much closer to the present. The future warehouse requires speed, agility, and flexibility; it will also require different models and setups, depending on product type and size, fulfillment models, distribution strategy, and so forth. One of the early lessons from the COVID-19 pandemic has been the inflexibility of inventory (in both form and location) and the need to have more flexible, "smart" inventory. In the future, IDC expects an increase in:

- » Dark warehouses, which are completely automated and require no human involvement
- » Dark stores, closed locations that have been turned into mini-fulfillment centers
- » Fulfill-from-store formats, which essentially turn a store into a warehouse
- » Localization of micro-fulfillment warehouses — siting facilities near high-population urban centers to enable faster and less expensive order fulfillment (Depending on the company, these warehouses may be stocked from larger distribution centers in a hub-and-spoke model or receive product directly from the manufacturer.)
- » Automation of warehouses, including more traditional materials handling conveyors and equipment and automatic guided vehicles as well as increasingly sophisticated autonomic mobile robotics that move flexibly around the warehouse

Managing the activities of future warehouses and connecting them to events outside the four walls — effectively and profitably — will be impossible without the visibility and agility of cloud. IDC's *Worldwide Supply Chain Management Applications Forecast, 2020–2024* predicts that by 2024, nearly 30% of supply chain management applications will be in the cloud and 31.8% of inventory management applications software will be cloud based. Cloud clearly leads to long-term growth and market share due to the benefits it provides around security, superior customer experience, scalability, easier integrations, and lower costs.

About the Analyst



Jordan Speer, Research Manager, Global Supply Chain

Jordan Speer is Research Manager for IDC Retail Insights, responsible for covering the global supply chain. Ms. Speer's core research examines how digital technology opens opportunities to better connect and optimize the execution of the end-to-end supply chain from order creation through order fulfillment. Her research will cover sourcing, transportation, warehouse and labor management, returns, and global trade management with particular emphasis on how leading-edge technologies such as AI and analytics are key to evolving and improving these processes.

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 **IDC Custom Solutions**

IDC Research, Inc.
5 Speen Street
Framingham, MA 01701, USA
T 508.872.8200
F 508.935.4015
Twitter @IDC
idc-insights-community.com
www.idc.com

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