

Cloud Revolution 2.0: The Dawn of Microservices

Examining what microservices means to the future of retail and what you need to know

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Phase one of retail's cloud revolution is well underway, but even as it gains mainstream momentum a second phase is emerging that will transform the foundations upon which today's tech stacks are built – architecture, platforms and infrastructure.

Phase one of the cloud revolution was many years in the making, but it has finally convinced even the most conservative retailers that significant benefits are possible when using a Software as a Service (SaaS) model and replacing internal data warehouses with third-party data centers.

However, a new phase of the cloud revolution is ramping up among leading-edge retailers and vendors that holds the promise of a broader range of benefits. This second phase of the cloud revolution is centered around the concept of microservices architecture and in this Targeted Research report *RIS News* will examine what it means for retail and what you need to know.

Replacing the Monolith

While microservices architecture is relatively new in retail, it has been heavily used by Netflix and Amazon for nearly 10 years. Other early adopters include Walmart, eBay, Gilt, Zalando, Twitter and Nordstrom, according to widely available reports.

For this report we define microservices as a web/cloud-based approach for creating loosely coupled functions (services) that are used within the retail enterprise. It is a standards-based approach that differs from current monolithic or SOA models by decomposing (decentralizing) applications into fine-grained, lightweight, independent services.

By services we do not mean POS or inventory management, for example, because they are too complex. Instead think of adding sales tax to a purchase or applying a promotion code or looking up a shoppers account by using a phone number.

A few of the most important benefits of microservices architecture are modularity for easy-on and easy-off capability,

FIGURE 1

Annual Revenue

Less than \$99 million	15%
\$100 to \$499 million	15%
\$500 to \$999 million	30%
\$1 billion to \$5 billion	19%
More than \$5 billion	22%

FIGURE 2

Sales Performance Last 12 Months

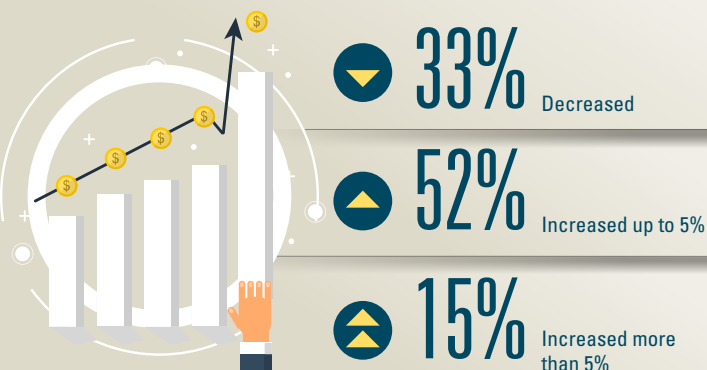


FIGURE 3

Retail Segment

Apparel	26%
Grocery/Convenience/Drug	44%
Specialty (electronics, crafts, gifts, etc.)	26%
Other	4%



FIGURE 4

Your personal level of knowledge about microservices



fast development and testing, flexible scalability, continuous delivery updates, and decentralizing or decoupling complex applications into smaller units (services).

Microservices architecture is considered a major component of a broad digital transformation plan and can be thought of as the continuation of the cloud technology revolution.

Microservices in Retail Today

A majority of retailers today are on the lowest levels of the learning curve when it comes to microservices – 40% of respondents say their personal knowledge is basic or rudimentary (i.e. reading reports, listening to podcasts, searching the web) and 22% say they are involved with active learning (attending sessions, classes and/or vendor demos).

However, a sizable group (46%) have moved beyond the lowest steps on the maturity ladder. This group consists of retail executives (19%) who are involved with trial experimentations in a test environment, 22% who are involved with development and/or deployment, and 7% who are actively investing in advanced platform development.

Shifting from an IT to a retail organization perspective, we find that most retail enterprises place some level of importance on adopting microservices.

While it is true that only 11% say their organizations consider

FIGURE 5

Organization's strategy toward leveraging microservices

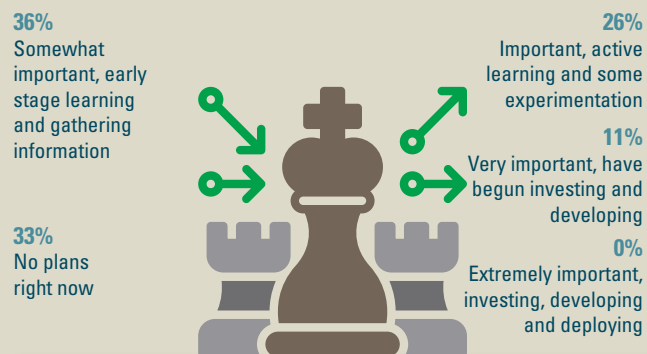
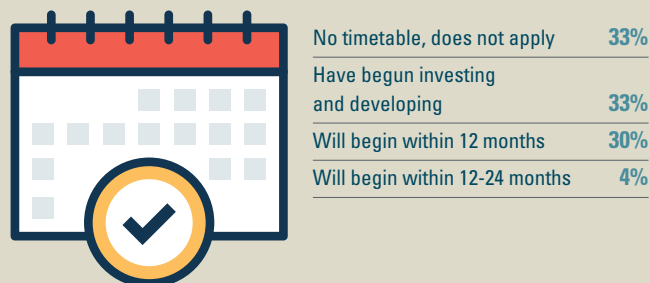


FIGURE 6

Timetable for investing and developing microservices



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microservices to be very important and worthy of investment and development, a sizable 26% say microservices are important and worthy of active learning and experimentation or somewhat important and worthy of early stage learning and gathering information (33%).

A surprising finding in the study is that a majority of retailers plan to begin investing and/or developing microservices within 12 months. A third (33%) say they have already begun investing and developing microservices and 30% say they will begin within a year.

Benefits and Obstacles

The biggest technology benefit retailers expect to achieve through adoption of microservices architecture is greater flexibility to add new functions/services (easy on, easy off due their lightweight and independent structure). This benefit was chosen by a big majority of retailers – 67%.

Another large group of retailers cited greater ease of creating web and mobile apps for enterprise applications (40%). Other major benefits cited were faster speed to market for adding new functions/services (37%), easier to

scale (autoscale or on-demand scaling) chosen by 33%, and continuous delivery and updating (33%).

The clear winner when citing organizational benefits was greater flexibility to deploy new customer-facing features and functions (chosen by 67%). This is a highly important quality to have in a customer-facing industry. Coming in second place on the organizational benefits list is greater flexibility to deploy new back-end capabilities (48%).

Other organizational benefits cited by retailers are faster ability to leap ahead of or respond to the competitive marketplace (44%), saving money by eliminating legacy application/integration complexity (33%), and better ability to shift applications to web and mobile environments (22%).

Clearly “greater flexibility” is considered a major quality of a microservices approach across a wide variety of benefits.

This bodes well for the future adoption of microservices architecture in retail. However, before it picks up momentum it will have to overcome several major hurdles. The number one hurdle cited by retailers is dealing with the cost of replacing legacy applications and infrastructure, which was chosen by 67%.

It is not technically accurate to think of a microservices

FIGURE 7

Technology benefits for moving to a microservices approach

Greater flexibility to add new functions/services (easy on, easy off)	67%
Easier to create web and mobile apps for enterprise applications	40%
Faster speed to market for adding new functions/services	37%
Easier to scale (autoscale or on-demand scaling) independent services	33%
Continuous delivery and updating	33%
Decoupling/decentralizing monolithic applications and architecture	22%
High configurability to shape software by creating reusable code	22%
Major step in digital transformation plan	15%
None	7%

FIGURE 8

Organizational benefits for moving to a microservices approach

Greater flexibility to deploy new customer-facing features and functions	67%
Greater flexibility to deploy new back-end capabilities and functions	48%
Faster ability to leap ahead or respond to the competitive market	44%
Save money by eliminating legacy application/integration complexity	33%
Better ability to shift applications to web and mobile environments	22%
Save money by going to the cloud	19%
Other	4%

FIGURE 9

Top obstacles to overcome when moving into a microservices environment

Cost of replacing legacy applications and infrastructure	67%
Risk of replacing legacy applications and infrastructure	48%
Internal and external expertise difficult to find and obtain	41%
Trusting cloud-based delivery for core applications and platforms	33%
Migration path and major players (vendors/consultants) not well defined	33%
Microservices platforms still immature	22%
Perception of microservices as bleeding-edge and unproven	15%
Microservices development tools still immature	11%
Microservices monitoring tools still immature	11%
Other	4%

FIGURE 10

What is your IT organization's cloud strategy?

Use cloud for some software as a service (SaaS) applications	56%
No opposition to cloud, but no immediate plans	22%
In addition to SaaS and testing PaaS and IaaS, expanding use of cloud as a key part of a broad digital transformation plan	15%
In addition to SaaS, testing/using Platform as a Service (PaaS) and/or Infrastructure as a Service (IaaS)	11%
Expand use of SaaS only	7%
Opposed to use of cloud delivery for core applications	4%

strategy as a rip-and-replace deployment because many intermediate pathways are available that could stretch out the transition and reduce the disruptive impact of a big-bang project.

However, regardless of how long it takes, retailers will ultimately have to account for the cost of replacing their current applications and infrastructure. Naturally, most retailers consider this to be a major obstacle to overcome.

In second place on the obstacle list, chosen by 48%, is the risk associated with replacing proven legacy applications and infrastructure. Other big obstacles include difficulty in finding internal and external microservices expertise (41%), trusting cloud-based delivery for core applications and platforms (33%), and a poorly defined migration path with unproven vendors and consultants (33%).

Future of the Cloud

Although a sizable contingent of retailers still has reservations about the cloud (4% are opposed to using it for core applications and 22% have no immediate plans to use it), a majority of retailers are in the process of executing a cloud strategy. This is important to note because microservices architecture is a cloud-based technology.

Not surprisingly, most retailers say they plan to deploy a hybrid cloud or multi-cloud approach as their overall cloud strategy. This means they will use a combination of public cloud (over the Internet) and private cloud (internal network) or even multiple private clouds when they expand their use of cloud delivery for enterprise applications.

Currently, retailers estimate that more than a fifth (23%) of their annual IT operating budget goes to cloud application subscriptions and fees, which is a significant amount of the overall IT budget. They also estimate it is up 19% when compared to three years ago.

Finally, we wanted to find out which cloud platforms retailers prefer as they build out their cloud and microservices environments. This is an important question to consider since

microservices environments will be dependent on the cloud platform it is built on.

The top two preferred cloud platforms are Microsoft Azure, which was chosen by 60%, and Amazon Web Services (AWS), which was chosen by 56% even though revenue derived from AWS fuels Amazon's retail operations. However, it cannot be denied that Amazon has staked out a clear leadership position in cloud platform technology and it is in the process of adopting an agnostic (even business friendly) approach to its retail clients.

Methodology

This study was conducted during the month of February and only senior executives from national or large regional retailers were invited to participate. The results do not include any store-level, field-level or regional employees. Only headquarters-level staff responses were included.

Conclusion

A new phase of the cloud revolution is emerging in retail around the concept of microservices, which holds the promise of a broad range of benefits that will transform the very foundations upon which today's tech stacks are built – architecture, platforms and infrastructure.

Although it is still early in the microservices transformation, there is a sizable group (48%) of retail executives who are already involved in the essential steps of trial experimentation and platform development.

A third (33%) of retailers say they have already begun investing in microservices architecture and 30% say they will begin investing within a year.

Although the cost of replacing legacy systems and the risk of using an unproven approach are major obstacles retailers will have to overcome, the promise of "greater flexibility" across a wide range of technology and organizational benefits ensures the future adoption of microservices architecture will steadily increase in retail. **RIS**

FIGURE 11

Preferred cloud strategy



Hybrid/Multi cloud (combination of both over the Internet and a private internal network)	63%
Private cloud only (private internal network)	26%
Public cloud only (over the Internet)	11%

FIGURE 12



Percent of current yearly IT operating expenses that go to cloud application subscriptions and fees

FIGURE 13

19% Compared to three years ago, the increase in IT operating expenses that go into cloud application subscriptions and fees



FIGURE 13

Preferred cloud platforms



Microsoft Azure	60%
Amazon Web Services	56%
Salesforce	29%
Google Cloud	26%
SAP Cloud	22%
Oracle Cloud	15%
Adobe Cloud	15%