

Capgemini Perspectives:

Cloud Native Comes of Age in Consumer-driven Industries

How retail and consumer-focused companies are increasing business velocity and customer satisfaction with apps built for the cloud



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Executive summary

In an age where business velocity is critical to success, a growing number of companies in the retail and consumer-focused industries are embracing a cloud-native approach to application development and deployment. This approach is helping companies realize value around key business priorities:

- The supreme agility and flexibility of cloud-native apps are critical to the continuous innovation and digital modernization that helps companies differentiate their customer experiences.
- The extreme elasticity and scalability of cloud native make it ideal to run big data and analytics applications to build insights from in-store and digital customer data.
- Companies can build efficient operations by fast-tracking digital priorities around Smart Factory, NextGen Billing, Digital Supply Chain, Digital Workforce Management, Order Fulfilment, and Financial Planning & Forecasting.

Taking the pulse of the market

To understand how well companies in this industry are embracing the cloud-native opportunity, their motivations for doing so, and the success they're seeing, we recently commissioned a global survey. The findings confirm the growing importance of cloud native in this industry, with the percentage of new business applications that are cloud native forecast to double by the year 2020.

And many cloud-native leaders are already seeing significant results:

- 73% say it now takes them less than 14 days to develop and deploy new web applications
- 84% say that cloud native has helped them increase revenue and cut operating costs.

But adoption isn't always easy, and a number of barriers still stand in the way of their transformation journey:

- One-third of business-side respondents say their biggest IT priority for the next 1–2 years is "reducing IT costs"—this makes it difficult to invest in new cloud-native initiatives
- 65% agreed that organizations face a significant cultural challenge in their move to cloud native.



The findings confirm the growing importance of cloud native in this industry, with the percentage of new business applications that are cloud native forecast to double by the year 2020."

Why read this report

In this paper, learn how companies can overcome these and other barriers to effectively embrace and make the most of a cloud-native approach. They must:

- Consider the **motivations driving cloud-native adoption** among all organizational stakeholders
- **Overcome their budget constraints** with a focused cost-redirection strategy
- **Select a platform or technology** option that supports these business goals
- **Transform DevOps** in line with new cloud-native capabilities and development approaches.
- **Evaluate** their existing applications portfolio to decide:
 - Which should be lifted and shifted to the cloud
 - Which should be rewritten for cloud
 - Which should be retired
 - Other options for rationalizing your applications portfolio

The benefits of being a cloud-native leader:



Why should companies in consumer-driven industries care about cloud native?

The retail and wider consumer-focused industry is heavily brand- and customer experience-driven and innovation is a constant. In today's digital world, all companies must develop future-proof strategies that create sustainable competitive advantage. Adopting a cloud-native development model is the key to thriving in this dynamic business climate.

Traditional business applications were developed and deployed as monolithic entities, run either in an on-premises data center or "lifted and shifted" into a cloud environment. They may run in the cloud, but they can't take advantage of cloud's supreme elasticity and scalability.

Comparatively, cloud-native apps are built from the ground up, with Platform-as-a-Services (PaaS) tools for a cloud world using a modular architecture composed of many microservices, each of which is fast to develop, deploy, and modify. Essentially, they are applications developed to perform best in today's rapidly changing consumer market.

Cloud-native apps allow companies in the retail and consumer-focused industries to rapidly innovate and scale new products, achieving levels of business velocity and flexibility that are unattainable with monolithic systems.

As an example, one Fortune 200 consumer products company in North America was able to take their digital marketing initiatives to the next level with cloud-native applications. They are now able to design and deliver a personalized user experience across brands, channels, and retail partners, including mobile coupons delivered directly into customers' devices. The velocity with which they are now able to personalize their digital engagement programs has significantly improved their reach and enhanced their brand equity in the market.

Read on to find out what our global survey of retail and consumer-focused companies reveals about the factors shaping cloud-native adoption in this industry and how companies can ensure that their move to cloud native delivers the desired business results.

“*Cloud-native apps allow companies in the retail and consumer-focused industries to rapidly innovate and scale new products.*”

Cloud Choice Podcast series: Reasons to consider a cloud-native strategy.

Discover reasons why businesses are considering cloud native more than ever before in this podcast.

Listen Now 



Cloud native comes of age in consumer-driven industries

The survey results show that cloud native is gaining noticeable traction in the retail and consumer-focused industries, with 36% of executives saying that the approach is already a “core part” of their overall cloud strategy. Respondents believe that 41% of total cloud spend in this industry will be on PaaS by 2020 and that 32% of all new apps will be cloud native by the same year.

When it comes to applications that companies in this industry prioritize for cloud native, “big data and analytics” lead the charge at 39%, with “customer-facing websites” and “customer-facing mobile applications” following at a tied 18%.

Those priorities align with some of the biggest trends currently reshaping this industry. Today, the most successful companies in this industry use customer data to guide their operations, make better-informed business decisions, and create a highly satisfying customer experience. In many cases, cloud native has made that possible—explaining why other companies are eager to follow suit.

When it comes to skills, companies in this sector have clearly been honing their cloud-native development and deployment capabilities. Almost

three-quarters (73%) of respondents say that it now takes them less than 14 days to develop and deploy new web applications—only slightly fewer than in the banking sector, which leads the table at 74%.

That speed—paired with the insight granted by cloud-native business intelligence and analytics capabilities—has given rise to a new, super-flexible breed of consumer-focused companies. These leaders can identify customer needs early using customer data and respond almost instantly with high-velocity cloud-native application development.

It’s clear that the customer is king in all of this—and with good reason. When Capgemini carried out a survey into digital customer experience, one in five consumers¹ taking part said they stopped purchasing from a company after a poor experience.

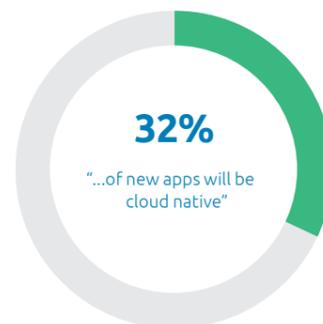
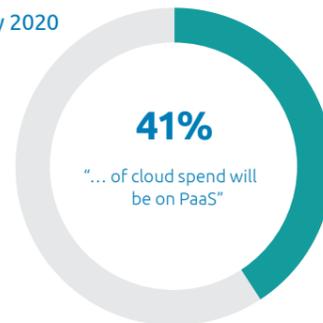
Finally, for cloud native to truly make a tangible difference, it must be embraced throughout the organization. The survey suggests that a new breed of cloud-native CIO is emerging to lead the charge.

Strong interest in the cloud-native approach



By 2020

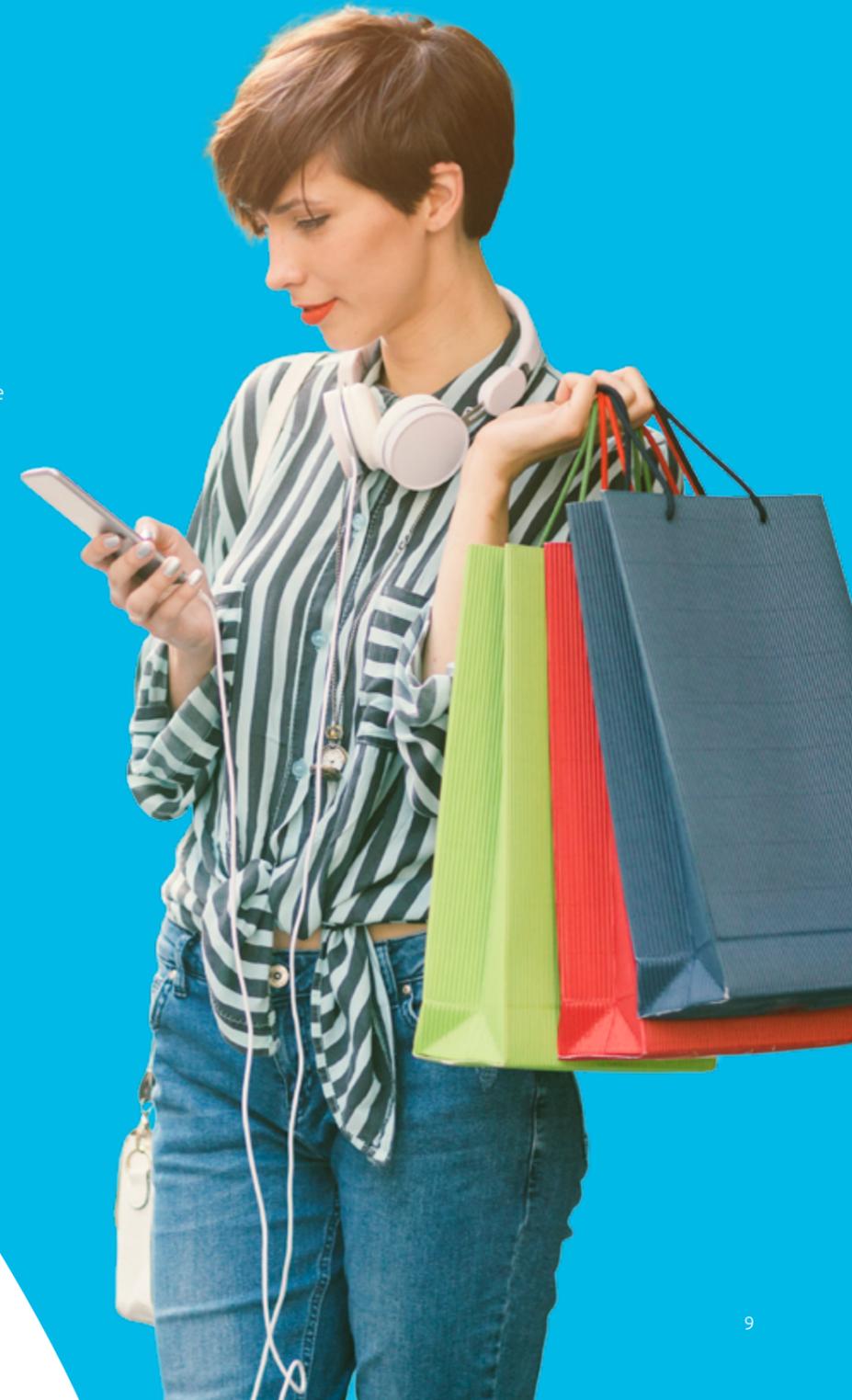
By 2020



Adapt or die

Store closures and corporate bankruptcies provide ample evidence that those companies unable or unwilling to adapt may not survive the digital revolution. As customers lean increasingly toward increased use of mobile and digital, they clearly expect their suppliers (whether a retailer or direct-to-consumer supplier embracing a new go-to-market model) to be equally digitally adept.

These are disruptive times. As an example, Capgemini’s global survey of 6,000 consumers and 500 retail executives² found that 71% of consumers would, in the future, be willing to bypass traditional retailers to buy directly from manufacturers or large internet players such as Google (Google Express), Apple, or Facebook if these players partnered with local retailers that handled the last-mile delivery.



1 Rethinking the digital user experience as a collaborative exchange

2 Making the Digital Connection: Why Physical Retail Stores Need a Reboot.

Three typical use cases driving cloud-native adoption in consumer-driven industries

Companies have different motivations for planning their move to cloud native. The three most common use cases that drive cloud-native adoption in the retail and consumer-focused industries are:

1) Transform the business for greater agility and flexibility

As companies in this industry drive flexibility and agility to help enhance customer experience and accelerate product releases, they need the right technology strategy to enable this transformation.

Traditional monolithic applications can severely limit agility as applying even simple updates can take weeks. In this industry defined by its rapid pace of change, cloud native offers a microservices architecture that allows companies to rapidly adapt and develop new business models in the most efficient way possible.

2) Optimize operational efficiency

Digitalizing operations to improve efficiency and gain actionable real-time insights requires a well-oiled infrastructure and set of processes in the background. Cloud native offers significant opportunities for improving operations—especially the processes that tie application development to IT operations (DevOps). Companies are able to improve DevOps efficiency, achieve continuous delivery with CI/CD, and optimize their operations.

A cloud-native approach enables DevOps teams to overcome numerous issues that affect development process efficiency and speed as well as output, including:

- Inconsistencies in environment configurations when going between dev, test, and release stages
- Drops in quality due to significant increases in the size and scale of releases each year
- Long time to market caused by unexpected integration collisions and unresolved dependencies.

3) Adopt an API (Application Programmer Interface) ecosystem

Companies that want to deliver innovative new hyper-connected services for customers and build a platform for future growth want to break their monolithic integration flows into microservices that enable them to achieve greater business velocity. This has led to an increased adoption of APIs for building agile integrations and opening up new channels for growth.

Cloud-native development and microservices architecture helps achieve this by moving towards an API ecosystem. This allows them to develop a services architecture where they can manage connections with partners, customers, and different parts of their own business through APIs to deliver innovative services and new business models.

Secure budgets with a transformation-focused business case for cloud native

While IT budgets are shrinking and there is pressure to cut costs, companies in the retail and consumer-focused industry find it difficult to invest in new cloud-native programs. To overcome this cost barrier, companies should find ways to redirect costs from operations to new innovations and metrics-based business goals.

Many companies in this industry have an IT estate that is heavily dependent on outdated technology and therefore provides an ideal scenario to transform their IT landscape to become future-ready. The most common areas where companies in this industry can free up their budgets include:

- Reducing dependency on costly data centers—or getting rid of them altogether—cutting costs by as much as 40%
- Modernizing of essential on-premises workloads such as mainframes to more agile and cost-effective cloud-based environments
- Rationalizing their applications portfolio and freeing-up critical resources for innovation.

These will also ensure that more IT budget is invested in achieving strategic business goals, through innovations enabled by cloud native, rather than increasing technical debt (keeping outdated technologies operational).



Companies should find ways to redirect costs from operations to new innovations and metrics-based business goals."

A global agriculture chemical company frees up critical resources and gets more from SAP by moving workloads to the cloud

The company, by their own admission, simply couldn't operate their business without SAP. Getting the most from SAP while keeping costs low is a core part of their mission and the cloud offered a compelling case to help them do both.

With Capgemini's help, the company successfully navigated one of the biggest and most complex SAP migration processes ever carried out, ultimately achieving:

- Improved SAP performance
- 20% year-over-year cost savings
- The ability to spin-up compute for new capabilities in minutes or hours, instead of weeks or months.



Finding the right way forward to start your cloud-native journey

Before you can embark on your cloud-native journey, a major question remains—what’s the best way to move away from the monolithic and antiquated apps and deployments to which companies have grown accustomed, and adopt an agile, efficient cloud-native approach?

A critical activity is to evaluate the existing IT landscape and future requirements for new applications that support your growth ambitions. By analyzing the current application portfolio aimed at growth, companies can determine:

- Which existing applications could be lifted and shifted to the cloud to reduce costs and increase agility
- Which are no longer fit for purpose and should be retired
- Which could be rewritten or re-architected for a cloud environment and take advantage of cloud elasticity, accelerated innovation, and rapid updates.

Your first option is to **enable new application development** using microservices, containers (e.g. Docker, Kubernetes, etc.), and platforms such as Pivotal Cloud Foundry. The microservices approach provides several unique features, including: re-use, rapid updates, elasticity, and scalability. This is especially relevant for applications with:

- A high (or potentially high) number of users
- Dynamic usage (many spikes and valleys)
- External user groups (customers, suppliers, partners, employees, etc.).

The **lift-and-shift** option requires migrating existing application platforms to the cloud with little or no code modification. This is the fastest and simplest option and can commonly be used for:

- Applications where the business case does not support re-writing them for the cloud
- COTS (common-off-the-shelf) applications including ERP, Human Resource Management, and other enterprise workloads.

Re-architecting applications enables you to take advantage of cloud features by decomposing monolithic applications into easily consumable domain-specific business transactions such as microservices. You’d typically want to consider this for the same type of applications listed earlier for new application development—apps with a high number of users, dynamic, and external usage.

Replacing on the other hand enables you to replace core applications with Software as a Service. This offers greater scalability for core app features, and is a good choice when dealing with:

- Applications that are maintenance-intensive
- Applications that require specialized skills to develop and maintain
- Applications that use tools/frameworks with high licensing costs.

Finally, some applications (such as Mainframe or AS/400) may need to be completely transformed by **rewriting** them for a modern language and framework. This offers the greatest cost and agility benefits in the long term, but requires more upfront work and should be considered for:

- Applications with tightly coupled functionalities
- Applications that have a complex domain model which needs to be normalized
- Applications that drive business value
- Applications that are built as a monolith.

Of course, not everything has to be moved to cloud native. The applications that require frequent updates and can benefit most from extreme elasticity are ideal for a move to cloud native. Many companies in this industry have heavily invested in their ERP applications such as SAP, for example. These don’t need to move to cloud native right away, but a cloud-based deployment can help smooth the transition to a future, cloud-native applications suite.



A critical activity is to evaluate the existing IT landscape and future requirements for new applications that support your growth ambitions.”

The move to cloud native: Weighing up the technology options

The right technology path for your enterprise will depend on the overall direction of your business and its cloud strategy, which vendors you have already chosen, and whether you prefer an off-the-shelf platform that is ready to deploy, or full control of your own platform built in-house.

Option 1: Off-the-shelf Platform-as-a-Service (PaaS)

Proven PaaS solutions such as Pivotal Cloud Foundry and IBM Bluemix make it easier for you to develop, deploy, and manage apps. They remove undifferentiated workloads and make pre-developed functionality, connections, and frameworks available for your own deployments so that your developers can focus on building business services.

These can incur significant upfront costs that need to be balanced against the return on investment from your applications in the longer term. Vendor lock-in is a concern for many companies, but workloads will usually be portable to different underlying cloud providers.

Recommended for companies with significant cloud budgets that favor simplicity and speed.

Option 2: Public Platform-as-a-Service (PaaS)

Leading public cloud providers such as AWS and Microsoft also offer PaaS-like capabilities that enable developers to create applications easily on their platforms. If you are already working with one of these platforms, extending your existing investments to PaaS may offer advantages. Companies in this industry looking to build their machine learning capabilities should also evaluate what these vendors are able to offer on their platforms to enable these capabilities.

This option will most often imply a major long-term commitment to that specific public cloud provider.

Recommended for companies that have a clear strategy to concentrate investments in one market-leading public cloud vendor.

Option 3: Custom Platform-as-a-Service (PaaS)

Another option is to create your own custom PaaS platform or work with a partner to tailor one for you, typically leveraging containers and container orchestration (e.g. Docker, Kubernetes). This can be tailored to the specifications of your business, people, DevOps processes, and innovation goals, while minimizing vendor lock-in.

This approach can lead to complexity and a greater management workload and demands a strong skills base. Significant initial investment in time and resources will be needed to reach the functionality offered by a pre-built PaaS.

Recommended for companies with clearly defined and unique cloud ambitions and significant in-house expertise.

Whatever the technology choice, in order to realize the desired results from a move to a cloud-native approach, companies need a strong cloud foundation. This includes a robust strategy to manage a hybrid cloud environment and a culture that supports the microservices and DevOps approach.



The move to cloud native: Effecting culture change

As those who have already made the move know, the shift to cloud native is more than just a technical transition; it's a complete culture change. And people, by nature, resist change if the value isn't immediately clear or the transition isn't seamless. Almost two-thirds (65%) of respondents to our survey agreed that organizations face a significant cultural challenge from the move to cloud native.

Successful cloud-native strategies are underpinned by a culture of flexibility and innovation. To create that, you must have everyone on board.

To fully unlock the power of cloud native, CIOs and other senior business leaders need to ensure everyone is on the same team—one that's not only ready for change, but willing to embrace it.

A cultural challenge



Podcast: The importance of culture in cloud native

Listen Now  

“*[The challenge] is going to be around the people and the culture, to change that mindset of the application development community and how they develop applications today. Changing and influencing culture is no simple task. It starts with developers, ensuring that the processes and tools surrounding development truly enable them to get the most from a cloud-native approach. But it must extend right down to the people using what the developers are creating.”*

The Vice President of Technical Operations and Services at a large restaurant chain.



The move to cloud native: Building the team of the future

Getting everybody to adopt a cloud-native culture is only half the challenge. Developing cloud-native applications requires a team with strong knowledge of PaaS and cloud-native solutions. The lack of relevant skills is seen by 70% of survey respondents as a “significant” or “very significant” challenge.

DevOps is operational optimization, so it represents significant changes for development, test, and operational teams, and the skills they need to succeed. To start, teams need to be organized around products instead of functions, so that dev, test, and ops teams can all support one another, work more effectively in tandem, and become self-sustaining.

Cloud-native application development goes one step further, enabling fast, flexible DevOps by connecting everyone in the cloud and enabling easy collaboration, simpler automated testing and deployment to provide the ideal platform for experimentation and innovation.

In the cloud-native world, developers need lots of skills that aren't traditionally related to development.

Rather than purely doing development tasks, as they would when operating in a functional silo, they also need operations skills to help make cross-functional teams self-sustaining.

Agile, cloud-based development, underpinned by a DevOps strategy, can be a huge change for current development teams, and the skills required are very different to traditional development. The industry-recommended 12-factor³ cloud-development capabilities are still rare for many companies and represent a significant step forward for clients at the beginning of their cloud-native journey.

A team with cloud-native skills will naturally think cloud native—and to do that, it needs to be:

- Empowered with the tools and platforms to develop cloud-native applications and services
- Freed from legacy culture and process burdens, so they can develop at speed
- Aligned to a common goal, with a shared understanding of how cloud native can help them achieve it.

A team-building challenge



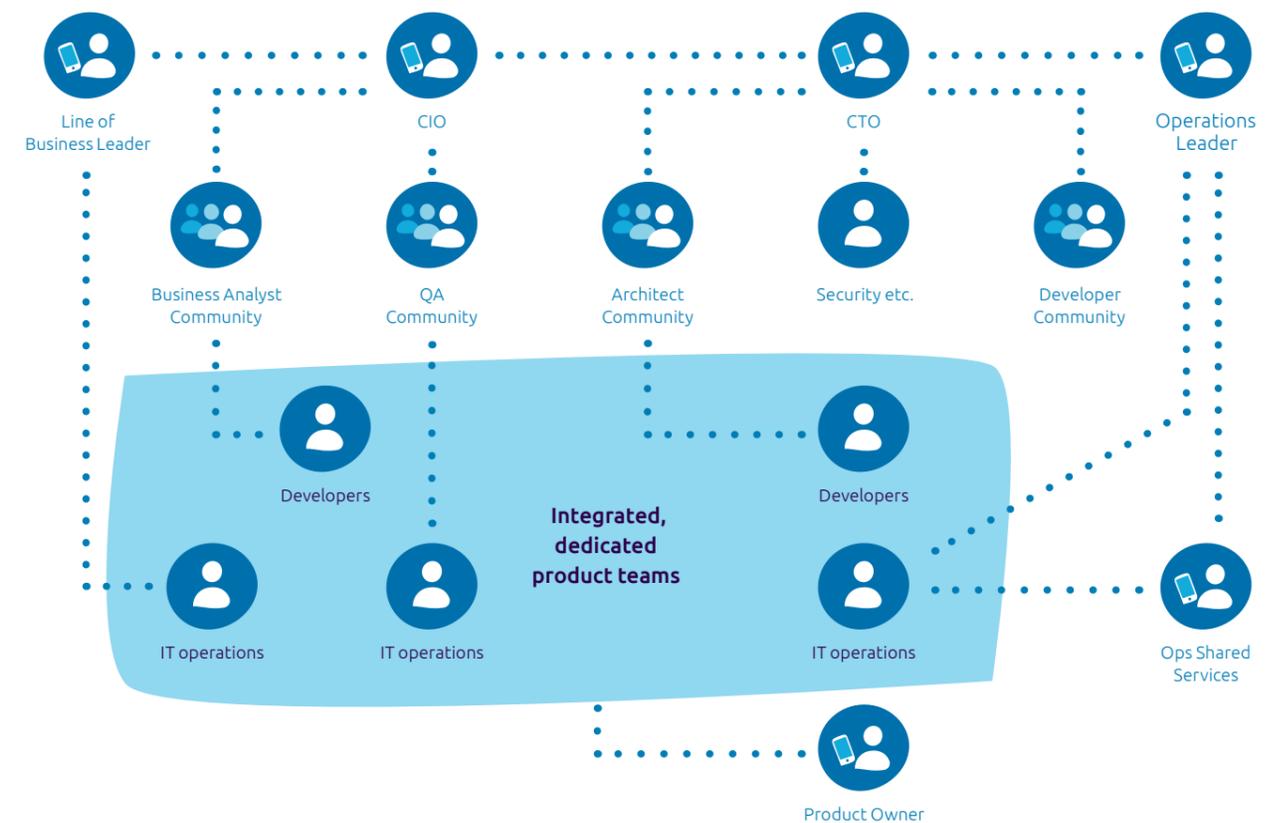
Podcast: How to build the right cloud-native team

Listen Now

³ <https://12factor.net/>

Aligning operations around product teams

The diagram below shows what operations look like when they're built around dedicated product teams instead of siloed functional IT teams. Each product team has all the skills it needs, from all the discrete IT functions required to serve those products effectively. These teams facilitate more efficient operations and communication across the company, ensuring everyone involved with a product fully understands the needs and requirements of those working alongside them. This is the backbone of efficient DevOps and ultimately ensures the timely delivery of the very best outcomes possible, every time.



Getting there won't be simple,

and in practice, will require an evolutionary approach—acquiring and nurturing new capabilities slowly. Many companies setting off on their cloud-native journeys are defining their own standards customized to their ambitions, opting to strive only for the factors that really impact them and help them achieve their goals.

CIOs acquiring and developing these skills within their companies need to look at the big picture. This isn't a short-term project that requires temporary support—it's a long-term investment in building the team of the future. Although the ambition will be to build a team that can develop

cloud-native apps based on the 12-factor application guidelines, it might not always be practical to consider this as a starting point.

The three “Es”: making cloud native a reality

For cloud native to be successful, it needs to be supported and adopted far beyond the boardroom. To do that effectively, organizations must approach cloud native as an iterative and evolutionary process. Only by tackling the change iteratively can it be executed successfully.

Rather than rolling cloud native out like another approach to development, everyone needs to learn to think cloud native before making any technical leaps. Beyond the physical and technical changes required to execute a cloud-native strategy, people must learn to:

- Fail fast and accept failure as an essential method of identifying issues early
- Think in terms of specific working patterns such as replatforming and refactoring to make the best decisions based on application, time, and cost demands
- Share knowledge and communicate continuously.

Each business unit will execute cloud native in its own way, but the key to everyone's success will be breaking the process down and approaching it iteratively—tackling the technical, cultural, and structural challenges separately and over time.

To ensure a successful adoption of cloud native across the organization, CIOs should follow the three “Es”:

Educate:

Teach everyone to work in cloud-native ways, show them that it's ok to fail fast, and train them for the technological changes as well as the operational ones that will impact who they work with and how they work with them.

Enable:

Provide software frameworks and sample code to developers to help them become accustomed to cloud-native development faster and give your people the means to communicate, collaborate, and work effectively as they adapt to agile, cloud native, and DevOps.

Enforce:

All of your teams need to be supported by clearly defined digital standards that keep them aligned. Standards and governance ensure that while self-sustaining teams work freely in the ways that best suit them, everything is kept aligned across the organization, and efforts are not duplicated when building similar microservices.



For cloud native to be successful, it needs to be supported and adopted far beyond the boardroom.”



What cloud-native success looks like

An organization with a successful cloud-native strategy can expect to enjoy increased agility, flexibility, and scalability.

According to our research cloud-native leaders state their new approach has:

- Improved organizational velocity (88% agree)
- Enabled better customer experiences (87% agree)
- Boosted workforce mobility (81% agree)
- Reduced development and operating costs (84% agree)
- Enhanced innovation delivery (81% agree).

It's clear from our research that there are tangible business gains from the adoption of cloud native. In fact, 83% of leaders feel confident they are now ahead of their peers financially thanks to their move to cloud native.

For retailers and consumer-focused companies, the end result of successful cloud-native adoption is:

- A faster, more agile, and more flexible business that is capable of changing and rolling out new applications and services to meet new demands at speed
- An infrastructure built to support the flexible experiences demanded by today's digital customers

- A platform for continuous operational improvement and innovation
- A more cost-effective base for all enterprise technology
- A faster, more collaborative, and more empowered IT team with all the tools they need to innovate effectively.

Measuring success for cloud-native leaders

88% ... improved organizational velocity

87% ... enabled better customer experiences

81% ... boosted workforce mobility

84% ... reduced development and operating costs

81% ... enhanced innovation delivery

“Cloud native has changed the nature of our relationship with the business. We're now involved in every conversation from idea forward. When the business is thinking about an opportunity, we are there at the beginning. Rapid delivery changes the relationship.”

The Senior Manager of Information Services at a Fortune 200 consumer products company

Recommendations

How should companies in retail and the wider consumer-focused industry design their cloud-native journey to derive maximum impact on their business performance? While our research report “Cloud native comes of age” provides wide-ranging recommendations on this topic, the following recommendations highlight industry-specific applications for cloud native to meet the unique challenges and priorities of the retail and consumer-focused industries.

Focus on differentiated sales and marketing apps to deliver winning customer experiences

The supreme agility and flexibility of cloud-native apps are critical to the continuous innovation that helps companies differentiate their customer experiences. Companies should focus their cloud-native adoption plans around such applications as ecommerce, customer-facing websites or mobile apps, digital loyalty programs, digital marketing campaigns, in-store digitization, etc. This is where cloud-native applications help companies in this sector build sustained competitive advantage in today's fast-paced market.



Build insights from in-store and digital customer data for personalized digital engagement

The extreme elasticity and scalability of cloud native make it ideal to run big data and analytics applications to manage the growing variety, velocity, and volume of data generated today. This will enable companies to quickly convert this data into meaningful insights that fuel personalized digital engagement programs.

Create more efficient operations and accelerate digital transformation initiatives

We strongly recommend cloud native both for key digital priorities within the organization and as a way to improve operational efficiencies. This also enables cash-starved companies to shift more capital from operations to innovation. The key areas to evaluate for companies in this industry include Digital Supply Chain, Smart Factory, Smart Warehouse, Digital Fulfillment, Digital Workforce Management, and Financial Planning & Forecasting.



Ensure alignment of stakeholders

An agile and DevOps approach as part of a cloud-native strategy can help all stakeholders—from developers, to architects, to the CIO—stay aligned to one mission and work continuously to achieve it. It is a combined top-down and bottom-up approach that is required to get everyone on board this transformation journey. With continuous development and innovation driven by a unified team, your business can get ahead of the competition—whatever market you're in.



Get the full research report

See how the companies in the retail and consumer-focused industry compare to other industries in the race to go cloud native—and get a closer look at what a cloud-native strategy could help you achieve. Download the full research report:

*Cloud native comes of age:
What businesses need
to know.*

Download



About Capgemini

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