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# Industry cloud: **The next step toward digital transformation**

**As cloud adoption grows,** enterprises can now adopt custom solutions tailored to their specific industry. **The result is a more rapid progression toward digital transformation and business success.**

CIO

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**Digital transformation is becoming ever more nuanced as technology leaders seek solutions that can help them seamlessly achieve ambitious business goals.**

IT teams aiming to deliver business value and competitive advantage from their cloud investments are increasingly demanding IT capabilities optimized for their sector. The era of *industry cloud* is here.

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Most every organization must deal with competing demands around cost, innovation, security, and complexity. However, different industries have distinct and complex cloud requirements, whether delivering industrial AI in manufacturing, bespoke online solutions for retailers, or creating exceptional patient experiences in healthcare.

Industry cloud solutions aim to answer these needs, enabling different industrial sectors to make use of cloud offerings to fit their specific requirements. These value-driven offerings allow companies to preserve existing investments in core applications and compose a custom solution by adding components they don't already have. Additional components may be platform, data, or infrastructure services to optimize IT and enable faster time to market for priority initiatives.

But as is so often the case in IT, companies must understand what various providers mean by "industry cloud," what to look for in a provider, and how to make an informed choice.

This white paper will provide guidance on the sorts of solutions that fall under the industry cloud umbrella and demonstrate why NTT DATA has the maturity and industry connections to provide a best-in-class solution that helps IT deliver transformational change.

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# 48%

already use **industry cloud solutions**, according to the Foundry Cloud Computing Study.

## The race to the cloud

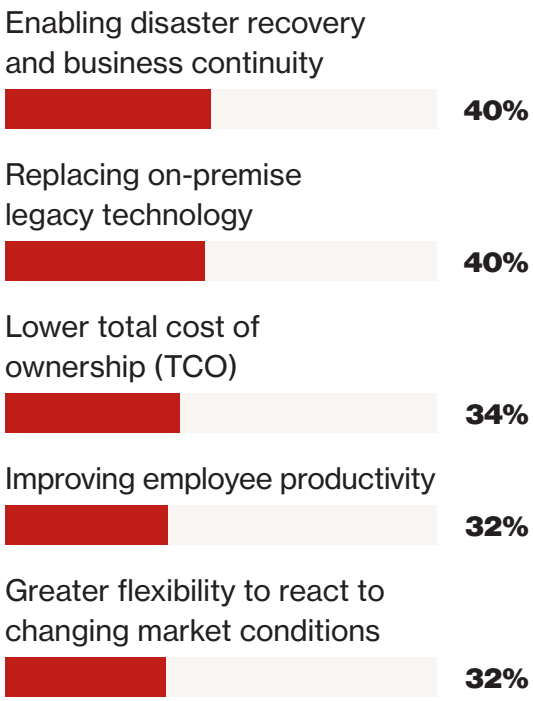
The industry cloud is a natural evolution of the cloud migration that is well underway.

The 2023 Foundry Cloud Computing study found more than half of IT environments (52%) are already in the cloud and nearly two-thirds (63%) will be within 18 months.[1]

The reasons are familiar: disaster recovery and business continuity, replacing on-premises technology, lowering total cost of ownership, and improving employee productivity.

However, about one-third of respondents cite another cloud driver: greater flexibility to react to changing market conditions. That requires a more industry-specific approach, which is precisely where enterprises are headed.

**Figure 1** | **What's behind cloud investment**




SOURCE: FOUNDRY CLOUD COMPUTING STUDY, 2023

The industry cloud approach is clearly taking root. Nearly half of respondents (48%) to the Foundry survey already use industry cloud solutions, an additional 22% plan to, and another 18% are interested. And the interest

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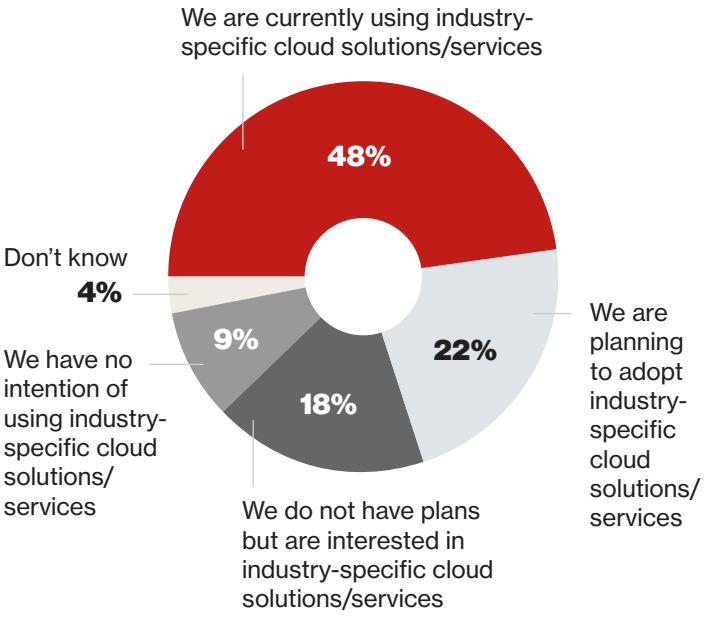
spans verticals, with more than half of respondents from financial services, education, healthcare, services, and retail industries all saying they're currently using industry cloud solutions; high-tech (49%) and manufacturing (38%) are not far behind.[2]

This interest is beyond the nascent stage. In a survey of more than 2,100 companies, IDC found nearly three-quarters (74%) are dedicating at least 11% of their IT budget for industry-specific solutions including industry cloud offerings. Nearly a third (31.4%) are spending between 25% and 49% of their IT budgets on such solutions.[3]

**Figure 2** | **Use of industry-specific cloud solutions**




SOURCE: FOUNDRY CLOUD COMPUTING STUDY, 2023

## Defining industry cloud

Industry cloud combines composable functional, platform, and infrastructure capabilities into comprehensive services. Such services may include a platform-as-a-service (PaaS) or infrastructure-as-a-service (IaaS) base, networking, and edge computing infrastructure to support industry-specific applications.

Pre-built APIs foster fast, straightforward integrations to various services, workflows, analytics tools, rules, databases, DevSecOps platforms, and third-party services. These applications, tools, and services collectively help companies meet industry-specific security demands and regulatory requirements.

Integration with third-party services and industry-specific devices, such as internet of things components, enables secure data sharing that conforms to industry norms.

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With so many components pre-integrated, the industry cloud can dramatically reduce the time required to implement digital transformation projects and realize actual business value in your specific vertical.

What's more, industry cloud solutions generally do not require a wholesale upgrade of IT infrastructure and applications.

"With their promises of a complete and integrated solution for your industry-specific needs, industry clouds *seem* to represent a massive new system that requires a drastic overhaul of how you currently do your work," writes Nadia Ballard, research manager in IDC's SaaS and Cloud Research group. "But in fact, industry clouds are built with flexibility and modularity in mind that enables organizations to adopt as many or as few modules as they need at a time."[4]

In short, industry cloud offerings can deliver significant value, enabling IT organizations to realize benefits including:

- **Optimizing their return on cloud investments**
- **Standardization of IT infrastructure and applications**
- **Sustainability through reuse of industry-specific services**
- **Enhanced efficiency and productivity**
- **Increased competitive advantage and future-proofing**

## How industry cloud eases your pain

Examining the various pain points different verticals face underlines the case for an industry cloud approach.

### Healthcare

Healthcare organizations face demanding security requirements centered around maintaining privacy for sensitive patient data, including complying with regulations such as the Health Insurance Portability and Accountability Act. They also need to support compute-intensive applications, including CT scans and MRIs. It's a combination that screams for a series of edge data centers.

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Interoperability is another issue, whether with other service providers to promote health information exchange or with insurance providers. Shortcomings can lead to inefficiencies and errors.

There are wide use cases for generative AI to optimize and enhance the patient experience. Healthcare organizations can create realistic simulations of various health scenarios, from diseases to complex medical procedures. Unlike traditional training methods, genAI simulations are dynamic and interactive. Industry Cloud genAI models can swiftly analyze and generate specific insights regarding patient cases and adapt in real-time, based on the information presented by the models.

Other industry cloud use cases include:

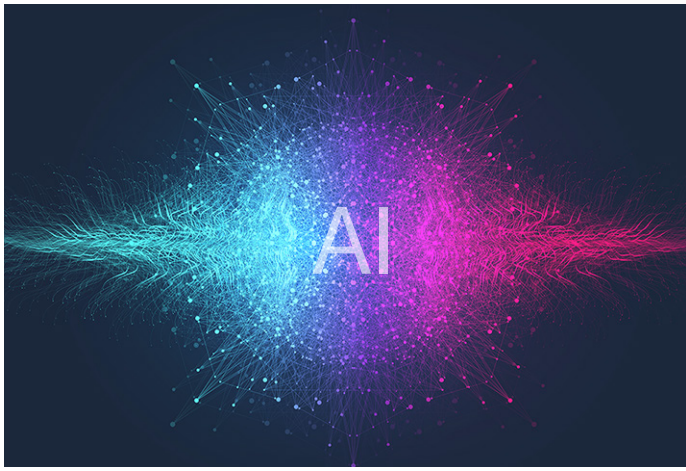
- **Electronic health records (EHR)**
- **Clinical experience**
- **GenAI-assisted diagnosis**
- **Drug discovery**
- **Clinical operations**

**Financial services**

Security, regulatory compliance, data management, analytics, and resiliency are among the biggest challenges for financial services organizations.

Customers are becoming more demanding and accustomed to seamless digital transactions, including mobile payments and digital wallets. Therefore, financial institutions need to provide solutions that enhance the customer experience yet maintain tight security and compliance.

Artificial intelligence is showing promise in helping financial services firms address many of these challenges, including security, fraud detection, and customer service. But in these early days of AI, expertise is difficult to come by.



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Other industry cloud use cases include:

- **Composable banking**
- **Lending card**
- **Issuing and payments**
- **AI powers dynamic pricing and promotions strategy**

Financial institutions are increasingly using genAI to improve customer interactions through chatbots, detect fraud faster, and streamline operational tasks. Industry Cloud genAI technology is expected to significantly enhance the efficiency and effectiveness of financial institutions' operations.

### Retail

Retail organizations must contend with an ever-evolving array of e-commerce developments, including buy now pay later, product personalization, product recommendation systems, chatbots, and virtual assistants.

Security and privacy demands are stringent, considering they must cover thousands of dispersed point-of-sale systems and regulatory requirements, including the General Data Protection Regulation. Retailers must likewise optimize connections with numerous supply chain players.

As with financial services, AI is showing promise in addressing emerging trends, such as dynamic pricing and inventory management. It will also enable businesses to respond quickly to market changes and maximize revenue — at least for those organizations prepared to capitalize.

GenAI is also designed to create original content including product designs, visuals, and personalized marketing campaigns. It helps brands develop tailored experiences, unique products, and forecast consumer preferences accurately. Retailers can use Industry Cloud genAI to foster innovation and provide customers with a more personalized shopping experience.

Other industry cloud use cases include:

- **Online ordering**
- **Procurement planning**
- **Loyalty management**
- **Headless commerce**

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**Manufacturing**

Challenges abound in manufacturing as Industry 4.0 sparks a new surge of digital transformation. Intelligent factories with advanced edge connectivity and compute capabilities promise to help companies more efficiently collect data and apply AI as well as machine learning capabilities.

This gives rise to predictive maintenance to help identify patterns, predict failures, and optimize maintenance plans. Improved monitoring and faster data analysis combine to deliver timely insights to improve workforce safety. Companies can also gain newfound visibility into indoor and outdoor assets, including automated location and performance tracking.

At the same time, manufacturers must be cognizant of consumer demands around sustainability to ensure continued customer loyalty and positive brand reputation.

While they embrace the new, manufacturers must also preserve investments in legacy systems where applicable, making integration a key component of modernization efforts.

GenAI in manufacturing streamlines operations, from product design to predictive maintenance and supply chain optimization, enabling strategic decision-making. Industry Cloud offers a wide range of solutions, including reducing time to market, driving innovation, and improving efficiency to meet evolving customer needs.

Other industry cloud use cases include:

- **Connected internet of things**
- **Digital workforce management**
- **Track & trace logistics**
- **Productivity management**
- **Quality control**
- **Predictive maintenance**

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## Turning challenges into advantages

For each of these challenges, the industry cloud offers solutions that address the pain points.

Consider supply chain logistics. In any industry, a supply chain logistics solution requires standardization and numerous integrations, regardless of whether the solution is in the cloud or not.

For example, a manufacturing company must integrate various machines, sensors, and devices on the factory floor to get real-time production data. It also needs to tie in an army of third-party suppliers and service providers.

Traditionally, such an integration effort meant standardizing on a data collection and networking format to tie in all the factory floor components. To connect with third-party providers, the manufacturer would establish connections individually with each one.

While the company would use standardized communications and data collection protocols whenever possible, a few outliers would inevitably require proprietary means.

Industry cloud makes the same logistics solution far more manageable. The cloud provider will have established connections with all the major players in the industry supply chain, leaving the manufacturer with only one required connection: to the cloud provider.

Similarly, an industry cloud provider will have solutions and partners ready for integration and data collection on the factory floor, including any additional required sensors or devices. Importantly, the provider should be able to work with any existing data collection solution already in place.

### Solutions for restaurants and retail

Online shopping and delivery illustrate another example of the power of the industry cloud, one that came to the fore during the COVID-19 pandemic. As soon as the pandemic hit, virtually all retailers and restaurants wanted to establish an online delivery service.

To serve all its customers, a global restaurant chain would need to

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integrate with delivery providers customers were already using, some household names, others lesser known. Globally, that means some 20+ delivery providers. Connecting to each provider takes significant effort, including establishing a reliable connection from each location, agreeing on a data exchange format, and so on. As with the logistics example, inevitably, some number of providers will use non-standard APIs or protocols, adding to the complexity.

An industry cloud provider can take on that integration effort on the company's behalf, leaving each restaurant to merely establish a connection to the cloud provider.

The same scenario plays out for retail store chains and other industries, such as healthcare and logistics, that must deal with numerous third-party providers. Rather than reinventing the wheel on its own, each company can partner with an industry cloud provider with deep expertise and relationships in their specific vertical industry.

> Industry cloud providers should be able to **develop both custom offerings** and to **integrate with commercial off-the-shelf products**.

## What to look for in an industry cloud provider

To get the most out of an industry cloud, you need to partner with a provider that offers both a comprehensive set of services and the flexibility to let you choose only what you need.

In terms of services, it starts with support for a full stack of cloud services, including as-a-service offerings for software, platform, and infrastructure. These should include data center platforms as well as cloud-to-edge and network layers. A range of local and wide-area network services is also helpful, including 5G. The provider should have extensive experience in running and managing cloud platforms with efficiency and compliance to service level agreements. They must also offer flexibility and composability around existing investments.

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All services should be highly scalable to support rapidly growing organizations and large enterprises. Look for a provider with proven experience building and supporting platforms for clients across the globe. Proven experience means supporting thousands of clients, demonstrating a track record of quality and production that can accelerate speed-to-market capability while reducing development and deployment costs.

Industry cloud providers should be able to develop both custom offerings and to integrate with commercial off-the-shelf products. A full stack managed services approach should be available for those customers who require it.

Similarly, the provider should be armed with an array of solution accelerators or frameworks that address different functions in any given vertical.

Part of the beauty of the industrial cloud approach is the provider comes armed with what are essentially prepackaged solutions that address each of these areas. It's crucial, however, that the solutions integrate with and complement what already exists.

Providers may include not just traditional IT service providers, but large companies in any given vertical industry. Automakers such as Volkswagen, for example, have created their own industry clouds.

"VW's primary goal for the project is to reduce the cost of manufacturing, accelerate time to market, tailor solutions for its unique manufacturing needs, increase safety, and scale the solution to all its factories globally," a spokesperson told CIO.com. A secondary goal is to open up new business areas by selling the solution to others.[5]

It's indeed possible that companies in the auto industry would use services offered by VW or other automakers along with an industry cloud offering from a global systems integrator. The key to that kind of flexibility is that the industry cloud provider supports relevant APIs and standardized integrations that already exist.

To preserve your IT investments, the provider should also be able to work with preexisting applications and infrastructure. Look for a composable offering where you can pick and

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choose the components you need and forego those you don't.

The provider should also ensure the solution is optimized, with the right workloads running on the most appropriate infrastructure, whether cloud-based, on-premises, or on edge devices. Any supporting data frameworks and integrations should likewise be optimized and standardized according to industry norms.

## NTT DATA demonstrates industry cloud leadership

As a global systems integrator with deep experience in various verticals, NTT DATA has the expertise and approach required to ensure your success with industry cloud.

Our strategy and transformation experts focus on the areas of the business that need the most support. That could mean accelerating innovation, strengthening digital engagements with customers, or developing new applications and services to improve operations. NTT works alongside your team to apply industry-specific recommendations and strengthen your ability build, manage, and optimize applications and processes.

NTT DATA's Industry Cloud Solution is based on composable building blocks, third party integrations, a catalog of industry accelerators, and strategic partnerships with all of the top hyperscalers.

Across all industries, NTT DATA combines strategy services along with cloud, IoT and edge, app development, modernization and migration, as well as cloud-native architectures and composable services.

## Don't get left behind

The cloud is maturing. IT organizations understand well how to use it to their benefit and are rapidly adopting cloud services.

In so doing, they're finding generic services are not enough to get them to the next level in digital transformation. Companies need cloud solutions tailored to address their specific industry challenges. They need industry cloud.

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NTT DATA has proven expertise and in-house solutions coupled with industry partnerships to deliver comprehensive offerings in verticals including healthcare, financial services, manufacturing, retail, and more.

"What's most exciting to me about the industry cloud trend is that there will undoubtedly be increased adoption going forward," says Jose Kuzhivelil, vice president of the Cloud Services Division at NTT Ltd. "You don't want to get left behind."





[1] Foundry, "The balancing act of cloud expansion: Cloud Computing Study 2023," October 2023

[2] Ibid.

[3] IDC, IDC Market Presentation, "Industry CloudPath 2023: Executive Summary Report," Document number US49612123, July, 2023.

[4] Ballard, N., IDC Blog, "Maximizing Your Industry Cloud Investments," March 2023.

[5] Rooney, P., CIO.com, "Volkswagen drives the automotive industry cloud forward," June 2023.

Case study

# Industry cloud helps automaker meet the EV challenge

The push toward electric vehicles (EV) qualifies as a significant disruption in the auto manufacturing business. Along with an inherently new type of engine to develop and manufacture, automakers must deal with another technology that takes on outsized importance in the EV era: the auto app.

For one automaker, that meant consolidating three different mobile applications into a unified platform, one that would include the sort of new EV charging functions customers expect. The manufacturer decided to use the project to tackle another issue at the same time: integrating sales, customer relations, and product information into a single platform.

The automaker turned to NTT DATA, who recommended a microservices-based solution taking advantage of an industry cloud platform incorporating Microsoft Azure and .NET, the React JavaScript library, and an open-source distributed event streaming platform.

The microservices approach involves independently deployable, loosely coupled services that address various business capabilities. It facilitates more rapid development as compared to the monolithic architecture the manufacturer previously employed, while enabling the automaker to take advantage of components that already existed and could be reused.

The finished app provides an internal dashboard for customers to monitor and get a summary of EV charging activity. It uses gamification to help drive increased customer engagement and sales, such as for service opportunities.

For the automaker, the new app provides benefits including minimized maintenance costs because it streamlined three apps into one. The microservices architecture, along with new, clean code, improves visibility into the code as well as app performance. Security is also improved as the new app implements the Open Web Application Security Project (OWASP) Application Security Verification Standard, providing a basis for regular penetration testing.

In short, use of industry cloud and NTT DATA is enabling the automaker to jump to a leadership position in in-app EV charging features.

Case study

# Lab develops COVID-ready testing solution in just four weeks

Necessity is the mother of invention, as the saying goes, and the COVID-19 pandemic proved the accuracy of that old saw. One example was a mass testing solution launched early in the pandemic by an EU clinical laboratory in just four weeks using an industry cloud solution.

With demand skyrocketing, the lab team needed a solution that could rise to the unpredictable nature of the situation. Time, of course, was of the essence, which made a public cloud solution a natural choice.

Working with NTT DATA and Amazon Web Services, the clinical lab created an industry cloud solution leveraging multiple clouds, serverless computing, and a microservices-based architecture.

Within a month, the client was able to deliver a new, fully digital system to securely process 20,000 tests per day.

A key element of the platform was the ability to manage data securely, and at scale. At each of the sites, data such as each patients' national health number is captured via a smartphone app, ensuring that each test can be tracked at every step of the process.

In the course of its work the team created a set of innovative testing and analysis processes that served as a set of best practices for mass COVID-19 testing. Indeed, when the second wave of infections hit Europe, the benefits of the strategy became evident. The lab was able to help detect the rise in infections earlier than neighboring cities and react quickly to contain the spread of the virus.