Beyond the hype: C-suite perspectives on breakthrough cloud success

Recognizing the cloud paradigm shift and leveraging it for business growth

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Contents

Summary

Summary

About this Omdia perspective

The cloud, as a technological enabler, is mature. This perspective is to help business and IT leaders think beyond the traditional value of the cloud and recognize its capabilities as a direct contributor to business growth and outcomes. The paradigm shift is where business decision-makers are moving beyond seeing the cloud as a technological solution and see it as driving business growth, agility, and outcomes.

In this perspective, we explore the cloud's evolution and on how decision-makers can take their business aspirations to the next level. Forward-thinking leaders have seen the value of cloud-native approaches, cloud platforms, and industry clouds, among other features, and are leveraging the cloud for business growth and success.

Executives should use this resource to understand the realities of cloud and possibilities it presents. It offers research-backed findings, case studies, and practical ideas to move forward, enabled by powerful and continuously developing cloud capabilities.

Summary

Perspective overview

Moving past the basics: a paradigm shift in cloud thinking

The new cloud paradigm is “business-first”. Forward-thinking enterprises are now using the cloud as a strategic enabler of business outcomes – to drive growth, bring products and services to market faster, improve customer and employee engagement, and innovate without risk. They are investing in areas like AI and business analytics to ensure they can extract business value from the cloud.

Strengthening business foundations with the cloud

Cloud platforms remove technical complexity and reduce technical costs to match business growth, as well as improve technical security and reliability. They allow businesses to scale their operations, create innovative customer experiences, and grow their revenues. In this area, 47% of CIOs regard their most critical challenge as automating IT processes through cloud platforms[1].

The cloud dividend: enabling innovation and growth

Industry clouds are crafted to offer industry-specific support for compliance, regulations, governance, and security. Each industry cloud is purpose-built with industry norms, standards, best practices, and governance criteria in mind. Omdia’s research shows that the five most significant users of industry cloud solutions (in order) are the manufacturing, financial services, healthcare, government, and education sectors[2].

Future directions of the cloud

With the potential to improve decision-making and increase productivity by up to 60%, AI and GenAI have passed a tipping point. Similarly, cloud-native is vital to the future direction of the cloud. Cloud-native is one of the fastest-growing aspects of the cloud as it enables speed of delivery and cost savings, as well as reduces risk to the enterprise.

Extracting business value from the cloud

To derive business benefits from the cloud in this new paradigm, enterprises will need to use cloud features and tools with which they may not be familiar. Therefore, enterprises should partner with experienced cloud service providers to provide them with insights and advice on extracting business value from the cloud. Newer capabilities such as cloud-native, AI and GenAI, cloud platforms, and industry clouds are game changers.

1 IT Operations Survey – 2023 (June 2023)
2 Cloud Services End-User Survey – 2023 (June 2023)

Moving past the basics: a paradigm shift in cloud thinking

Moving past the basics: a paradigm shift in cloud thinking

The current cloud paradigm

The concept of cloud computing has evolved over several decades.

Cloud use has matured and is now stable; nearly 50% of all large enterprise workloads are run in infrastructure, platform or software-as-a-service (IaaS, PaaS, or SaaS) environments[3].

Modern enterprise clouds have advanced to become ecosystems that drive innovation, growth, scalability, security, and built-in intelligence for competitive advantage. Forward-thinking enterprises are now using the cloud as a strategic enabler of business outcomes to drive growth, bring products and services to market faster, improve customer and employee engagement, and innovate without risk.

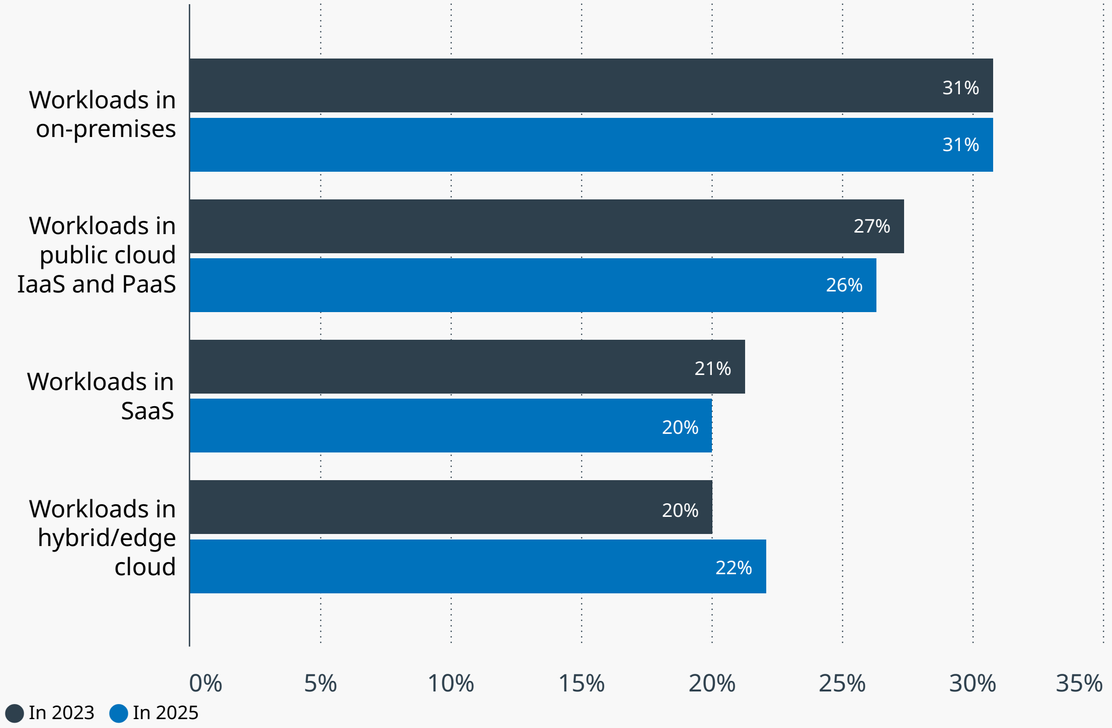
The paradigm shift is from a “cloud-first” to a “business-first” mindset. Business-first leaders are now optimizing and accelerating their business objectives through cloud-native computing (CNC): an approach to designing and building software specifically to take advantage of the cloud computing environment. It’s not just about moving existing applications to the cloud but instead building them from the ground up with the cloud’s characteristics in mind. The primary benefit of CNC is its ability to speed up time to market and enable businesses to achieve results and gain a competitive advantage much faster.

Most organizations now operate different variations of on-premises and public-cloud environments. This strategy enables businesses to utilize the public-cloud’s scalability and agility for suitable workloads while maintaining sensitive data and business-critical applications on-premises for enhanced control and performance. Hybrid cloud deployments showcase a strategic and measured transition in cloud usage, leveraging the advantages of cloud while maintaining control over critical aspects. As Figure 1 indicates, hybrid cloud usage is rising even as other cloud forms decline.

3 Enterprise IT Insights: IoT, Cloud, AI, and 5G – 2024 (October 2023)
4 Cloud Services End-User Survey – 2023 (June 2023)

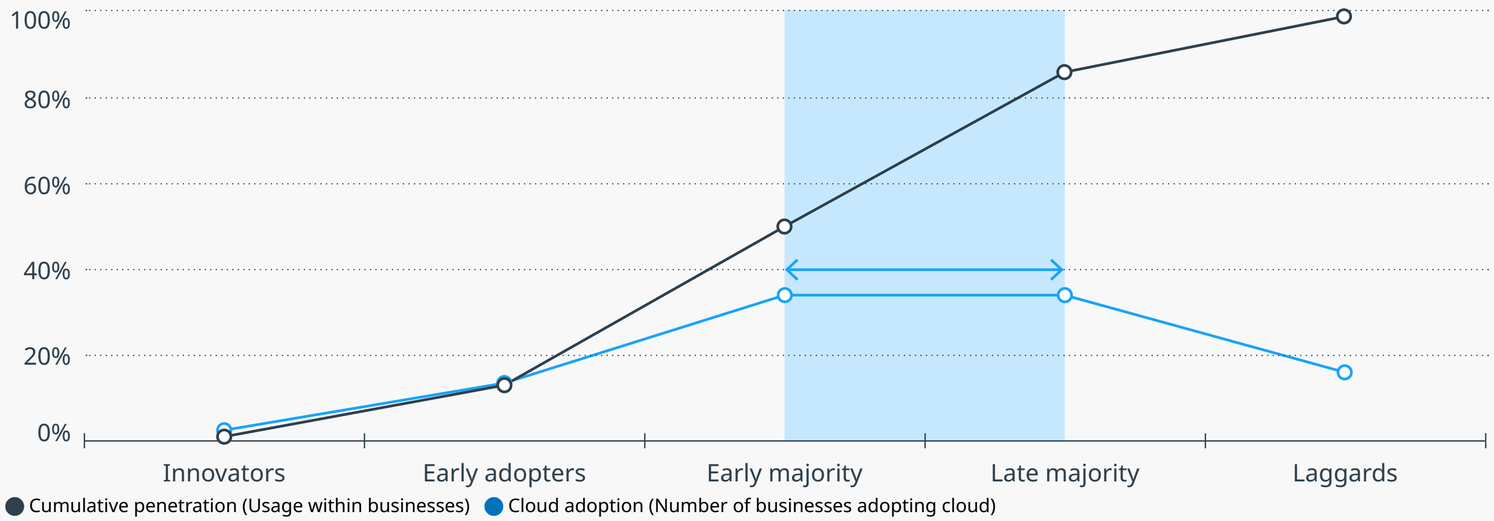
Figure 1: The use of hybrid cloud is increasing while other forms of cloud usage decrease

A hybrid cloud allows businesses to choose the best environment for each workload and avoids the "all-in" cost commitment associated with the public-cloud. The hybrid cloud allows businesses to leverage existing assets while extending capabilities with public-cloud resources.



Source: Cloud Services End-User Survey – 2023[4] | **Copyright:** ©2024 Omdia

Figure 2: Most businesses have adopted cloud in some form already, and its use within businesses is increasing



Source: 2024 Trends to Watch: Cloud Computing[6] | **Copyright:** ©2024 Omdia

However, overall cloud usage is still growing (Figure 2), indicating that businesses are optimizing their cloud-service mix while increasing their overall cloud adoption. Although the shifts in enterprise deployment across cloud options appear to be minor, the trend has been ongoing for years. The growth of the hybrid-cloud market (20% CAGR for the last four years[5]) is further evidence enterprises are using more hybrid cloud solutions.

Companies adopting the cloud are in the early-to-late majority stage (the blue area in Figure 2). However, the penetration of cloud usage into organizations is growing as companies add new workloads, applications, data analytics, customer engagement and digital products to the cloud.

5 Enterprise IT Insights: IoT, Cloud, AI, and 5G – 2024 (October 2023)
6 2024 Trends to Watch: Cloud Computing (November 2023)
7 Cloud Services End-User Survey – 2023 (June 2023)

For many, early cloud deployments were sometimes disappointing, and some expectations were not fully met (Figure 3). Many organizations hastily implemented cloud solutions without a robust strategy and architecture, resulting in poor assumptions about cloud capabilities, a shortage of skilled personnel, and insufficient governance. These flawed deployments led to overspending due to underutilized resources, increased risk from inadequate security controls, and poor monitoring of cloud usage. Additionally, many organizations bypassed the expertise of IT consulting partners, opting to manage cloud implementation independently.

Figure 3: Cloud expectations not met

45% Data sovereignty and privacy concerns

41% Loss of control

40% Unkown costs; extra costs that we have incurred

37% Vendor lock in; cannot change until the current contract expires

37% The fact that cost is variable and not constant

36% Cost; the cloud is too expensive

33% Complexity; there is too much choice and I do not understand it all

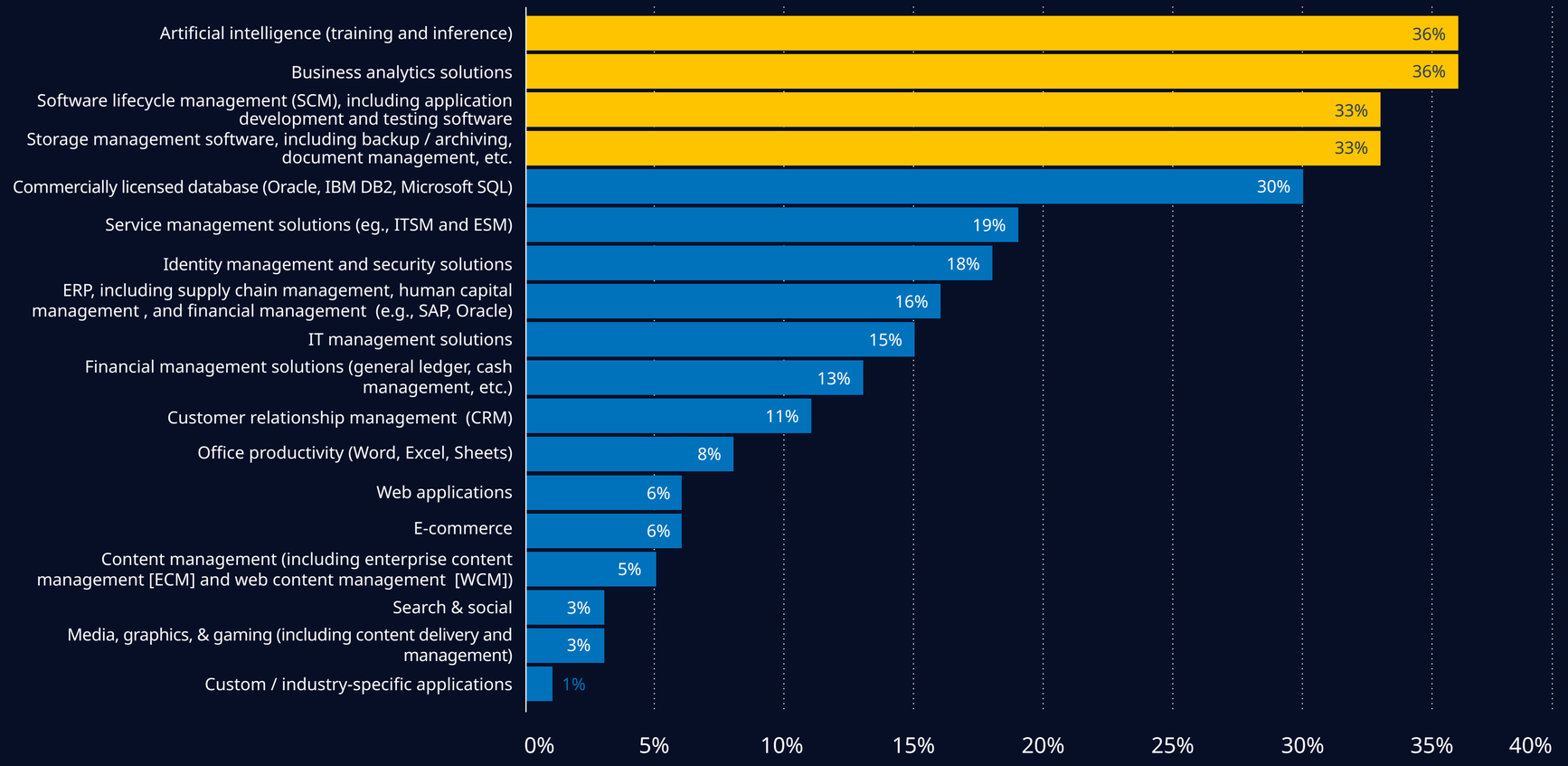
31% Poor quality of customer service

Source: Cloud Services End-User Survey – 2023[7] | **Copyright:** ©2024 Omdia

However, IT departments continue to prioritize cloud adoption, reflecting successful technological outcomes. 80% of Omdia-surveyed enterprises expect to increase cloud spending, with 26% planning to boost spending by over 10%. The focus should now shift to extracting business benefits from existing cloud deployments and exploring the rich functionality provided for business enablement. The mechanism to obtain these business benefits is often through cloud-native services to develop business apps.

In fact, enterprises have already moved significant portions of their business workloads to the cloud, including office productivity, IT management, and ERP solutions. According to a 2023 Omdia Survey (Figure 4), the top four workloads moving into the cloud are AI, business analytics, software lifecycle, and storage management. All four improve a business' decision-making and increase agility.

Figure 4: Enterprise workloads moving into the cloud



Source: Cloud Services End-User Survey – 2023[8] | **Copyright:** ©2024 Omdia

8 Cloud Services End-User Survey – 2023 (June 2023)

There is growing recognition among the C-Suite that cloud apps and services offer enterprises agility, resilience, and scalability. With that known value realization, more business executives are now expecting the cloud to deliver business benefits, mirroring a consumer mindset seamlessly. Cloud capabilities have recently been strengthened to meet these expectations, focusing more on delivering value than on the technology itself.

In summary, the paradigm shift in cloud thinking is:

- Technical deployments in the cloud have been the norm, and are now mature.
- There is a shift from cloud-first (technical) thinking to business-first (benefits and objectives) thinking.

Case study

ISG embraces the cloud to drive its dynamic construction services vision

ISG's vision is to become the world's most dynamic construction services company, building spaces that help people and businesses thrive. After deciding to adopt Microsoft Azure as a future-proof technology platform, ISG needed a partner to guide them on their transformation journey.

Through a Cloud Strategy Workshop, NTT DATA was able to map out ISG's business and stakeholder needs, IT organization, operational model, and systems. With the workshop completed, ISG identified that efficiency and reliability could be improved and aligned with operational excellence objectives.

As part of the cloud transformation, ISG and NTT DATA completed a number of sprints, resulting in the creation of an architecture blueprint that would govern possible uses for the cloud. ISG's new Azure applications can now be deployed in three weeks – a 350% improvement in the time needed to provision new infrastructure – and the move to the cloud has delivered 100% uptime, resulting in speed and performance gains that impact business success.

Strengthening business foundations with the cloud

Deriving business benefits from a powerful cloud base

The continued momentum of cloud can be attributed to significant advances like cloud-native applications, industry clouds, platforms, Data AI, and GenAI, which, among others, have helped both business and IT leaders to recognize the paradigm shift toward extracting business benefits from the cloud. With AI and GenAI, organizations are increasing speed, reducing costs, and driving productivity.

Cloud-native capabilities drive speed, enable cost-savings, and reduce risk. Industry accelerators, reusable components, simplified automation, and integration capabilities are impossible to achieve without cloud-native strategy and delivery. Industry clouds have built-in capabilities and best practices specific to the industry. Cloud platforms enable businesses to achieve their objectives faster and at lower risk, and they offer more predictable costs through simplified management dashboards.

Additionally, cloud-native architectures, applications, and accelerators further contribute by reducing the time it takes to bring products and services to market. As these advancements are delivered primarily through cloud platforms, understanding a provider's specific platform becomes essential for businesses looking to leverage these benefits.

Leaders seeking to achieve specific business goals can leverage intelligent, AI-powered cloud-delivery platforms. Modern cloud platforms enable businesses to achieve their objectives faster, and with less risk, thanks to built-in agile, composable architectures, security and predictive analytics.

Many organizations are developing unified cloud strategies that align with overarching business goals to realize tangible benefits. They are establishing governance, security protocols, and deployment approaches, selecting optimal providers, and assessing the skills and partnerships required for successful implementation.

Enterprises benefit from collaborating with cloud service providers (CSPs) and IT consultants rather than operating in isolation. CSPs and consultants offer diverse industry experience, a proven track record, an in-depth understanding of complexities, and a forward-looking vision for cloud technologies. A differentiator to look for in a CSP is its ability to provide end-to-end management services, combining integrated strategy, DevOps practices, design, and delivery. This end-to-end approach leads to meaningful collaboration across the lifecycle between the customer and CSP, impacting the ability to enable more business outcomes.

Case study

Redesigning Mango’s cloud architecture to accommodate 500 new stores

Mango, one of Europe’s fastest-growing fashion groups, is a global company with design, creativity, and technology at the center of its business model. Mango’s strategy is based on constant innovation, the search for sustainability, and a complete ecosystem of channels and partners.

To support an aggressive goal of opening 500 new stores in the next two years, Mango needed a new, reliable payment platform that could scale with their business growth while also managing seasonal and business fluctuations efficiently. To better support business planning, the new system would also need a flexible cost model that would align with the actual demand and results of Mango’s ecommerce business.

NTT DATA redesigned Mango’s cloud architecture for their payment platform. Combined with a migration to Amazon Web Services (AWS), the new architecture is more reliable and flexible than their legacy system was.

Choosing to partner with experts ensures cost-efficiency, accelerated development, and invaluable support, while going solo can lead to higher costs, fewer resources, and slower progress.

Business outcomes delivered through cloud platforms and services include:

- **Customer engagement in the cloud:** Enterprises now face the reality of customers who primarily interact online. This digital interaction encompasses brand engagement, B2B transactions, and citizen services. The cloud empowers organizations to enhance digital customer experiences through scalability, omnichannel presence, rapid development, data-driven personalization, and, most crucially, agility to adapt to evolving needs swiftly. For example, ecommerce engines are essential for business success. While on-premises ecommerce setups exist, the cloud offers significant advantages for most businesses. It's easier to manage, secure, and scale, and a cloud platform has many essential best practices built in.
- **Innovation through agility:** The cloud accelerates the development and deployment of features and services, driving faster business-app delivery and innovation cycles to maintain a competitive edge. Agility translates to resilience: in the face of disruptions, whether environmental or industry-specific, agile companies can swiftly adapt and sustain their viability.
- **Scalability for growth:** The cloud's scalability adjusts workloads to match demand fluctuations, ensuring operational efficiency during peak and off-peak periods. Enterprises can make adjustments based on conditions like website traffic surges, avoiding over-provisioning costs or bottlenecks from under-provisioning. This business-aligned response drives improved performances, optimizes costs, and avoids web-based delays or, worse, crashes. This level of scalability and flexibility provides a foundation of strength to a business.
- **Efficiency through automation:** Cloud-based automation capabilities streamline processes, optimize resource utilization, and reduce operational overhead. Most CIOs want to address global IT skill shortages and wage inflation, but they must do so in a way that does not cause conflict, increase staff turnover, or damage the business. The top initiative driving additional cloud investment is automating IT processes, with 47% of CIOs naming it the most critical issue to address[9]. Automation allows resources to be redirected to more business-essential projects, reduces error-prone tasks, and solves IT noise issues that can be automatically managed in the background.
- **Data-driven decisions:** The cloud enables extensive data collection and analysis, driving data-driven decision-making and enhanced business performance. Cloud providers offer a variety of analytics tools and services, eliminating the need for businesses to invest in costly software licenses or build their own infrastructure. The growth of GenAI product development and its data utilization further boosts hyperscale cloud providers[10]. GenAI is changing the face of organizational practices and efficiency[11], and its effect on customer experience cannot be understated.

9 IT Operations Survey – 2023 (June 2023)
10 Cloud and Data Center Market Snapshot – March 2024 (March 2024)
11 Generative AI in the corporate environment (April 2024)

Case study

Unleashing explosive growth for a health and wellness company

A global provider of health and wellness products and services saw an opportunity to accelerate growth by equipping their salesforce with powerful digital tools. By capturing and analyzing a wealth of marketing data more efficiently, the company could help their network of independent sales agents connect with consumers and grow the business. At the same time, however, the client knew their existing technology infrastructure wasn't strong enough to support a massive increase in data storage and processing needs. The client needed to transition to a cloud-native data warehouse and analytics services to support the sales platform.

NTT DATA determined that a custom-built data warehouse and analytics platform would serve the client best, and established the platform's back end on the Amazon Web Services (AWS) cloud, using Amazon Redshift as the data warehouse, and several other supporting AWS products.

The client's sales network has doubled in size to more than 80,000 sales agents since launching the new platform, through which they support more than 4.5 million customers.

Strengthening business foundations with the cloud

The cloud is not a remedy for everything

The cloud cannot solve all business problems. However, CSPs are working hard and innovating to address specific challenges related to niche requirements for specific industries or businesses.

The successful use of cloud in an enterprise starts with strategy, governance, cloud frameworks, and aligning modernization efforts to business growth agendas.

Industries with strict data residency or compliance regulations require sovereign clouds that ensure data storage within specific geographical locations. Sovereign cloud solutions must address various regulatory restrictions imposed by governments. CSPs are meeting these needs, with an increasing number of companies adopting sovereign clouds. In 2024, 70% of large enterprises and 84% of financial services firms plan to utilize these services, while smaller companies' usage ranges from 13% to 42%[12].

Specific business applications necessitate low latency, prompting considerations of edge computing or on-premises solutions if bandwidth is inadequate. Edge computing places computing power and data close to transaction activity, enabling faster processing. For instance, retail stores utilize localized processing to update central systems with non-time-sensitive data like transaction details, stock levels, and customer information.

In new-paradigm cloud solutions like cloud-native computing and industry clouds, these limitations are diminishing, and Omdia expects that most will be resolved shortly.

In summary, significant advances in cloud features and capabilities can strengthen business foundations and enable considerable benefits:

- Internal benefits include operational efficiency, automation, security, and decision-making.
- External benefits include improved customer experience and satisfaction, innovation at the speed of customer requirements, scalability to meet customer demands, and data-driven decisions.

12 Cloud Services End-User Survey – 2023 (June 2023)

The cloud dividend: enabling innovation and growth

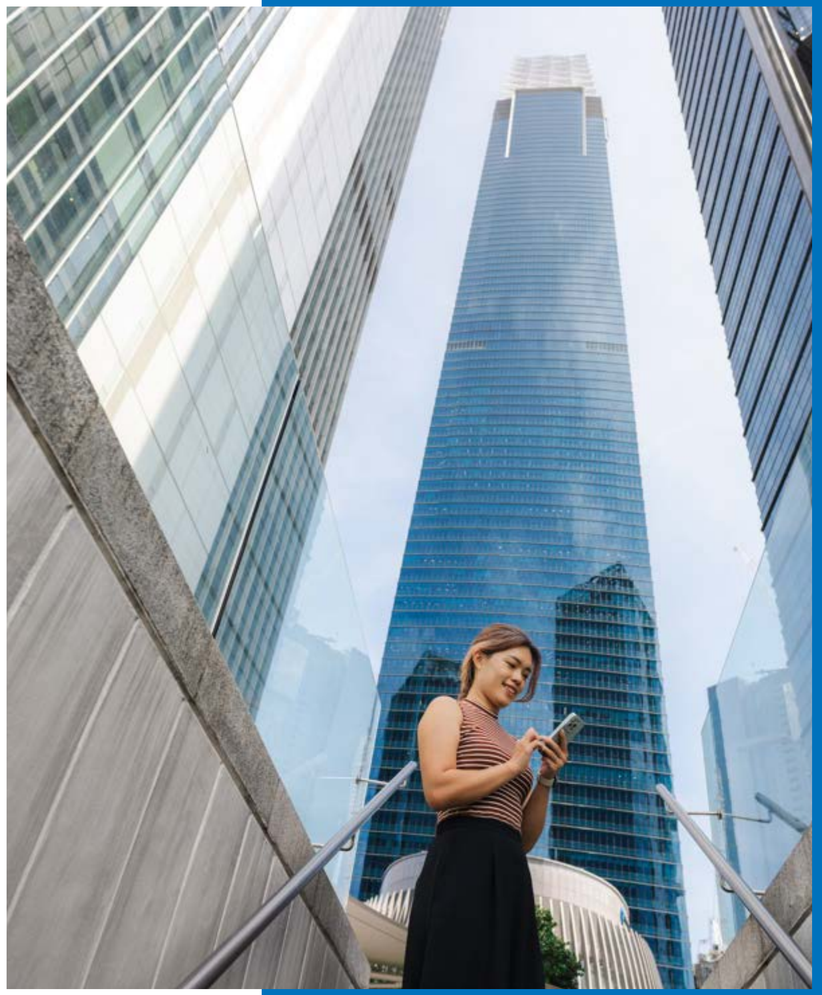
The cloud dividend: enabling innovation and growth

Accelerated innovation

Going beyond cloud basics unlocks a powerful accelerated innovation platform. Cloud-based technologies empower businesses to:

- **Experiment without risk:** Rapidly prototype and test innovative solutions with minimal upfront investment.
- **Become data-driven:** Leverage cloud-based AI and machine learning to analyze massive datasets, unearth hidden insights, and fuel informed decision-making.
- **Deliver faster:** Get innovative products and services to market quicker, outpacing the competition.

This data-driven agility translates to enhanced customer experiences through the development of solutions that cater to evolving customer needs.



Case study

Automation, best practices, and self-service capabilities allow Flexport to innovate at the speed of its market

Flexport Inc. is an American multinational corporation that focuses on supply chain management and logistics, including order management, delivery, trade financing, insurance, freight forwarding, and customs brokerage.

Demand for Flexport's cloud software and data analytics services has risen so quickly that the company doubled in size in three years to keep pace.

Flexport began their Amazon Web Services (AWS) journey with a single account. However, multiple years of explosive growth meant the company needed to scale out its AWS infrastructure. With team members' time already in high demand, Flexport turned to the NTT DATA team for help.

NTT DATA helped Flexport implement automation that delivers infrastructure built with cloud and security best practices. Self-service capabilities reduce the complexity of multiple AWS account architectures.

Flexport has established automation that delivers self-service capabilities to engineers, removing the underlying complexity so they can focus on building the company's platform for global logistics.

The cloud dividend: enabling innovation and growth

Achieve enduring growth with cloud agility

Business agility enables enterprises to swiftly respond to emerging technologies, customer preferences, and competitor strategies. This results in faster time to market, responsiveness to customers, and the ability to adapt rapidly to change, fostering efficiency and customer-centricity.

One of the most valuable aspects of the cloud is that it is a multiplier for agility in businesses. Scalability, collaboration and innovation, enterprise-ready applications, and elasticity drive agility in organizations.

Cloud scalability enables businesses to handle sudden demand spikes and launch new services seamlessly, removing concerns about infrastructure constraints. This agility enables businesses to quickly capitalize on new market opportunities.

Cloud-based tools facilitate seamless collaboration across teams and locations. This fosters knowledge-sharing, idea generation, and faster innovation cycles.

The cloud dividend: enabling innovation and growth

Advanced analytics and the power of data and cloud platforms

Cloud platforms offer advanced analytics tools like machine learning (ML) and artificial intelligence (AI), enabling businesses to analyze vast datasets for actionable insights. By leveraging cloud-based analytics for predictive modeling, businesses can anticipate trends and customer needs, enabling the proactive development of market-aligned products and services and driving growth.

When leveraged as a business solution, cloud platforms automate repetitive tasks, streamline workflows, and improve operational efficiency, freeing up valuable resources for more strategic initiatives that drive growth. Users are increasingly adopting a platform approach (Figure 5), particularly in relation to a business solution.

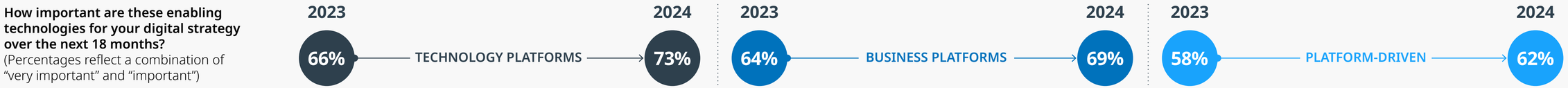
One example of cloud platforms is customer engagement platforms, which offer multichannel communication, customer data management and analytics, campaign management, and automation of workflows, among their features. These prebuilt services can radically change the customer experience and significantly improve customer satisfaction. Figure 5 shows the adoption of customer engagement platforms as an example of cloud platform adoption.

The 10% jump in planned investment in customer engagement platforms (CEPs) spotlights the need for businesses to break free from channel and data complexity to establish a foundation that enables omnichannel personalization, agility, and scalability.

Leading service providers have made significant investments in platforms to implement, manage, and deliver services optimally, far surpassing the capabilities of most individual organizations' IT teams. Leveraging the service partner's platform and experience enables enterprises to build, manage, and enhance business solutions effectively for better business outcomes.

Cloud platforms enhance the speed of delivery of services, provide the ability to engage with customers in real time, and include industry best practices as standard features.

Figure 5: Year-on-year adoption of customer engagement platforms as an example of cloud platform adoption



Source: 2024 IT Enterprise Insights in Customer Engagement[13] | **Copyright:** ©2024 Omdia

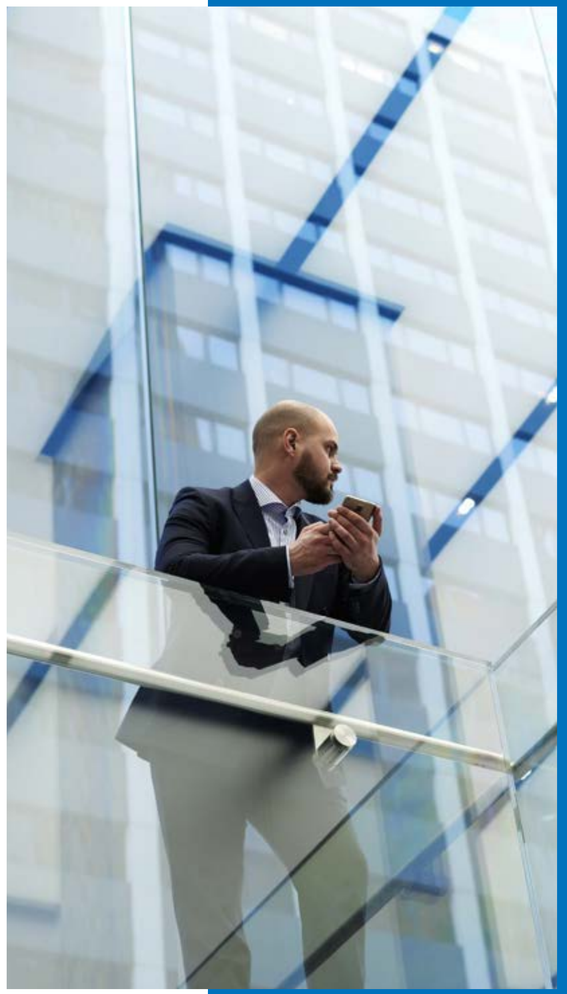
13 2024 IT Enterprise Insights in Customer Engagement (December 2023)

The cloud dividend: enabling innovation and growth

Unlock new revenue streams with the cloud

The cloud presents various revenue and business-model opportunities for enterprises. Adopting a cloud mindset is essential to capitalize on these avenues. Beyond infrastructure, the cloud acts as a catalyst for creating, building, and deploying new products and services. Notable revenue-generating aspects of the cloud include:

- Customer experience platforms are gaining traction (Figure 5). Customer data platforms (CDPs) are used in conjunction with digital experience management (DXM) platforms, and many enterprises have existing investments in CDPs or are planning to invest in them (Figure 6).
- Faster delivery of software or services on a subscription basis allows businesses to offer their products or expertise on a recurring-revenue basis, which creates a predictable income stream.
- The cloud provides the ability to bring secure services to market faster, so businesses can respond to changing industry and customer needs with agility and speed. This, in turn, leads to customer retention and growth. Faster and high-quality project delivery times on custom/component-based development builds customer trust, loyalty, and confidence over time.
- Businesses are empowered to collect, store, and analyze vast data. This data can be an asset, and businesses can explore ways to monetize it through insights-as-a-service offerings or targeted advertising solutions leveraging customer data.



Case study

Global leader in energy storage solutions powers a new beginning

As a global leader in low-voltage advanced battery technologies for mobility, Clarios needed to design and deliver a new IT infrastructure against a difficult deadline. However, the COVID-19 lockdown changed everything for Clarios, interrupting a significant technology transformation.

After meeting with several potential partners, Clarios chose to work with NTT DATA, and together, they worked to deliver modern digital workplace services, refactor more than 200 applications to Microsoft Azure, implement a cloud-based middleware app integration platform, and replace Clarios' on-premises data warehouses with a cloud-based data lake and analytics tool.

With NTT DATA as their partner, Clarios completed their transformation four months early and 8% under their budget, amounting to US$10 million per year in savings.

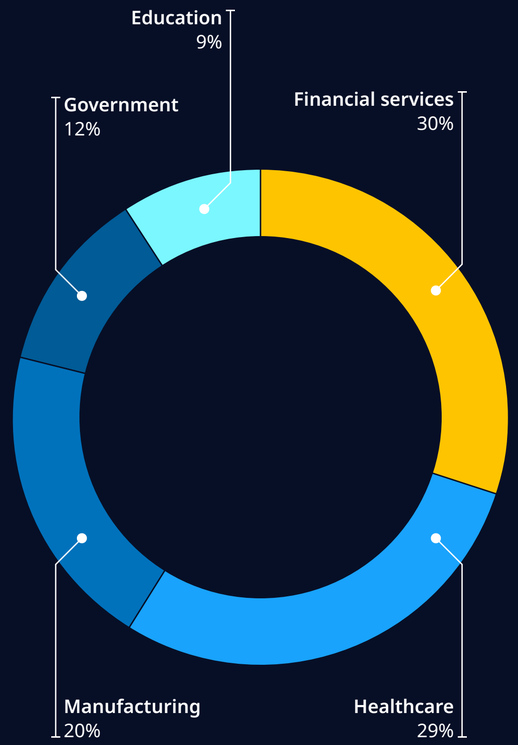
Industry clouds: a specialized powerhouse in the evolving cloud ecosystem

An industry cloud is a tailored computing environment crafted to meet the unique requirements of a specific industry. Think of it as a specialized toolbox containing industry-specific tools and features, preconfigured with relevant regulations and security measures. Industry clouds provide organizations with immediate access to best-practice configurations, which is crucial for ensuring security in the cloud.

Prebuilt solutions offer businesses faster deployments, cost savings, and simplified compliance, enhancing their competitive edge and innovation. Governments benefit from tailored tools that streamline processes like licensing and social services, improving service delivery and citizen engagement. These accelerators also expedite the development of government services like healthcare, transport, and finance, enabling governments to address challenges and opportunities swiftly, even with limited technical expertise.

14 Cloud Services End-User Survey – 2023 (June 2023)

Figure 6: Primary users of industry cloud solutions



Source: Cloud Services End-User Survey – 2023[14] |

Case study

Modernizing public transport

Public Transport Victoria (PTV) required a dedicated partner to continue the operation of its public transport ticketing system, which NTT DATA initially built. The system, called “myki,” had to scale to support 20 million mass-transit smartcards and over 24,000 devices located on trains, trams, and buses. The widespread use of mobile technologies for daily tasks has precipitated the demand for a travel-ready solution for myki customers.

NTT DATA focused on the modernization of myki. With the implementation of Centaur, a big-data system, NTT DATA provided PTV with more significant opportunities to gather and analyze hundreds of data types. Data collected includes passenger type, fare statistics, methods of payment, journey locations, routes for each vehicle, departure and arrival times, and the number of passengers dismounting at each stop. This valuable information provides the government with actionable data for maintaining and improving services to passengers throughout the state.

The myki system accommodates more than 585 million trips per year, processing more than $1.7 billion USD in funds, and 15 million myki cards have been sold to local, interstate, and international customers.

The cloud dividend: enabling innovation and growth

Using the cloud to mitigate business risks

Cloud services provide businesses with advanced security protocols such as regular updates, encryption, and multifactor authentication. Implemented by cloud providers, these protocols reduce the risk of data breaches and cyberattacks. Additionally, cloud-based disaster recovery and backup solutions ensure uninterrupted operations despite hardware failures or disasters. Enterprises allocate approximately 27% of their cloud budget to enhancing security, with large enterprises leading in this area[15].

Businesses invest in cybersecurity primarily for the "four Rs[16]": reputation, regulation (compliance), relevance (to customers wanting to know their online transactions are secure), and resilience (continuous operation).

By embracing the cloud, businesses can move beyond traditional business models and explore new avenues for generating revenue. The key to identifying new revenue streams is to:

- Identify opportunities for recurring revenue streams.
- Leverage data as a valuable asset.
- Capitalize on the cloud's agility for faster innovation.
- Reach new markets and customer segments globally.
- Contribute to the cloud ecosystem by offering specialized PaaS solutions.

15 Cybersecurity Decision Maker Survey 2023: Cloud Security Insights (November 2023)
16 The four Rs setting the bar for effective cybersecurity (March 2024)

Future directions of the cloud

Future directions of the cloud

Cloud-native computing

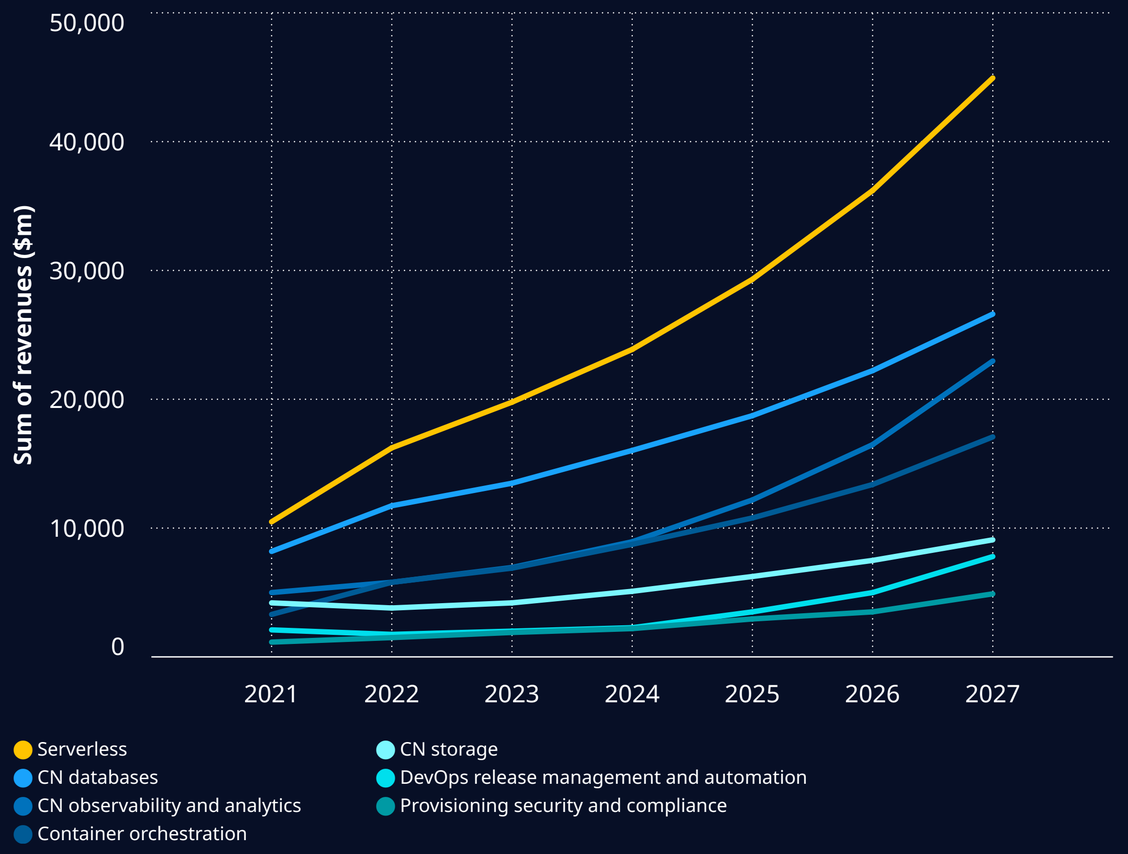
Rapid technological advancements and changing business needs will continue to drive the future of cloud. In this section, we explore the direction this future will take by looking at cloud features in the early adoption stage. Some of the features of early adoption are that standards and governance have not been fully established, use cases are found in innovative cloud users more than the mainstream, and technologies have not fully matured and coalesced. With technological advances in the cloud having reached a mature stage, the cloud is now making inroads into non-technical business operations.

Cloud-native computing (CNC) involves designing and building software to leverage cloud computing, utilizing microservices architectures, containers, declarative infrastructure, and continuous integration and delivery. There are different types of CNC, including databases, storage, containers, and DevOps platforms. The fastest-growing element of CNC is serverless computing (Figure 7), a cloud execution model where the cloud provider manages the servers, allowing developers to focus on writing code without server provisioning or maintenance. Over the next five years, spending in the CNC market will quadruple, with Omdia predicting it will dominate software development[17]. Companies will rearchitect applications to maximize cloud scalability and flexibility. While complexity will rise, so will flexibility, leading to substantial business benefits if CNC is executed correctly. Due to its complexity and the array of available products and services, enterprises should engage a partner for their cloud-native initiatives.

The increasing adoption of cloud-native computing brings more enterprise IT into the Kubernetes environment, which has both direct and indirect business benefits (Figure 8).

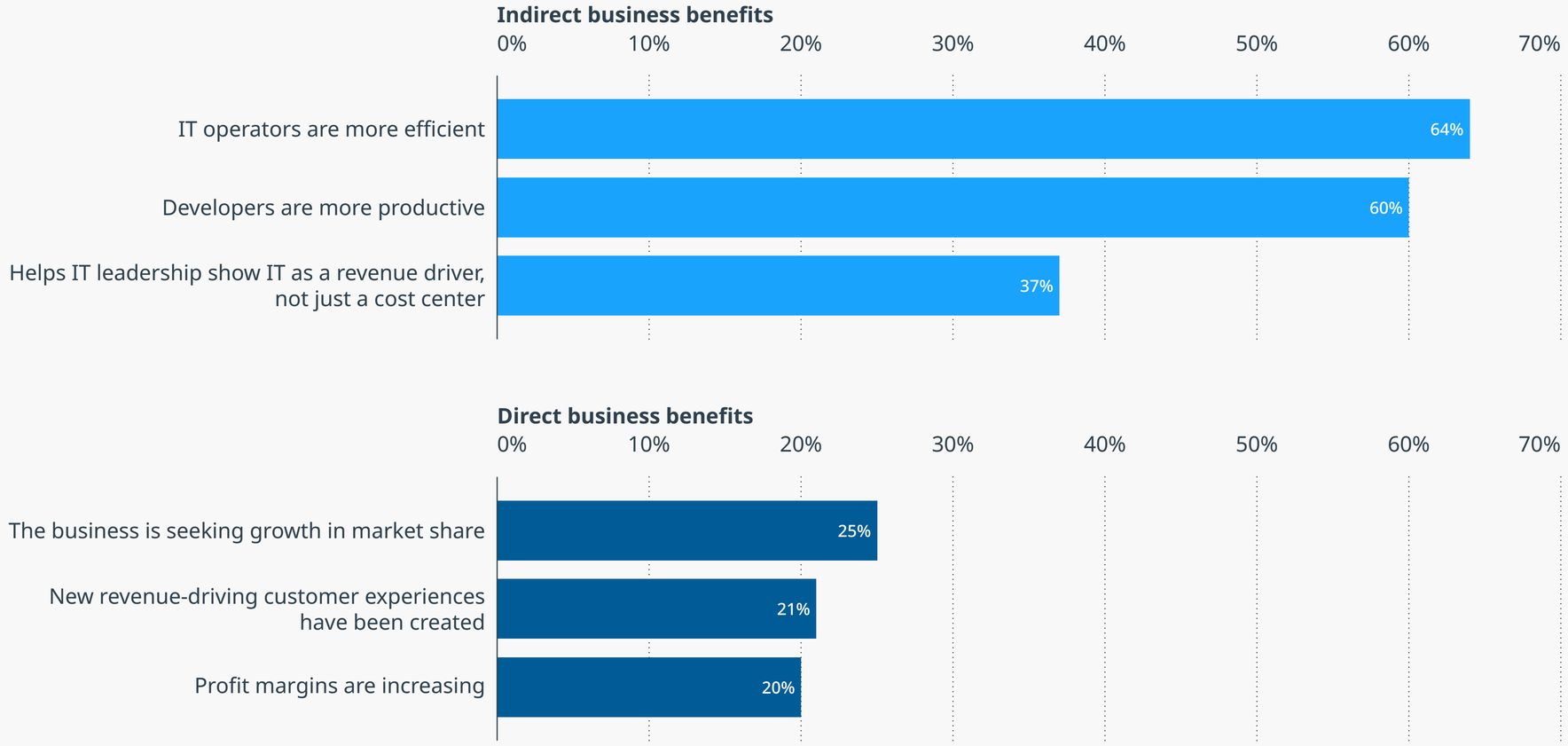
17 Cloud Native Computing Market Analysis – 2023 (October 2023)
18 Cloud Native Computing Market Analysis – 2023 (October 2023)

Figure 7: CNC revenue market forecasts, 2021–22 actuals, 2023–27 forecasts



Source: Cloud-native Computing Market Analysis – 2023[18] | **Copyright:** ©2024 Omdia

Figure 8: Business benefits from Kubernetes as part of CNC



Source: Cloud Native Computing Market Analysis – 2023[19] | **Copyright:** ©2024 Omdia

19 Cloud-native Computing Market Analysis – 2023 (October 2023)

Case study

Carrefour takes a cloud-first approach to grow their business

Carrefour has a well-established reputation in the retail sector. With growing success both in-store and online, they needed to modernize their IT systems. Their existing on-premises solution was too rigid to meet their evolving business needs, especially on high-traffic days, where their IT systems need to scale to meet increased customer demand. Carrefour needed to build ecommerce and business apps for speed, agility and cost advantages as they approached a cloud-first strategy.

Through a series of Cloud Strategy Workshops, Carrefour identified NTT DATA as their key partner in realizing their vision. Following NTT DATA's Cloud Transformation Framework, Carrefour was able to design their new cloud-based IT service. The solution provides them with a highly available, scalable and reliable infrastructure, leveraging extensive automation alongside the use of infrastructure as code to maintain tight control over their environment.

Carrefour's new cloud framework has enabled a new, flexible way of working, and they can now scale to meet changing demands. Among the platforms Carrefour have deployed is an SAP HANA solution that consolidates more than 100 legacy applications. This business-critical platform supports business processes at more than 200 hypermarkets. NTT DATA has also deployed a new ecommerce platform that enables outstanding time to market when rolling out new services.

Future directions of the cloud

Artificial intelligence (AI) and GenAI

The fusion of AI with cloud computing revolutionizes both businesses and government services. Organizations leverage cloud-based AI solutions to access scalable resources and cutting-edge algorithms on demand, eliminating the need for significant upfront investments in physical infrastructure. Businesses utilize AI for personalized marketing, supply chain optimization, and enhanced customer service with tools like chatbots and predictive analytics. Governments employ cloud AI to manage large datasets, enhancing services like crime prediction, traffic management, and citizen support. Overall, cloud AI can drive efficiency in governance and improves quality of life. Cloud service providers are increasingly providing large amounts of computing power for AI, indicating that the use of AI in business is growing (Figure 9).

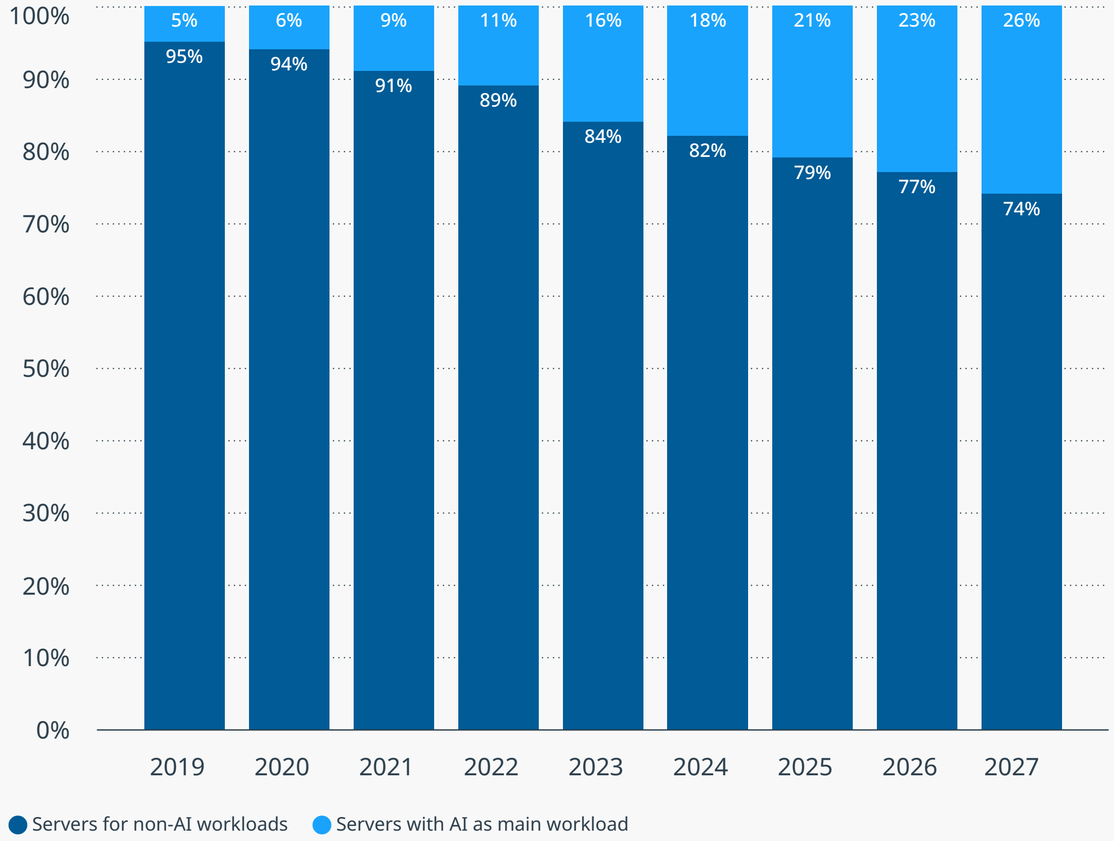
AI use increased in 2023 (growth in the second quarter of 2023 was due to the success of ChatGPT), and the trends discussed above suggest that this growth will be maintained until 2027.

Omdia research indicates widespread use of AI in the cloud for various purposes, with notable shifts in importance in the last two years (Figure 10). Expectations are that AI will increasingly focus on data analytics and machine learning, enabling businesses to identify growth opportunities and better understand customer behaviors for new product development.

Related to AI, a surging growth area for the cloud is GenAI. GenAI algorithms demand substantial computational power and resources to process large datasets efficiently. Cloud computing enables organizations to scale computing resources cost-effectively to manage diverse workloads. Implementing GenAI on legacy monolithic applications is challenging, whereas the modular architecture of cloud-native applications, with their inherent APIs, facilitates the seamless integration of GenAI components.

20 2024 Trends to Watch Analyst Call: Cloud & Data Center Research Practice (January 2024)

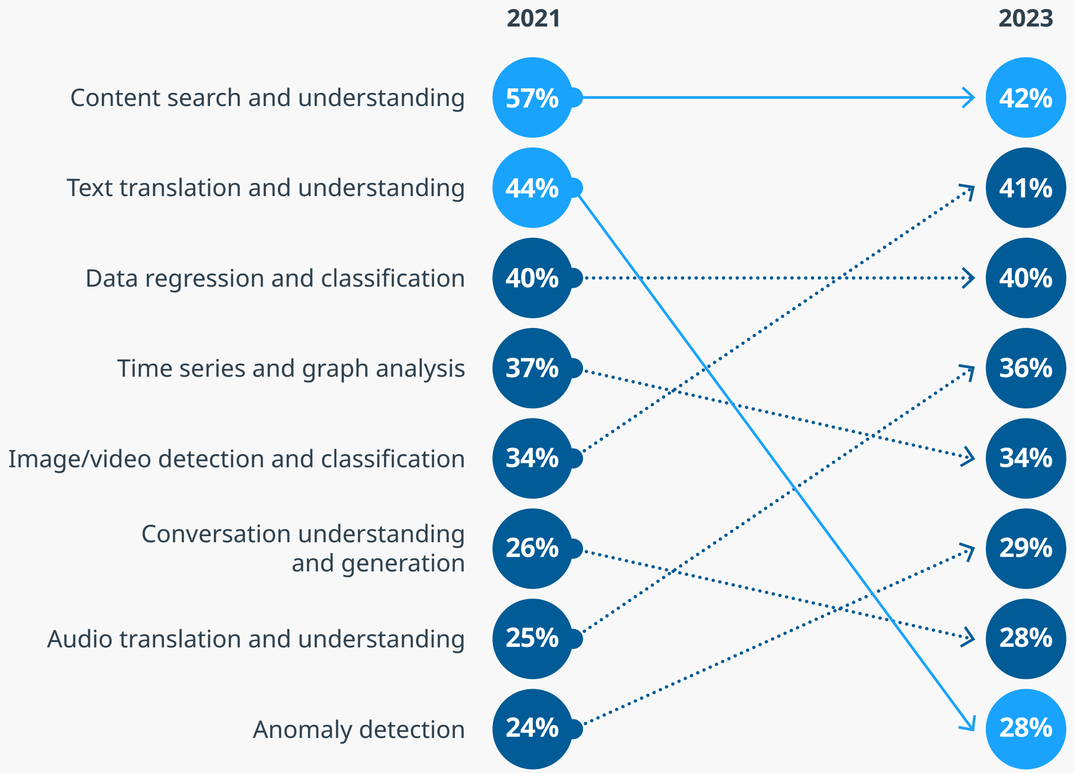
Figure 9: AI is the fastest-growing workload in cloud data centers



Source: 2024 Trends to Watch Analyst Call: Cloud & Data Center Research Practice[20] | **Copyright:** ©2024 Omdia

Figure 10: AI technologies in the cloud used by organizations

What are the most important AI technologies your organization is running in the cloud now, and what do you expect to be the most important by year-end 2023?



Source: Cloud Strategies: North American Enterprise Survey – 2022[21] | **Copyright:** ©2024 Omdia

GenAI, characterized by its proficiency in creating novel and authentic content, significantly impacts the landscape as follows[22]:

- **Enhanced creativity and efficiency:** GenAI can suggest new ideas, design prototypes, and even write creative content, freeing up employees to focus on more strategic tasks.
- **Personalization at scale:** GenAI can analyze customer data to create personalized marketing campaigns, product recommendations, and customer service interactions.
- **Streamlined processes:** Repetitive tasks such as report generation, data analysis, and code writing can be automated by GenAI, saving time and resources. GenAI is also excellent at summarizing long reports, creating task lists from reports, and generating different creative text formats, such as marketing copy, product descriptions, or even code.
- **Improved productivity:** An Omdia study[23] found that GenAI improves employee productivity by up to 66%, with significant benefits in writing, coding, and handling customer inquiries.
- **Improved decision-making:** GenAI can analyze vast amounts of data to identify patterns and trends, helping businesses make better decisions.
- **Optimized and intelligent cloud performance:** GenAI can automate resource management, improve cloud security, and provide intelligent workload automation.

Organizations adopting cloud computing avoid upfront hardware investments, opting for pay-as-you-go models with cloud service providers. These providers invest in robust security measures and infrastructure, which are vital for protecting sensitive data in GenAI applications. Cloud platforms include built-in redundancy and failover mechanisms, reducing the risk of data loss or business interruptions.

21 Cloud Strategies: North American Enterprise Survey – 2022 (February 2022)
22 Generative AI statistics: the 2024 landscape – emerging trends, and developer insights (January 2024)
23 Generative AI in the corporate environment (April 2024)

Future directions of the cloud

Edge and cloud

Edge computing refers to processing data closer to where it's generated, at the "edge" of the network. Edge computing moves as much of the data and processing load away from a central resource as possible, introducing real-time processing and low latency (response times), and reducing the volume of data being transferred. Edge computing involves any processing unit (computers, servers, IoT devices, smart cameras, and even mobile phones) that can process and store data without recourse to communicating with a central server, whether it be in the cloud or on-premises. The cloud provides centralized storage, advanced analytics, and large-scale processing capabilities for this data.

Omdia predicts that the market for enterprise edge services will double between 2024 and 2028[24] and that the installed base of edge devices will grow from 289,000 to 1.8 million in the same period[25]. This growth facilitates enterprise digital transformation, data monetization, and new workloads based on AI, the Internet of Things (IoT), advanced analytics, industrial automation, and autonomous vehicles.

Some of the general business benefits enabled by edge computing include real-time decision-making, improved reliability, increased security, faster innovation, and improved customer experiences. Specific benefits depend on the industry. For instance, edge computing allows manufacturers to monitor equipment health in real time for predictive maintenance. In retail, the edge can enable personalized product recommendations based on in-store customer behavior, optimizing inventory management. Healthcare providers can conduct remote patient monitoring and real-time analysis of vital signs for improved patient care. Using the services of a cloud service provider with experience across industries can unlock unforeseen opportunities.

24 Enterprise Edge Services Forecast, 2024–28: Market Size Will Double (April 2024)
25 Worldwide CSP Networked Edge TAM and Forecast (September 2023)

Future directions of the cloud

Digital twinning in the cloud

A digital twin is a virtual representation of a physical object or system. A twin could be a digital replica of a factory, a piece of machinery, an organization, or even an entire city. Twins are used in testing ideas and changes, proofs of concept, and sustainability modeling, among others. The use of digital twinning is growing, and because of its computing requirements, it is moving to the cloud[26]. Digital twinning models are being built in industry clouds, providing companies with shortcuts and templates for their twinning efforts.

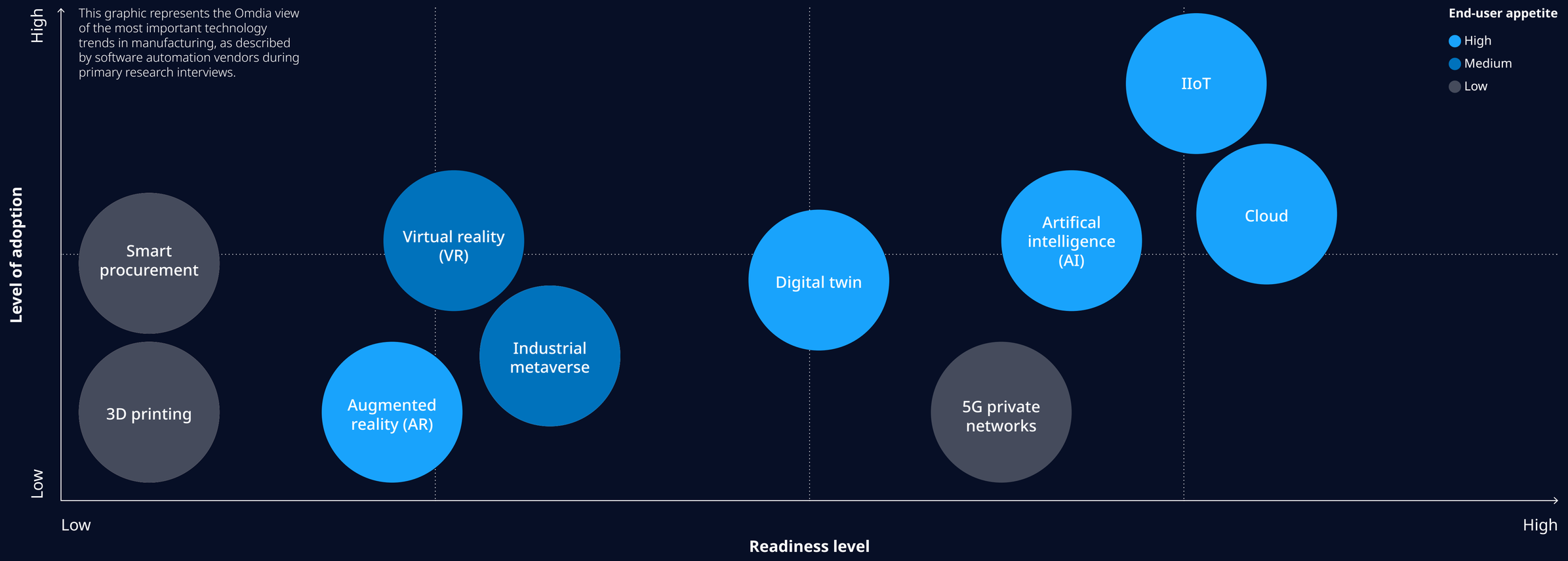
Digital twinning and industry cloud are mature, and enterprises are seeing the advantages of using both. Indeed, many enterprise architecture tools use digital twins to test organizational, process, and business modeling.

Additionally, digital twinning is increasingly moving to the cloud due to its computing demands, with models built in industry clouds offering shortcuts and templates.

Figure 11 (on the following page) cuts through the hype. For example, organizations have an appetite for Augmented Reality but aren't ready to use it and have not adopted it widely. They are ready for digital twinning, AI, cloud, and industrial IOT (IIoT). Industries have a high level of adoption of IIoT, cloud, and AI but are lagging in digital twin adoption. The cloud enables digital twinning and provides shortcuts in the adoption cycle.

26 Digital Twin for Sustainability – 2023 (January 2024)

Figure 11: Readiness to adopt digital twins is relatively high, but adoption is relatively low



Source: Digital Twin for Sustainability – 2023[27] | **Copyright:** ©2024 Omdia

27 Digital Twin for Sustainability – 2023 (January 2024)

Future directions of the cloud

Sustainability and the cloud

Sustainability will play a crucial role in cloud services, with providers investing in green data centers and carbon-neutral solutions to comply with regulations and meet corporate responsibility goals. This shift underscores a future where cloud computing becomes more efficient, integrated, and vital to business operations and sustainability strategies. Cloud infrastructure offers a unique opportunity to enhance a company's sustainability while delivering significant business benefits. Optimized for efficiency, cloud data centers utilize technologies like server virtualization and energy-efficient cooling systems, resulting in lower energy consumption than on-premises setups. Many providers now rely on renewable energy sources like solar and wind power, further reducing environmental impact and offering cost savings, increased agility, enhanced security, and meeting customer sustainability expectations[28]. Enterprises can reconfigure or rearchitect their cloud deployments to drive sustainability. Among the many options available, they can right-size their cloud instances, auto-scale with granularity, leverage serverless functions, utilize event-driven architecture, and so on.

In summary, the future of the cloud is already unfolding through advances in:

- Cloud-native computing, which improves business agility and speed, enhanced customer experiences, improved efficiency and reduced costs, and innovation and flexibility
- Artificial intelligence and GenAI, which improve decision-making, customer personalization, and productivity
- Edge computing, which improves reliability, security, transaction speed, and customer experiences
- Digital twins, which allow businesses to test ideas, prove concepts, explore alternative business models, and model future innovations

28 2024 Enterprise Insights Report – State of Sustainability (October 2023)

Case study

Penske Automotive Group accelerates sustainability efforts with data

Penske Automotive Group (PAG) is a diversified international transportation services company and one of the world's premier automotive and commercial truck retailers. To reduce its environmental impact, PAG partnered with NTT DATA sustainability consultants and Microsoft to quantify, benchmark, and monitor its carbon emissions.

PAG determined that an enterprise data management platform capable of capturing carbon inventory data at all levels of the company's portfolio – from dealerships to corporate and ancillary buildings – would help to baseline its current footprint, act as an ongoing monitoring system, and allow the company to identify opportunities for efficiency improvements.

In building a solution for PAG, NTT DATA utilized a full complement of Microsoft solutions to gather data and generate actionable insights.

NTT DATA integrated all emissions activity data through this data architecture and created application programming interfaces (APIs) to connect the platform to PAG's data warehouse. This offers the data and analytics needed to evaluate emissions factors, based on the Greenhouse Gas Protocol, and to determine precise carbon emissions from each business activity.

How to extract value from enterprise cloud initiatives

The cloud strategy

The cloud is now the main computing model for enterprises, but there's work to be done. Importantly, enterprises should evaluate their cloud maturity and build on that to extract the business benefits that the modern cloud offers.

Equally as important, as we have discussed in this paper, cloud is more than just infrastructure. Businesses also need to assess the maturity of their apps as they start thinking through how best to leverage cloud. Any strategy needs to include an analysis of the best venue for the workloads, who is going to use the data and how, who is going to support it, and what skills are required. These strategic decisions will help guide strategy sessions to focus on business objectives alongside technology objectives.

Cloud usage will vary for different enterprises, and their strategies will reflect that. However, the new paradigm of deriving business benefits from clouds depends on utilizing cloud features and tools with which the enterprise may not be familiar. Newer capabilities such as cloud-native, AI and GenAI, cloud platforms, and industry clouds are game changers. Enterprises should involve their trusted cloud services partner early in the strategy process to fully understand the potential of cloud for their business.

Typically, a cloud strategy would include the following elements:

Assess the current state: Identify overall business goals and how cloud adoption can support them. Identify the drivers of cloud adoption – agility, innovation, costs, or scalability. Assess the current state of cloud deployment and identify the skills and resources needed to support that state.

Define the desired state: With the help of a cloud partner, decide on the cloud deployment model that best suits the business needs. Determine the specific cloud services that will be utilized to achieve the desired cloud environment. Look for partners who understand GenAI, platform services, cloud-native, and industry clouds: critical elements of the new paradigm. Your cloud partner should be able to leverage these advances to meet business objectives.

Develop a cloud roadmap: Define the steps, impacts, costs, risks, and benefits for each element of the cloud rationalization, optimization, growth, and benefits-realization journey.

Security and compliance: Develop a comprehensive security plan that addresses data security, access control, and compliance with relevant regulations.

Governance and monitoring: Implement governance controls and monitoring tools to manage the cloud environment effectively. Monitoring includes tracking resource utilization, security alerts, and performance metrics.

Continuous improvement: Continuously evaluate the cloud strategy, identify areas for improvement, and adapt to evolving business needs and cloud technologies.

Ultimately, the cloud strategy is not a technical document. It is a clear blueprint for achieving business goals, enabled by the cloud, that business decision-makers should easily understand.

How to extract value from enterprise cloud initiatives

Develop and run a cloud center of excellence

A cloud center of excellence (CCOE) serves as the cornerstone for enterprise cloud initiatives. It brings together a cross-functional team whose primary role is to establish cloud best practices and governance standards and to facilitate the adoption of cloud services across the business. The CCOE acts as a central body that ensures all cloud solutions align with the company's financial targets and technical requirements, helping to mitigate risks and streamline operations.

Monitor to optimize continuously

Many organizations underutilize their cloud deployments, incurring unnecessary costs. To optimize usage, enterprises must understand their cloud usage patterns. Major providers like AWS, Microsoft Azure, and Google Cloud Platform offer comprehensive dashboards for real-time insights into resource utilization, costs, and service performance. For multicloud deployments, cloud management platforms aggregate data from various services, providing a unified view across accounts and providers.

One growing discipline pertaining to continuous optimization is site reliability engineering (SRE). In addition to improved observability and monitoring, SRE incorporates cloud governance, automatic threat detect and response, DevOps and FinOps. SRE is being leveraged to drive operational excellence by minimizing risk, preventing security breaches, and ensuring peak performance while driving cost savings. These capabilities are often delivered through cloud platforms, so understanding your CSP's platform is essential.

How to extract value from enterprise cloud initiatives

Find a partner that can enable your cloud

The cloud is complex, and cloud skills are difficult to acquire. Enterprises should select a trusted cloud partner who specializes in cloud deployment, usage, and growth, and has the experience and expertise to guide enterprises on their cloud journey. Find a cloud partner who is focused on business benefits. One of the significant issues with past cloud deployments has been a focus on the technology. Business benefits are what drive further investment in the cloud, and a partner should be able to develop business cases and project returns on investment on behalf of their clients.

About us

About us

NTT DATA

About NTT DATA

NTT DATA is a $30+ billion trusted global innovator of business and technology services. We serve 75% of the Fortune Global 100 and are committed to helping clients innovate, optimize and transform for long-term success. We invest over $3.6 billion each year in R&D to help organizations and society move confidently and sustainably into the digital future. As a Global Top Employer, we have diverse experts in more than 50 countries and a robust partner ecosystem of established and start-up companies. Our services include business and technology consulting, data and artificial intelligence, industry solutions, as well as the development, implementation and management of applications, infrastructure and connectivity. We are also one of the leading providers of digital and AI infrastructure in the world. NTT DATA is part of NTT Group and headquartered in Tokyo.

Omdia

About Omdia consulting

Omdia is a market-leading data, research and consulting business focused on helping digital service providers, technology companies and enterprise decision-makers thrive in the connected digital economy. Through our global base of analysts, we offer expert analysis and strategic insight across the IT, telecoms and media industries.

We create business advantage for our customers by providing actionable insight to support business planning, product development and go-to-market initiatives.

Our unique combination of authoritative data, market analysis and vertical industry expertise is designed to empower decision-making, helping our clients profit from new technologies and capitalize on evolving business models.

Omdia is part of Informa Tech, a B2B information services business serving the technology, media and telecoms sector. The Informa group is listed on the London Stock Exchange.

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help your company identify future trends and opportunities.

About us

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