

White Paper

Driving Cloud Adoption to Accelerate Digital Transformation in Indonesia

Sponsored by: Huawei Cloud Indonesia

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IDC OPINION

Digital transformation (DX) has consistently continued to be a national agenda for Indonesia. More digital initiatives in the government, regular enterprises, and small and medium-sized enterprises (SMEs) to accommodate digital demands and behaviors in the market can be found and are equipped well to drive national digital programs. The government of Indonesia has also determined the potential income of digital economy, which amounts to IDR4,531 trillion, that the country can achieve by 2030. DX agenda and COVID-19 pandemic have emphasized the role of digital infrastructure and have accelerated cloud solutions for enterprises in Indonesia. The need to have resilient digital foundation and infrastructure as enterprises undergo adoption of digital technologies is increasing, which is eventually leading to the growth of cloud services spending in the country.

The emergence of digital initiatives, such as building a digital experience platform, innovating digital products and services, and providing digital media, has created higher requirements of flexible, secure, and scalable modern infrastructure in the business environment. Enterprises must redefine their IT and digital infrastructure strategies to optimize the results of digital products, services, and experiences that they have created. IDC determines that the future of digital infrastructure will be driven by the element of ubiquitous resources and deployment, cloud-native technologies that drive as-a-service models, and autonomous operations with data and artificial intelligence (AI)/machine learning (ML) as enablers.

According to the *IDC FutureScape: Worldwide Cloud 2022 Predictions* (IDC #US47241821, October 2021), by 2025, 60% of organizations will implement dedicated cloud services either on premises or in a service provider facility to support and respond to the demands of performance, security, and compliance. Key and emerging technologies, such as security, big data and analytics (BDA), and AI/ML, will be the enablers of digital initiatives moving forward, and cloud services and technologies will become the anchor of how initiatives are deployed and implemented to achieve and drive business resilience, excellence, and innovation for future enterprises.

METHODOLOGY

Besides applying IDC's existing research, it conducted IDC Indonesia's 2022 *Enterprise Survey* through primary interviews to 101 enterprises in Indonesia. The interviews were done with IT decision makers and influencers to understand cloud adoption in their organizations. Industry participants were mainly from the banking, financial services, and insurance (BFSI), media, and logistics sectors.

IN THIS WHITE PAPER

The rise of cloud services has successfully contributed, driven, and supported digital initiatives of industries, such as financial services, media, and logistics, in Indonesia. Although various initiatives and trends are determined, the goals, key attributes, and expected outcomes of cloud services are equal.

In this White Paper, we examine the key drivers and initiatives of industries' DX and cloud adoption in Indonesia, key benefits of cloud infrastructure and services to enterprises and industries, best practices of cloud implementation in the country, and ways Huawei Cloud enable such transformation in a hybrid cloud environment and through industry-driven approaches.

TABLE OF CONTENTS

	P.
Methodology	1
In This White Paper	2
Situation Overview	1
<hr/>	
The Rise of Digital Infrastructure as a Digital Priority	2
The Momentum of Cloud in Indonesia	3
Hybrid Cloud as the Preferred Approach	4
The Emerging Role of Cloud in Industries	5
Financial Services to Be Digitally Competitive in the Market	5
Media to Empower Content Everyday	6
Logistics as an Essential Supply Chain Enabler	8
The Impacts: Distributed Work, Innovation, and Business Process Transformation	9
The Requirement: Secure and Scalable Modern Infrastructure	10
Future Outlook	10
<hr/>	
Hybrid and Multicloud Management for Business Resilience	10
Application Modernization to Optimize Digital Capabilities	11
Consumption-As-A-Service to Maximize Digital Infrastructure	11
Essential Guidance	11
<hr/>	
Best Practices in Cloud Adoption	11
Challenges	12
Conclusion	12
<hr/>	
Huawei Cloud's Value Proposition	13
Huawei Cloud Offerings and Industry Case Studies	13
Media	13
Case Study from a Leading Enterprise in Indonesia	14
Cloud to Optimize Content Delivery: A Case Study of One of the Leading Media Companies in Indonesia	14
Key Initiatives	14
Key Solutions	14
Benefits	15
Logistics	15
Case Study from a Leading Enterprise	15
Cloud to Enable Commerce and Distribution: A Case Study of One of the Leading Multinational Logistics Companies in Indonesia	15
Key Initiatives	16
Key Solutions	16
Benefits	16
Financial Services	16

TABLE OF CONTENTS – Continued

	P.
Financial Omni-Channel	17
Hybrid Cloud Solution	17

LIST OF TABLES

	P.
Table 1 Huawei Cloud's Financial Omni-Channel Solutions	17
Table 2 Huawei Cloud's Financial Hybrid Cloud Solutions	18

LIST OF FIGURES

	P.
1 Indonesia ICT and Public Cloud Services Spending, 2021-2026	1
2 IDC's Future of Digital Infrastructure	2
3 Public Cloud Adoption (PaaS and IaaS)	4
4 Financial Services IT Priorities in Indonesia	5
5 Media IT Priorities in Indonesia	7
6 Logistics IT Priorities in Indonesia	8
7 Cloud Impacts in Indonesia	9

SITUATION OVERVIEW

DX is not an option anymore for organizations to thrive and compete in the market. It has become a core enabler of business growth and strategy in the digital era. Moving into the future, a digital-first strategy is at the heart of businesses' journeys to stay relevant in the market. Entities and people are more connected; business process and operations are more integrated; and digital experiences of stakeholders are highly prioritized as part of DX agendas.

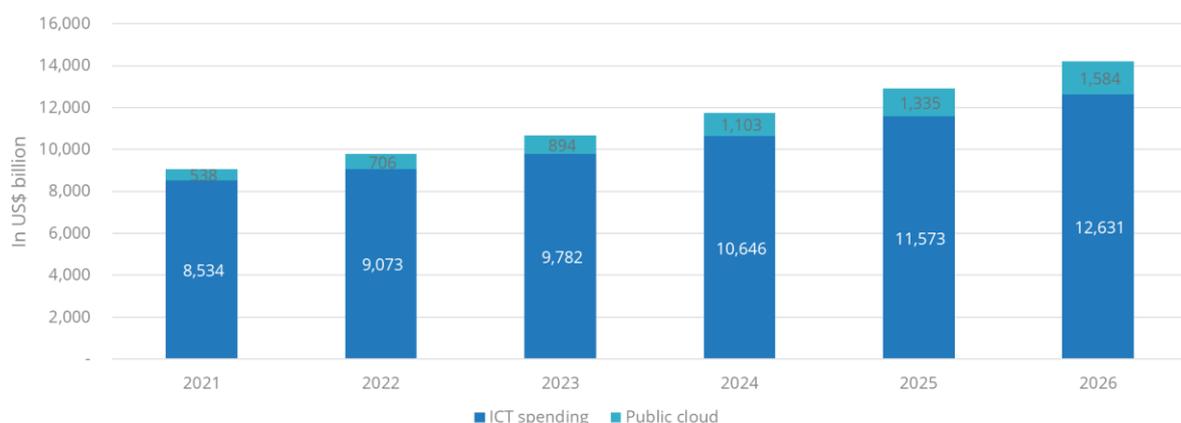
IDC predicted that in responding to the COVID-19 pandemic, global organizations accelerated their investments in digital initiatives. This means that more than half of the global economy will be based on or influenced by digital initiatives. For organizations in Indonesia, more than half of them have leveraged and tied DX initiatives to enterprise strategies at least for a short-term focus. After a global disruption and the COVID-19 pandemic hit, enterprises in Indonesia have become more considerate and aware of the role of digital technologies and capabilities in their organizations. In fact, many enterprises have shifted their digital plans and accelerated their digital and IT transformation agenda, resulting in an estimate of ICT spending growth at a compound annual growth rate (CAGR) of 8.2% for 2021–2026, which is driven by software and services spending.

DX initiatives and agendas are perceived as a must for present and long-term strategies to enterprises in Indonesia so that they can adapt and grow with the market dynamics in the country. IDC determined the rise of customer experience (CX), employee productivity, and innovation as key focus areas that most organizations in Indonesia plan to optimize through digital technologies and digital capabilities. To achieve such digital plans, building digital infrastructure capabilities is defined as one of the top agendas by more than 80% of Indonesian enterprises based on IDC's 2022 *Future Enterprise Resiliency and Spending Survey* conducted in July.

The rise of digital infrastructure has led to the emergence of public cloud services spending. IDC forecasts this to continue to grow and contribute to technology spend and digital initiatives in Indonesia. Indonesia's public cloud services spending is forecast to reach US\$1.584 billion in 2026, which contributes 12.5% to the total ICT spending in Indonesia (refer to Figure 1).

FIGURE 1

Indonesia ICT and Public Cloud Services Spending, 2021–2026



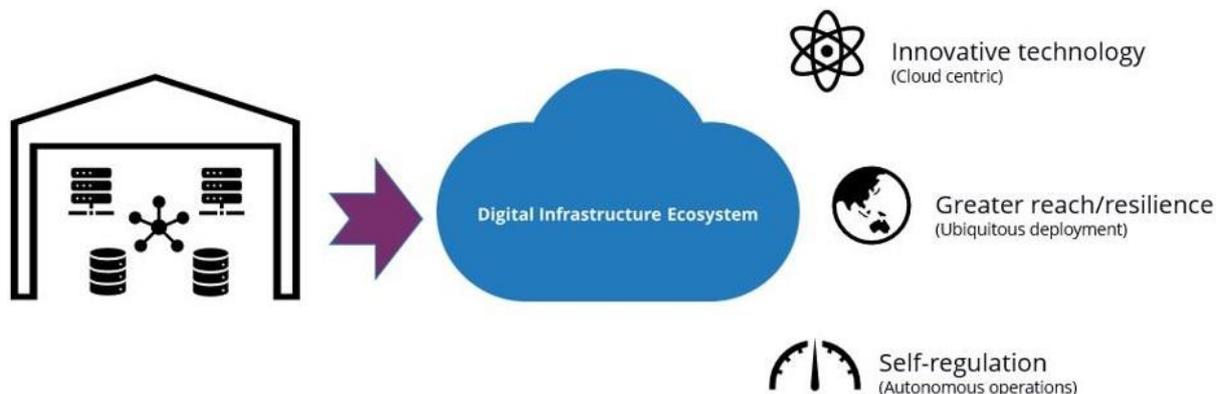
Source: IDC Worldwide ICT Spending Guide and Worldwide Semiannual Public Cloud Services Tracker, 2H21

The Rise of Digital Infrastructure as a Digital Priority

IDC's view of the future enterprise anticipates a world in which most businesses are digitized and enabled by dynamic, autonomous, and interconnected digital infrastructure platforms and services. As a result, the critical role of digital infrastructure for enabling and expanding a digital business has never been higher (see Figure 2).

FIGURE 2

IDC's Future of Digital Infrastructure



Source: IDC, 2022

IDC emphasizes that the success of a digital business is built on critical infrastructure with three major tenets:

- Cloud-native technologies that allow for on-demand resource scaling, migration, and flexibility
- Autonomous operations enabled by software-defined automation technologies paired with AI and ML analytics and best-in-class operational workflows, policies, and governance
- Ubiquitously deployed resource enabled by consumption-based sourcing and consistent visibility and control across the full range of storage, compute, and network infrastructure and services

IDC Indonesia's 2022 *Enterprise Survey* noted that developing a robust digital infrastructure, including cloud technologies, is one of the top IT priorities for most enterprises in Indonesia today as indicated by 29% of enterprises in Indonesia surveyed. Cloud technology is one of the three core pillars of IDC's Future of Digital Infrastructure framework. This goes along with autonomous operations and ubiquitous consumption. These pillars are expected to capture the full complexity and interconnectedness of on-premises, edge, and public cloud infrastructure resources. Cloud technologies serve as the foundation for platforms and systems to build and deliver cloud services and enable the delivery of a variety of shared public cloud services, managed services, dedicated infrastructure, and software-as-a-service (SaaS) models.

The use of cloud technologies in Indonesia is accelerated and driven by, but not limited to, the following factors:

- **The rise of capex- to opex-based approaches.** One of the key considerations for enterprises that has been heavily highlighted during the COVID-19 pandemic is the

alternative model to purchase and get technologies implemented in the organization. IDC determined that anything-as-a-service (XaaS) approaches in deploying digital technologies preserve free cash flows and eliminate capital investment (capex) while allowing DX to happen faster across the enterprise.

- **Scalability and flexibility.** IDC has observed that enterprises in Indonesia have determined and focused scalability and flexibility to reach an optimal level of business agility. Enterprises start to consider how to modernize their approach in IT infrastructure management because their digital environment requires high flexibility and scalability.
- **The rise of digital businesses and channels.** Digital channels, applications/platforms, and businesses have been emerging and trending for the past two years as Indonesian consumers and enterprises' mindsets and behaviors are digitally shifted. New business lines, products, and services are determined to accommodate the intensity of digital competition and ecosystem in the country. Application modernization is expected to be a future plan for enterprises as more enterprises in Indonesia have adopted a broad implementation of business applications according to IDC Indonesia's 2022 *Enterprise Survey*.

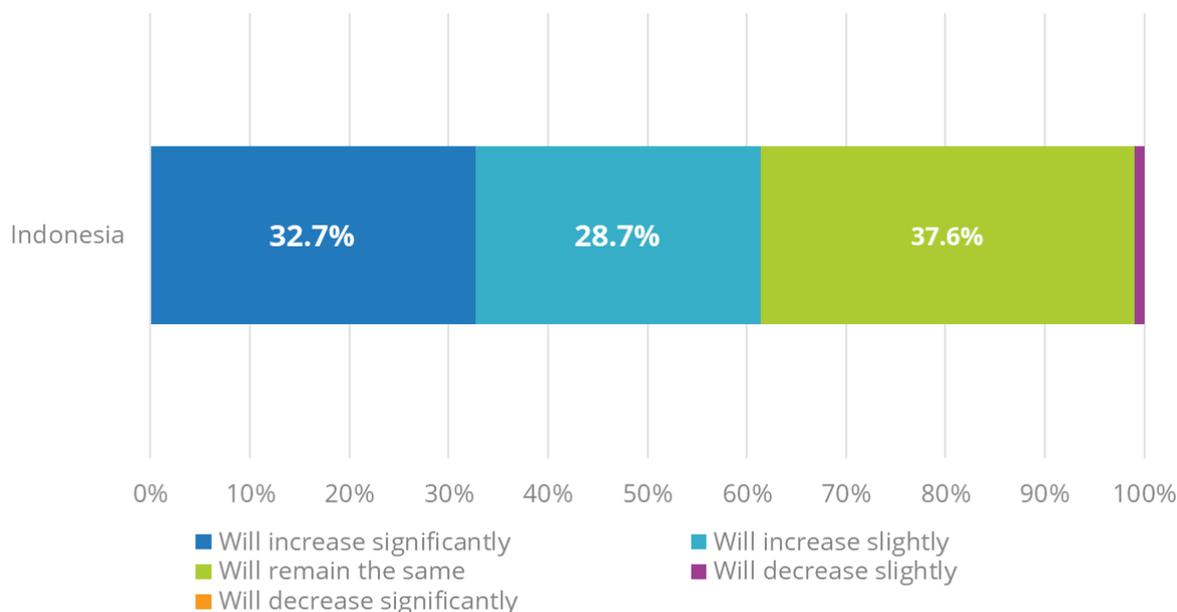
The Momentum of Cloud in Indonesia

Indonesia's public cloud services market is expected to reach US\$1 billion in 2024. IDC estimated that Indonesia's public cloud services market would reach US\$538.29 million in 2021, growing by 38.6% year over year (YoY) according to IDC's 2H21 Worldwide Public Cloud Services Tracker. Because the COVID-19 pandemic has gradually changed enterprises' views and mindsets on digital and has accelerated digital adoption in the market, cloud is essentially relevant and necessary to enable digital initiatives in the country. According to IDC Indonesia's 2022 *Enterprise Survey*, more than 60% of enterprises in Indonesia have indicated an increase of infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS) spending in the near future. The increase is determined as an indication of the shifts and reduction of traditional IT investment of IT planning and agenda of organizations in Indonesia.

IDC forecasts public cloud services to reach US\$1,589.25 million in 2025 with CAGR of 24.1% for 2021–2026, following a DX momentum that is happening in Indonesia. Besides, the acceleration of SaaS, IaaS, and PaaS has played a significant role, especially to create agility and drive innovation within organizations.

FIGURE 3

Public Cloud Adoption (PaaS and IaaS)



Note: n = 101

Source: IDC Indonesia *Enterprise Survey*, 2022

- **Business agility with IaaS.** Indonesia's IaaS market was estimated at US\$230.68 million in 2021 with a significant growth of 40% YoY. The growth is accelerated as enterprises prioritized core infrastructure to accommodate digital initiatives and create business continuity and agility within their organizations. In addition, technology implementation preference has continued to shift from capex to opex. With high-density datacenters and managed hosting, IaaS reduces the amount of capex needs to invest in on-premises hardware and datacenter space, turning more of the budget to opex, building redundancy into enterprise IT, and incorporating hosting strategies. Indeed, IaaS solutions can help streamline business continuity and disaster recovery programs.
- **Innovation with PaaS.** PaaS grew significantly in 2021 as the technology market reached US\$58.7 million in 2021. PaaS is forecast to grow at 33.2% for the next five years, which is estimated to be US\$247 million by 2026. The momentum of PaaS is emerging as enterprises aim to drive and develop digital innovation. IDC expects that platform-based innovation across the spectrum of cloud services will soon become part of any cloud strategy for enterprises.

Hybrid Cloud as the Preferred Approach

Based on IDC Indonesia's 2022 *Enterprise Survey*, hybrid cloud is considered as the top preference of cloud adoption approaches for the next 12 to 18 months, having 32.7% of responses. Private cloud is only perceived by 25.7% of enterprises in Indonesia as the top approach in cloud adoption, followed by mostly public cloud that is indicated by 22.8% of enterprises in Indonesia. The combination of workload deployment on cloud and on-premises is more common and convenient for enterprises in the country, considering the digital sovereignty and capability for

digital self-determination by states, companies, or individuals that have become major concerns for enterprises in Indonesia, especially the regulated ones.

The Emerging Role of Cloud in Industries

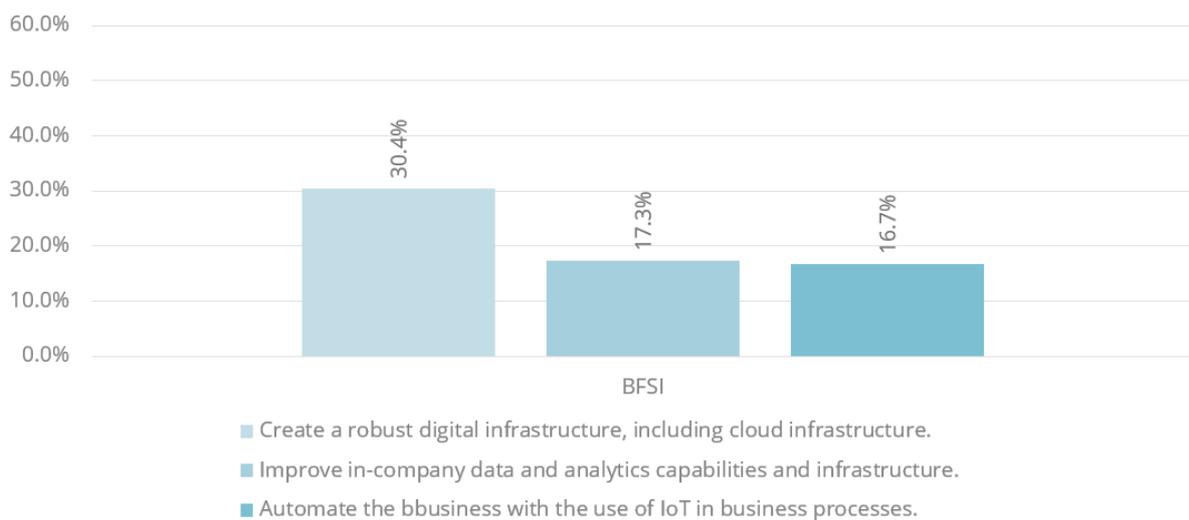
With the acceleration of digital adoption in the country, managing digital infrastructure becomes more important and essential for industries, such as financial services, media, and logistics, that are exposed to digital transactions, services, and consumption. Most industries that IDC observed have indicated creating robust digital infrastructure as an ultimate top IT priority in their organizations. The implementation of cloud as digital infrastructure is expected to give more opportunities and potentials to other emerging technologies, such as BDA, AI/ML, and so on. IDC has observed that some key trends and initiatives of cloud adoption in key industries include the succeeding sections.

Financial Services to Be Digitally Competitive in the Market

The financial services sector, including banking, insurance, and microfinance, is considered as one of the leading and more mature industries in terms of IT and DX in Indonesia. With more than US\$1.5 billion of ICT spending, financial services industries in Indonesia continue to accelerate their digital initiatives to accommodate consumer behavior changes and adapt in a digital-first environment. According to IDC Indonesia's 2022 *Enterprise Survey*, creating a robust digital infrastructure (30.4%), enhancing in-country data and analytics capabilities and infrastructure (17.3%), and developing business automation (16.7%) are key IT priorities from financial services. These priorities are expected to drive financial services organizations to accommodate and reach automation and efficiency, increase speed to market, and boost the use of data-driven decision making within business operations (see Figure 4).

FIGURE 4

Financial Services IT Priorities in Indonesia



Note: n = 28

Source: IDC Indonesia *Enterprise Cloud Survey, 2022*

Digitalization in banks and other financial services industries has been determined to accommodate digital experiences for employees and customers. Banks in Indonesia have started to migrate their noncore workloads to a cloud environment to bring efficiency and scalability in the digital environment. In addition, the emergence of digital banks and financial services has created rising waves of cloud-native applications and technologies to accommodate dynamic trends within the industry. IDC forecasts that Indonesia's financial services sector is to spend US\$116.59 million of public cloud services in 2022 (see IDC's 2022 Worldwide Public Cloud Services Spending Guide).

Based on IDC's 2021 *Worldwide Industry CloudPath Survey* that gave insights into how global industries, including financial services, accelerated their transition to cloud and leveraged new cloud capabilities, there are three notable focus areas that are happening in financial services globally. Focus areas include the development of a more diversified cloud strategy and road map, identification and prioritization of applications, workloads, and business processes that are migrated to the cloud, and new cloud strategies, including cloud procurement and purchasing preferences. IDC has determined that cloud initiatives in the cloud journey for Indonesia's financial services include:

- **Embracing hybrid and multicloud environments.** In banking, the enforcement of *Peraturan Otoritas Jasa Keuangan* (POJK) Number 13/POJK.03/2020 on risk management in ICT adoption has driven banks in Indonesia to work and collaborate with global and local cloud providers and infrastructure companies to enable in-country cloud strategies, be it for infrastructure, applications, and platform services. Private cloud is still the more preferred cloud adoption for financial services with 42.9% of responses from IDC Indonesia's 2022 *Enterprise Survey*, which is followed by a hybrid cloud approach with 28.6%. These cloud approaches are considered as the most convenient way to enable cloud technologies in financial services' digital ecosystem. Based on the same survey, about 75% of enterprises plan to increase their investment in private cloud, and 46% of enterprises plan to invest more in public cloud (IaaS/PaaS).
- **Reassessing applications, workloads, and processes.** Financial services have begun to reassess core and noncore applications, workloads, and processes as they go through digitalization. Business process modernization and automation, digital application development, and digital use cases and services deployment are some of digital initiatives that have been embarked in the financial services industry enabled by cloud technologies in the journey. One of the most exciting data from IDC's 2021 *Worldwide Industry CloudPath Survey* is how cloud is the underlying architecture for business applications, even those that are considered mission-critical. IDC has determined core banking applications, CX, sales and marketing applications, and digital channels as among the workloads that have been shifted to cloud infrastructure.
- **Developing new cloud strategies.** As cloud adoption and implementation are accelerated in the financial services industry, banks and financial services nonbanks have begun implementing their cloud strategies by strategizing cloud procurement and purchasing preferences. There is more education, knowledge transfer, collaboration, and even the creation of a cloud excellence center that are happening in the financial services industry.

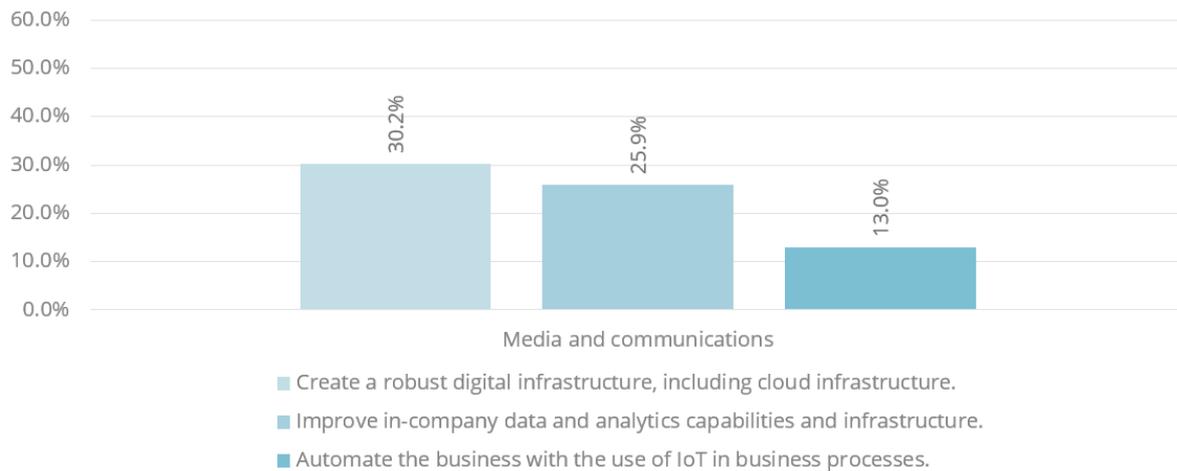
Media to Empower Content Everyday

Media is among the industries that have been disrupted by digital consumptions with the emergence of over-the-top (OTT), video on demand (VOD), and other digital media content that have changed the way consumers enjoy, consume, and experience these media content. These trends have driven more urgency by enabling digital capabilities and using digital technologies to be more reliable and adaptive to the ever-changing market trends in the media industry. As part of digital capabilities, IDC has found out that the implementation of digital infrastructure, data, and

AI/ML are among the top IT priorities of media companies in Indonesia based on IDC Indonesia's 2022 *Enterprise Survey* (refer to Figure 5).

FIGURE 5

Media IT Priorities in Indonesia



Note: n = 27

Source: IDC Indonesia *Enterprise Cloud Survey*, 2022

According to IDC Indonesia's 2022 *Enterprise Survey*, more than 90% of media companies in Indonesia have at least used cloud solutions, be it for test and development or already having the broad implementation of business applications enterprisewide. IDC expects that with more core technologies, such as data, and emerging technologies, such as AI/ML, being adopted within IT environments, digital infrastructure, including cloud, will become more essential than ever to accommodate digital trends in the media industry. According to the same survey, about 80% of media companies in Indonesia have indicated the increase of public cloud (IaaS/PaaS) spending for the next 12 months. Hybrid and public cloud are found to be the major approaches of cloud adoption in the media industry, with more than 80% of media companies planning to increase the use of public cloud in the next 12 months. IDC also expects that cloud investment will grow for business applications because, as emphasized in the survey, media companies will look to expand and enable cloud-based business applications to optimize business operations in the organization.

Some observations of key drivers of cloud adoption for the media industry in Indonesia are as follows:

- **Addressing unpredictability, high traffic, and workloads of digital content.** Media companies must be able to keep up and be prepared with customers' demands on digital contents.
- **Innovating new products and services.** The adaptive and flexible nature of cloud solutions allow media companies to innovate new products and services based on stakeholders' needs.

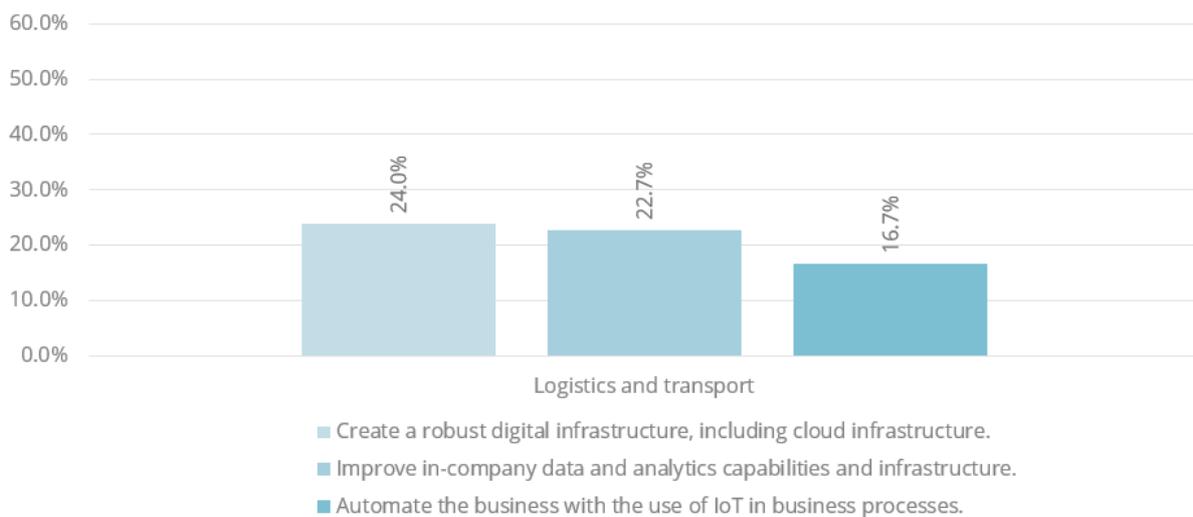
Based on IDC's 2022 *Worldwide Public Cloud Services Spending Guide*, public cloud services spending for the media industry is forecast at US\$30.4 million in 2022.

Logistics as an Essential Supply Chain Enabler

Logistics in Indonesia has shown digital acceleration in business operations and CX because it supports and enables ecommerce and retail/commerce activities in the country. The use of digital applications and platforms for customer and partner transactions is a priority for logistics companies, which leads to redefining their digital strategies and connectedness in the organization. Based on IDC Indonesia's 2022 *Enterprise Survey*, the logistics industry is to focus on increasing automation and efficiency through digital technologies and leadership (see Figure 6).

FIGURE 6

Logistics IT Priorities in Indonesia



Note: n = 25

Source: IDC Indonesia *Enterprise Cloud Survey*, 2022

Moving into digital-driven operations, IDC expects that emerging technologies, such as Internet of Things (IoT), BDA, and AI/ML, will be part of long-term technology road maps for logistics companies. The use cases of connected processes, asset management, fleet/freight management, smart logistics, and smart supply chain will be more demanded and will be commonly found to a certain extent in logistics as digitalization is accelerated.

With cloud infrastructure as one of the essential technologies in the digital journey, IDC forecasts that logistics and transportation in Indonesia will spend US\$19.86 million of public cloud services in 2022 based on IDC's 2022 Worldwide Public Cloud Services Spending Guide.

Based on IDC Indonesia's 2022 *Enterprise Survey*, logistics companies tend to leverage and adopt hybrid and public cloud solutions in their IT environment. About 80% of Indonesia's logistics companies plan to increase public cloud (IaaS/PaaS) adoption, with more than 60% of them planning to drive private cloud spending in hybrid environments. IDC has observed that workload deployment, balancing, and optimization in the industry is a cloud deployment focus that too right now because many logistics companies tend to consider regulation and compliance in the industry and cost or investment they need to spend and allocate in digital infrastructure transformation.

Some key drivers of cloud acceleration in the logistics industry are as follows:

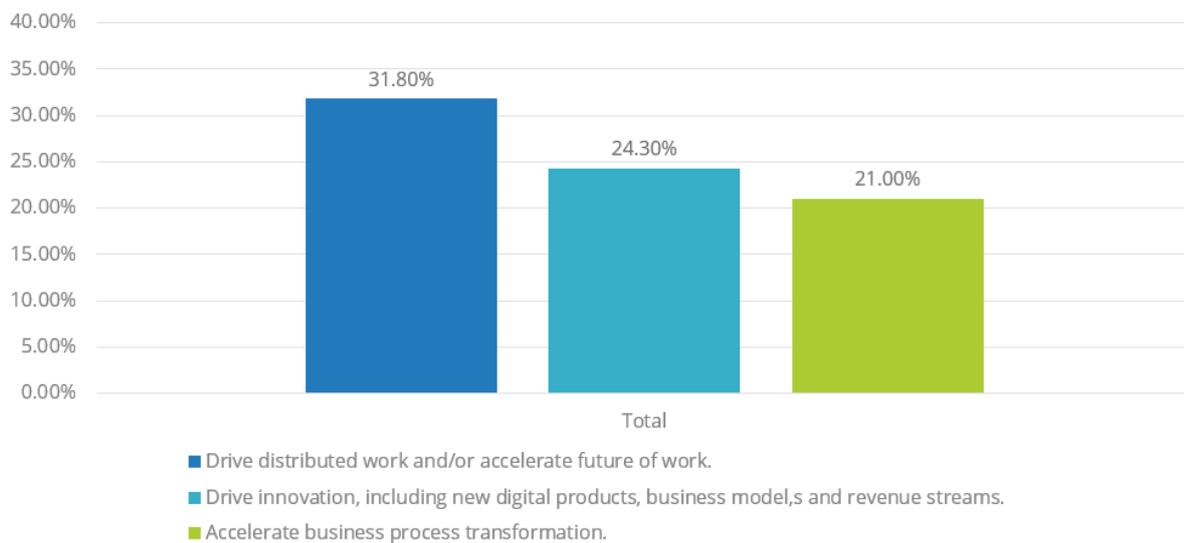
- **Enabling digital capabilities and ecosystems in retail and commerce industries.** As a digital enabler in the market, it is inevitable for the logistics industry to look beyond its own industry and seek collaboration with other related industries, such as manufacturing, retail, and so forth. The logistics industry enables digital platforms and omni-channel experiences as part of the evolution and transformation in the industry ecosystem.
- **Providing reliability and flexibility in infrastructure needs.** One of the benefits that the logistics industry has agreed on cloud infrastructure is the reliability enabled from services. The speed and flexibility that cloud offers to cater and accommodate infrastructure needs have lifted the weights off from most logistics companies.

The Impacts: Distributed Work, Innovation, and Business Process Transformation

According to IDC Indonesia's 2022 *Enterprise Survey*, cloud adoption has driven and accelerated the future of work deployment (31.8%); has driven innovation through new digital products, business models, and revenue generation (24.3%); and has accelerated business process transformation to organizations in Indonesia (21%) (refer to Figure 7).

FIGURE 7

Cloud Impacts in Indonesia



Note: n =101

Source: IDC Indonesia *Enterprise Cloud Survey*, 2022

Organizations in Indonesia have acknowledged that cloud services implementation indirectly brings agility the driving the country's DX agenda, especially after the COVID-19 pandemic has hit and disrupted industries. One of the examples of this is how organizations in Indonesia must thrive and adapt remote work that leverages digital workspaces. Cloud-based applications and infrastructures create flexibility to drive distributed work and accelerate future-of-work situations wherein workspace and work culture must be addressed virtually or digitally. Financial services, media, and logistics industries leverage cloud-based business applications to collaborate with

employees, communicate with customers, and do necessities at work to achieve high efficiency and effectiveness.

Another impact is how cloud creates scalability as companies move into innovation and business process transformation in the light of their DX journey. Innovation is a big part of the digital agenda for enterprises, especially for key industries, such as financial services, media, and logistics. Financial services continue to launch new products and services to cater to the market needs in the country. Media must adapt to find new revenue models to adjust with the changes of new markets. Logistics is moving to new business models that are driven by digital landscape and ecosystem to thrive and support scalable modern infrastructure, which is expected to drive innovative and transformative business development and processes to engage in the market.

The Requirement: Secure and Scalable Modern Infrastructure

To maintain business resilience and speed DX, IDC notes that enterprises must seek to enable consistent and secure end-to-end operational automation and control using ubiquitous cloud-native architectures paired with consumption-driven pricing and on-demand infrastructure scalability. According to IDC Indonesia's 2022 *Enterprise Survey*, the top 3 considerations about cloud services investment are comprehensive security (31.2%), risk management (23.1%), and agile and scalable modern infrastructure (20%). For more regulated industries, such as financial services, comprehensive security is more required, which was determined by 32.1% of financial services companies, to comply to regulations in the industry. Cyberthreats and risks of data sovereignty lead to considerations of risk management capabilities through innovation in cloud services deployment. The high workload and digital consumption in digital banking transformation increase the needs of agile and scalable modern infrastructure to be competitive and adaptive in the market.

Similar cases are seen from media and logistic companies that all emphasize the needs of data security and sovereignty in the cloud journey as well as agile and scalable modern infrastructure to accommodate the growth of digital products and services in various industries.

FUTURE OUTLOOK

Hybrid and Multicloud Management for Business Resilience

As mentioned and noted in previous parts of this paper, IDC has predicted that by 2025, there will be 60% of organizations globally implementing dedicated cloud services either on premises or in a cloud SP facility to respond to performance, security, and compliance requirements in the market (see *IDC FutureScape: Worldwide Cloud 2022 Predictions* [IDC #US47241821, October 2021]).

Public cloud services provide end users access to a variety of shared compute and storage resources, a broad marketplace of applications, and flexibility in consuming and paying for only their used services while reducing the burden of datacenter and infrastructure management. However, businesses continue to express the need to extend the cloud experience and cloud-native technologies into their datacenters and critical business locations. Security and data privacy, compliance with regulatory and internal requirements, inadequate performance, and service costs that are incompatible to end-users' expectations prevent companies from implementing cloud services in line with businesses' requests.

IDC sees that to maintain business resilience and DX speed, enterprises must seek to use consistent end-to-end operational automation and control using ubiquitous cloud-native architectures with consumption-driven pricing and on-demand infrastructure scalability. Multicloud management tools that span a variety of cloud operating models will be essential for organizations to enable end-users to focus on hybrid cloud IT operations and comprehensive policy-driven operations models that span infrastructure resources.

Application Modernization to Optimize Digital Capabilities

Another prediction that is relevant to be considered on the digital agenda is the view of application modernization. Determined from the *IDC FutureScape: Worldwide Cloud 2022 Predictions* (IDC #US47241821, October 2021), IDC has predicted that by 2024, the majority of legacy applications will receive some modernization investment, with cloud used by 65% of the applications to extend functionality or replace inefficient codes.

Application modernization is inevitable because every (old and) new application will exhaust one day and become a legacy application. Organizations have started to look at a Kubernetes orchestration environment as a more desirable and considered deployment platform in the market. However, an approach of greater long-term benefits is to refactor part of the application itself.

IDC's research finds that customers are already keen on using cloud services offering application programming interface (API) management, serverless/function computing, and event-based actions to replace some portions of existing applications. Using these or other cloud services to improve the functionality and efficiency of existing applications is projected to be an approach used for 65% of existing applications being migrated to public cloud by 2024.

Consumption-As-A-Service to Maximize Digital Infrastructure

The growth of public cloud services spending in Indonesia has indicated an interest of organizations to shift to consumption-as-a-service models in using technologies. Traditional approaches in technology procurement are time-consuming and complex, especially if organizations require agility and speed to develop and deploy applications and services within business operations. To become the best in digital infrastructure, IDC believes that leaders in digital infrastructure must align infrastructure architecture, modernization, operations, and funding models with their organization's most important digital business goals. Business outcomes-driven and as-a-service approaches are expected to be the core considerations of technology-buying models in the essence of digital acceleration that drives demands of cloud-based infrastructure and solutions.

ESSENTIAL GUIDANCE

With progressive trends of digital businesses and initiatives in Indonesia, digital infrastructure has certainly become an essential part of the journey for organizations in Indonesia. The adoption of cloud-based services and infrastructure is determined with hybrid and multicloud environments and opportunities to drive digital excellence in the business.

Best Practices in Cloud Adoption

Consider the following:

- **Focus on a cloud adoption strategy.** The cloud adoption strategy should provide clear structure around workload priorities to sort through which workloads should move to the cloud and which workloads should remain on-premises at least for the near term. The cloud adoption strategy must include categorizing workloads to define priorities and assessing/evaluating current and future workloads into the categories. One of the key important tips in determining workload balance is by understanding enterprises' digital road map and use cases. Understanding your industry and company trends in digital will realign with what is important and secondary, core and noncore in your digital infrastructure management.
- **Optimize cloud operations with a hybrid cloud management solution.** Because hybrid cloud adoption is getting more massive for enterprises in Indonesia, IDC expects that the

complexity of integration and orchestration of the cloud platform into the digital infrastructure is to be intensified. Focusing on the cloud operation is essential, and it is focused on managing variable demand and introducing a multitude of dynamic platform decisions and management governance/compliance directions that can be applied to optimize hybrid cloud implementation. Cloud operations management requires an entirely new set of capabilities and drives the potentials of hybrid cloud solutions in the organization.

- **Ensure that the necessary IT capabilities are in place.** Consider the impact that cloud adoption will have on the entire IT organization. There will be more needs and requirements of new resources or skills to support a new set of problems because of this adoption. New capabilities in IT organizations will be identified; and business service information systems will require an upgrade. Having cloud SPs as key partners is suggested to optimize cloud adoption benefits and outcomes in your organization.
- **Look closely and wisely at the partner selection.** Based on IDC's observation, hybrid (and multiple) cloud management and approaches create benefits with right selection of a partner to accelerate IT modernization, assist and ease the shift to cloud-based IT, and establish consistent data/resource management policies and procedures across all clouds. Having partners that are capable of enabling and deploying the right use of cloud applications and infrastructure across internal and external datacenters/infrastructure is beneficial.

Challenges

As cloud adoption is being prioritized more in organizations, several factors may slow down cloud consideration and deployment for enterprises in Indonesia. Based on IDC Indonesia's 2022 *Enterprise Survey*, the top challenges include limited investment for cloud infrastructure, unstable network latency and data transfer on cloud, and lack of unified monitoring and management to optimize cloud implementation. These obstacles may hinder cloud optimization for enterprises in Indonesia, including financial services, media, and logistics.

Limited investment for cloud infrastructure and network latency is considered a key challenge to optimize cloud adoption for most enterprises in the country. Although enterprises still find it challenging to optimize cloud ROI, high latency, in terms of performance, is still found to optimize cloud adoption in Indonesia. Other challenges present in the market include lack of skilled resources and limited governance and compliance in the industries.

The lack of skilled resources and limited governance and compliance within organizations may affect more of the organizations' acceptance and culture toward cloud implementation. As a result, cloud adoption is not optimized because of the lack of know-how and standard to drive development and deployment, leading to less economic benefits to organizations.

Support from cloud SPs to not only educate but also empower users have been impactful for organizations to a certain extent. Enterprises that have strong partnerships with cloud SPs have more chances to grasp the goods, let go the bad, and optimize implementation in their cloud journey.

CONCLUSION

The rise of cloud requirements and needs in Indonesia leads to the momentum of cloud service offerings and competitiveness in the cloud. With the vision of building the cloud foundation for an intelligent world with ubiquitous cloud and pervasive intelligence, Huawei Cloud has positioned and dedicated itself to drive and leverage cloud infrastructure in Indonesia's market with local supports, technology leadership, and industry-driven use cases and approaches. The focus has been driving

everything as a service, with key values on IaaS for global accessibility, technology as a service for easy innovation; and expertise as a service for shared excellence.

Huawei Cloud's Value Proposition

Huawei Cloud drives innovation and collaboration with customers, partners, and developers by emphasizing a mindset of "Think Cloud Native, Act Cloud Native," building an all-digital, all-cloud, and AI-driven world with everything as a service. Huawei Cloud leverages key propositions through the following:

- Huawei Cloud proposes IaaS for global accessibility by expanding global datacenters and networks and leveraging cloud-network collaboration to connect people, things, and applications. It also aims to provide a seamless experience through efficient distribution and processing of information streams and deliver cloud services at speed. Huawei Cloud works with partners to enable 61 availability zones (AZs) in 27 geographic regions, covering more than 170 countries and regions.
- Huawei Cloud offers Technology as a Service for Easy Innovation by driving research and development (R&D) with 100,000 R&D engineers and more than US\$10 billion in annual R&D investment. It provides cloud-native, AI, data intelligence, audio and video, and collaborative office technologies in a wide variety of industries as part of its cloud services.
- Huawei Cloud proposes Expertise as a Service for Shared Excellence by enabling API services through MacroVerse aPaaS, which can be consumed easily by enterprises and developers for scenario-specific innovations.
- Huawei Cloud is establishing AZs in Indonesia. It launched its Indonesia Region in November 2022 that emphasized its focus to enable the digital economy of Indonesia. Huawei Cloud's datacenter in Indonesia will support Making Indonesia 4.0 and empower the DX of enterprises and micro, small, and medium-sized enterprises (MSMEs) in the country. The Indonesia Region is a regional hub of KooVerse, Huawei Cloud's global infrastructure of storage, compute, and network resources. The core areas covered by this Region will enjoy low latency of less than 20ms. This localized cloud foundation also comes with a dual-active, 99.99% highly available disaster recovery (DR) architecture to turbocharge industry innovation and upgrade.

Huawei Cloud Offerings and Industry Case Studies

Huawei Cloud drives competitiveness on its offerings and services with a cloud-native mindset. The competitiveness is found in the form of ubiquitous cloud-native service (UCS), AI services with a one-stop AI development platform, big data cloud services, media services, and cloud stacks that leverages scenario-based solutions for industries.

IDC notes that the emergence of cloud adoption and opportunities in Indonesia is aligned with Huawei Cloud's long-term commitment and competitiveness in the country. As one of the key value propositions and aims for competitiveness, industry-based solutions and expertise have been introduced and emphasized to accommodate digital infrastructure needs and requirements to accommodate industries' DX agenda. Focusing on key industries, such as financial services, media, and logistics, in Indonesia, Huawei Cloud has driven key solutions for each industry to support digital businesses in the ecosystem.

Media

Enabling content production, analysis, and processing and distribution, Huawei Cloud drives competitive edge in the media industry with efficient, intelligent, and stable service capabilities. Huawei Cloud emphasizes key features combining with cloud infrastructure, such as:

- Seamless live streaming solution
- Fast video starting time

- AI capability for video
- Fast and reliable content delivery network (CDN)
- Rendering solution

Case Study from a Leading Enterprise in Indonesia

Cloud to Optimize Content Delivery: A Case Study of One of the Leading Media Companies in Indonesia

For media, it is about momentum and the "now." Hence, it is impossible for media companies to be relevant without having digital capabilities in their operation and services in real time. One of the leading media companies in Indonesia has begun DX in cloud infrastructure as a key enabling and driving element in the organization. This is done as a response to the massive rise of digital content consumption and requirements in Indonesia. The media company experienced and anticipated the massive growth of users and traffic in popular contents that bring the company to consider and implement scalable infrastructure in the organization.

Key Initiatives

Cloud infrastructure has been at the heart of digital acceleration for media to cater to key digital initiatives in the organization, such as:

- **Enhancing experiences and offering digital media platforms and services, such as news portals, video content, live streaming, and so on.** Media is prioritizing digital platforms to engage and deliver services to customers. Digital infrastructure is employed to help and support the media company to accommodate fluctuations in traffic and workload of content consumptions in a daily basis. As a result of cloud implementation, a media company can accommodate four times the growth of users and traffic with a more efficient and cost-effective process. Using cloud brings flexibility and scalability in managing the IT infrastructure environment.
- **Nurturing an innovative and adaptive mindset in product and market development.** The media company realized that it is a must to welcome and be open to new ideas, products and services, and contents to be relevant in the market. The digital culture has brought the media company to accommodate content testing and development that is allowed and supported by cloud infrastructure.

Key Solutions

To optimize results of DX agenda and initiatives, the media company has leveraged and enabled cloud infrastructure and solutions from Huawei Cloud:

- **Computing, such as Elastic Cloud Server** and Auto Scaling to provide secure, scalable, and on-demand computing resources to flexibly deploy and balance applications and workloads
- **Storage, such as Cloud Backup and Recovery** and Object Storage Services to back up cloud services and provide stable, secure, and easy-to-use cloud storage services
- **Network, including Virtual Private Cloud** and Elastic Load Balance to optimize and secure the virtual network and distribute traffic across multiple services to balance workloads
- **Content delivery network to speed up website load times**, high-quality video stream, and file download times with high bandwidth and performance, with Huawei Cloud CDN's High Bandwidth that has been utilized to handle high-traffic requirements with optimal performance for the media company

Benefits

With local support and the accountability of Huawei Cloud in Indonesia, the media company has realized better CX and services and has driven operational excellence in the organization. Faster speed to market and higher reliability are determined as key benefits that are experienced to be viable and relevant in the industry.

- **Speed to market.** Cloud infrastructure helps the media company address changing media trends that happen frequently and quickly. The media company can now be agile and flexible to be relevant and can currently address market trends without compromising qualities and allocated budgets of the IT infrastructure.
- **Reliability.** Offering digital products/services requires high network capacities in a daily basis. The use of cloud infrastructure and solutions have enabled the media company to have high reliability in service quality and delivery.

Logistics

Realizing an emerging industry in Indonesia, Huawei Cloud has put focus on building cloud-enabled industry solutions to accommodate potentials of the logistics industry. Using Huawei's supply chain practices, Huawei Cloud is meant to optimize and unlock benefits of cloud solutions for the logistics industry in a digital ecosystem. It has assessed and determined cloud solutions based on industry value chain, including order/supply, transport, warehouse, delivery, and end customers. By combining and driving emerging technologies, such as IoT, BDA, and blockchain, Huawei Cloud deploys smart logistics solutions with the following key attributes:

- **Smart logistics solutions.** Huawei Cloud's smart logistics solutions emphasize best-of-breed digital technologies with intelligent logistics services, secure and stable service system, warehouse and transportation platforms, and emerging technologies, such as IoT and BDA.
- **AI platform.** Huawei Cloud has allowed logistics companies to perform better and more efficiently in routing and improving accountability and reliability to partners, such as ecommerce platforms, with its AI-enabled platform.

Case Study from a Leading Enterprise

Cloud to Enable Commerce and Distribution: A Case Study of One of the Leading Multinational Logistics Companies in Indonesia

Logistics has obtained an essential role in supply chain ecosystem that leads and drives the need of being agile and resilient in difficult times. Technology has given more agility, ability, and opportunities for logistics to thrive and grow, and the success examples of this are leading logistics companies that have intently driven a DX agenda to be more competitive and adaptive to support their business and customers' needs. Starting its journey in Indonesia more than five years ago, the logistics company has committed to enable certain technologies, and cloud is one of the critical ones. The company believes that enabling digital capabilities and digital infrastructure is a must to optimize operational excellence and provide better CX.

According to IDC Indonesia's 2022 *Enterprise Survey*, the logistics company has already adopted cloud solutions for 90% of the workloads in the organization, with the remaining still at its on-premises datacenter. The logistics company must be ready, at all costs, to uncertainties and dynamics that may occur in the ecosystem. One of the trends that is driving the digitalization of the logistics company is the fast growth of ecommerce in Indonesia, which requires the logistics company to stay ahead and agile in the market.

Key Initiatives

Cloud infrastructure is essential for the logistics company to be agile and innovative in the industry ecosystem. The key initiatives enabled through cloud are:

- **Increasing and focusing on digital-driven business and operations.** The logistics company has determined and committed to focus and prioritize digital business and experience in the market. Having cloud infrastructure gives more flexibility and scalability to innovate and optimize digital products and services to customers and its internal operations. Focusing on digital businesses and operations has pushed the logistics company to be ready and resilient in adapting to market changes and dynamics.
- **Accommodating emerging technologies in the future.** One of the plans of the logistics company is to optimize data capabilities and enable emerging technologies, such as IoT, in its business operations. Focusing on cloud implementation is the beginning for a long-term vision of the logistics company.

Key Solutions

To optimize the results of its DX agenda and initiatives, the logistics company has leveraged and enabled cloud infrastructure and solutions from Huawei Cloud:

- **Computing, such as Elastic Cloud Server** and Auto Scaling to provide secure, scalable, and on-demand computing resources to flexibly deploy and balance applications and workloads
- **Network that includes Virtual Private Cloud** and Elastic Load Balance to optimize and secure the virtual network and distribute traffic across multiple services to balance workloads

Benefits

Highly supported and driven by Huawei Cloud, the logistics company has gained and experienced business benefits with cloud as the core digital infrastructure.

- **Speed to market.** Cloud infrastructure gives agility for the logistics company to respond in any market dynamics that occur in its digital environment. Being agile to changes and fast to market have become key attributes to thrive in the industry, and the logistics company can achieve it with cloud infrastructure enabled by Huawei Cloud.
- **Efficiency and effectiveness.** The effort and commitment in the digital business may affect the investment, for which the company should prepare. This, however, is not to forget the dynamics of the logistics industry, and the ecosystem may require extra budget and funding to capture business opportunities in the industry. For example, logistics companies must be ready if there is a rise in demand from ecommerce partners because of ad hoc promotions. Using cloud as core digital infrastructure has given more space for the logistics company to be cost and process effective in managing their IT infrastructure and environment. The process must be so clear to be responsive, and the cost must be affordable to be adaptive. The logistics company has increased more chances to entice more businesses and generate revenue with resilient and agile infrastructure that is driven by cloud solutions.

Financial Services

Huawei Cloud elaborates reliability and security especially for a highly regulated industry that is financial services, including financial technology (fintech) organizations. Conventional banks, digital banks, insurance, payment gateways, and peer-to-peer (P2P) lending are among the sub-industries that benefit from Huawei Cloud solutions. The key solutions are highlighted in the succeeding sections.

Financial Omni-Channel

Huawei Cloud's cloud services emphasize an end-to-end service for financial customers, such as banks, insurance, and microfinance, by combining industry-focused features in the technology environment. The objective of Financial Omni-Channel Solutions is to help migrating fundamental services to the cloud so that companies can achieve fast growth and improve their competitiveness in the country. Several features that have been implemented in financial services are detailed in Table 1.

Table 1

Huawei Cloud's Financial Omni-Channel Solutions

Solution	Description
Dedicated Financial Cloud	Dedicated Financial Cloud helps financial institutions migrate core services to the cloud. This includes computing, storage, and network resources that are isolated on multiple levels.
Digital Bank	The Digital Bank is a dedicated cloud solution that provides exclusive resources for digital banking services by ensuring high performance and security compliance for core financial services.
Insurance Business	The Insurance Business solution is enabled through Huawei Cloud services by constructing and deploying insurance service systems.
Small Internet-Based Loans	The Smart Internet-Based Loans solution is a wide range of Huawei Cloud services to establish a secure, regulation-compliant, small internet-based loan platform that includes risk control and business management capabilities.
Supply Chain Finance	Supply Chain Finance solutions roll out financial supply chain systems quickly.

Source: IDC, 2022

Hybrid Cloud Solution

The Hybrid Cloud Solution is highly demanded by financial services institutions. This solution has focus and priorities on acceleration of the innovation and digitalization in the industry. This solution utilizes hybrid cloud that connects public and private cloud. It has a unified public cloud service ecosystem and public cloud operations and maintenance (O&M) management. With key focus areas of high speed to market and resilient digital infrastructure, including disaster recovery centers, Huawei Cloud leverages hybrid cloud solutions with the key attributes as stipulated in Table 2.

Table 2

Huawei Cloud's Financial Hybrid Cloud Solutions

Solution	Description
Hybrid Cloud Disaster Recovery and Backup	The solution provides disaster recovery and backup capabilities for multiple cloud and cross-cloud for service deployment, data protection, and management.
Backup and Archive	Backup and Archive provides a secure and easy-to-manage data protection solution that backs up local data to the cloud.

Source: IDC, 2022

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