Top Four Trends Are Shaping the Future of Public Cloud

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Top Four Trends Are Shaping the Future of Public Cloud

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Initiatives: Cloud and Edge Infrastructure

New trends in cloud computing are continuing to expand the breadth of cloud offerings and capabilities. This research enables I&O leaders to anticipate and adapt their strategies to the future of cloud computing.

Additional Perspectives

- Summary Translation: Top Four Trends Are Shaping the Future of Public Cloud (26 October 2021)

Overview

Impacts

- Broad adoption of fully managed and artificial intelligence (AI)-/machine-learning (ML)-enabled cloud services from hyperscale cloud infrastructure and platform service (CIPS) providers will rapidly eliminate the operational burden of traditional infrastructure and operations (I&O) roles in the public cloud.

- New public cloud use cases empowered by new cloud options and non-geosynchronous-orbit (NGSO) communications constellations, including low earth orbit (LEO) and medium earth orbit (MEO) satellites, and new 5G R16 and R17 capabilities, will drive broader, deeper and ubiquitous cloud usage over the next five years.

- Growing geopolitical regulatory fragmentation, protectionism and industry compliance are driving the creation of new regional and vertical cloud ecosystems and data services, like GAIA-X in European countries or in global finance and pharmaceutical markets.

- Cloud providers are responding to customer organizations' growing focus on sustainability by instituting more aggressive carbon-neutral corporate goals, creating new challenges to I&O leaders.

Recommendations

I&O leaders focused on cloud and edge infrastructure should:

- Expand their cloud automation strategies by incorporating new automated cloud service provider (CSP) tools and services into their I&O processes and skills.
- Explore the new cloud use cases being created by new wireless communications advances, mainly those that allow the creation of new immersive customer experiences and new business models.
- Pursue new cloud use cases by incorporating solutions such as data encryption and distributed cloud that allow you to maximize the utility of your preferred strategic cloud provider.
- Monitor future developments of new geopolitical regulatory and regional protections by working closely with legal and compliance teams within your organization.
- Incorporate sustainability goals into your their strategies by leveraging cloud providers' environmental initiatives and advances that deliver additional business value like strengthening the brand equity of their organization.

Strategic Planning Assumption

By 2026, public cloud spending will exceed 45% of all enterprise IT spending, up from less than 17% in 2021.

Introduction

Table 1: Impacts and Top Recommendations for I&O Leaders

(Enlarged table in Appendix)

Impact ↓	Top Recommendation ↓
Adopting fully managed and AI/ML-enabled cloud services from hyperscale CIPS providers shifts the operational burden from traditional I&O roles to automation frameworks, software developers and CIPS providers.	▪ Expand your cloud automation strategies by incorporating new automated CSP tools and services into your I&O processes and skills.
A new greater level of cloud service expansion over the next five years, empowered by new distributed cloud options and NGSO communications constellations, including LEO and MEO satellites, and new 5G R16 and R17 capabilities will push cloud adoptions to a new level of broader, deeper and ubiquitous cloud usage.	▪ Explore the new cloud use cases that are being created by new wireless communications advances, mainly those that allow the creation of new immersive customer experiences and new business models.
Growing geopolitical regulatory fragmentation and protectionism are driving the creation of new cloud and data service ecosystems, such as GAIA-X in European countries.	▪ Pursue solutions, such as security features and distributed cloud, that allow you to maximize the use of your preferred strategic cloud provider. Regional providers do not have the capabilities of global hyperscalers and the trade-offs for using a local provider may be unacceptable to application architects. ▪ Monitor future developments of new geopolitical regulatory and regional protections by working closely with legal and compliance teams within your organization.
Cloud providers are responding to customer organizations' growing focus on sustainability by instituting more aggressive carbon-neutral corporate goals.	▪ Incorporate sustainability goals into your cloud strategies by leveraging your cloud providers' environmental initiatives and advances that deliver additional business value like strengthening the brand equity of your organization.

Source: Gartner (June 2021)

New trends in public cloud computing expand public cloud offerings and present organizations with opportunities to simplify management and strengthen their commitment to "green IT," but also could present potential regulatory compliance pitfalls. This research helps I&O leaders to anticipate and adapt their strategies for what is next in the future of public cloud computing.

Impacts and Recommendations

CIPS Providers' Automated Programmable Infrastructure

Infrastructure is becoming programmable, and the operation of programmable infrastructure is becoming automated. Modern IT infrastructure, whether deployed in the data center or consumed in the public cloud, requires less manual intervention and routine administration than its legacy equivalents. CIPS providers are automating significant parts of the IaaS and PaaS stack, including database replication and orchestration of container workloads. Managed database services from hyperscale cloud providers relieve enterprises of the responsibility of ensuring that database replicas are in place and performing as expected. Such systems are easier to manage because routine tasks are now the responsibility of CSPs.

For example, this option has proven popular among organizations deploying containers for the first time. More than 50% of new customers deploying containers on Amazon Web Services (AWS) in 2020 chose AWS Fargate, a serverless container offering that abstracts container orchestration and management away from users of the service. AWS automates the orchestration and management.

But this level of reliability comes at an acquisition cost that is nearly twice as expensive as DIY alternatives, such as deploying your own database software on virtual machines or bare-metal compute infrastructure. Before adopting a service that automates orchestration and management, I&O leaders must ask:

- Do we have the right skills? Can we deploy, operate and manage a cloud service as well as the service provider?
- Can we manage a DIY deployment and all the surrounding software required at a lower cost than the premium imposed by the service provider?
- Can we keep up with a hyperscale service provider's pace of innovation with respect to a particular service?

Recommendation:

- Expand your cloud automation strategies by incorporating new automated CSP tools and services into your I&O processes and skills.

Cloud Ubiquity

Today, the cloud underpins most new technological disruptions, including composable business, and has proven itself during times of uncertainty with its resiliency, scalability, flexibility and speed. Hybrid, multicloud and edge environments are growing and setting the stage for new distributed cloud models.

As a result, cloud adoption will continue to expand rapidly (for example, overall more than 20% CAGR from 2020 to 2025 in total spending; see Forecast: Public Cloud Services, Worldwide, 2019-2025, 1Q21 Update). In addition, new wireless communications advances such as 5G R16 and R17 capabilities, as well as non-geosynchronous-orbit (NGSO) communications constellations that include LEO and MEO satellites, will drive new use cases in multiple industries and additional cloud usage growth.

New use cases could include, for example:

- Enhanced mobile banking experiences (see Market Trends:5G for Banking)
- Public-sector digital transformation initiatives, such as smart city, digital government, mobile and cloud-based service (see Market Trends: 5G for the Public Sector)
- Healthcare transformation when combined with AI, augmented reality (AR)/virtual reality (VR) and edge computing (see Market Trends: 5G for Healthcare)
- Smart factories and Industrie 4.0 (see Market Trends: 5G in Manufacturing)
- Enhanced shopping experience through online and physical shop channels (see Market Trends: 5G for Retail)

Recommendation:

- Explore the new cloud use cases that are being created by new wireless communications advances, mainly those that allow the creation of new immersive customer experiences and new business models.

Regional Cloud Ecosystems

Geopolitical change may be the only trend that's countering the expected impacts of market consolidation and concentration. For example, digital service taxes, tariffs and other geopolitically driven restrictions on trade and investment could increase fragmentation in the tech industry (see Note 1 and Tech Providers 2025: Strategic Responses to Disruption From Geopolitics and World Events).

For the enterprise market, this may evolve into a more segmented market that offers a choice between tech providers headquartered in countries or regions like Europe, China or the U.S. Both sets initially will continue to leverage the same open-source components they leverage today. However, the competitive landscape won't happen at that underlying technology level, but at the higher level of enabled business outcomes. Regions not able to create or sustain their own platform ecosystems will have no choice but to leverage the platforms created in other regions and resort to legislation and regulation to maintain some level of control and sovereignty. This may include regions that were traditionally economically strong, such as Europe and the Middle East. Concerns among politicians, academia and tech providers in these regions are increasing, leading to initiatives such as GAIA-X and others (see Market Trends: Europe Aims to Achieve Digital Sovereignty With GAIA-X).

Moreover, regional data residency and privacy laws are increasing in scope and complexity, and companies in the financial and public sectors are looking to reduce critical lock-in and single points of failure with their cloud providers outside their country.

Recommendations:

- Pursue solutions, such as data encryption and distributed cloud, that allow you to maximize the use of your preferred strategic cloud provider. Regional providers do not have the capabilities of global hyperscalers and the trade-offs for using a local provider may be unacceptable to application architects.
- Monitor future developments of new geopolitical regulatory and regional protections by working closely with legal and compliance teams within your organization.

Sustainability and “Carbon-Intelligent” Cloud

Climate change is one of the biggest strategic issues that most organizations will face over the next several years. It affects companies through forces that range from consumer and enterprise buying criteria to employee and partner expectations of corporate social responsibility. Investors’ notion of carbon risk is adding a new financial element to the issue, and policymakers around the world are introducing legal and regulatory imperatives. Finally, weather events have had, and will continue to have, a direct physical impact on companies’ products, services and operations.

Having a fully sustainable digital business is becoming mandatory for a growing number of organizations and, for many, the choice of CSP may hinge on the provider’s “green” initiatives. As a result, the vast majority of cloud providers are taking steps to reduce their environmental impact, which includes implementing more aggressive carbon-neutral goals and commitments and focusing on continuous improvement of their sustainability capabilities, as new sustainability requirements will be mandated over the next few years.

Recommendation:

- Incorporate sustainability goals into your cloud strategies by leveraging your cloud providers’ environmental initiatives and advances that deliver additional business value like strengthening the brand equity of your organization.

Evidence

Evidence comes from multiple vendor announcements, Gartner client inquiries, published research and presentations from Gartner research communities.

Note 1: Earlier Gartner Perspective on Geopolitical Fragmentation

In earlier scenario planning efforts, such as Market Insight: Future of IT Services, 2020, the "Economic Fortresses" Scenario from October 2012 and Market Insight: The Future of the Data Center Market, the "Tech Ration" Scenario from 2013, Gartner has discussed the possible impact of fragmentation scenarios. Our latter 2013 research, for example, explores a scenario where, In response to the worldwide economy and events in the Middle East, governments around the world became protectionist and internally focused. Like the U.S. with its "Made in America" program, the EU mandated that all government and business purchases, including IT, were to be from EU providers. This attitude began to filter down to local regions where "Buy local" mandates became the norm. By 2017, this movement and declining government revenue resulted in local taxes being levied on all internet transactions on a global basis. In anticipation of the move toward internet taxation, Amazon purchased an island and established its own national state and government to avoid paying internet transaction taxes.

While in the earlier 2012 note, we explored for example how "information policies" may cause:

- Challenges from data sovereignty issues and strengthening of borders.
- Digital services used as "weapons" in the battle for growth, dominance and power.
- Governments to prevent data, information and trade from moving outside their respective borders.
- Economic fortresses forcing local standards, making global trade difficult.

In retrospect, we now all know this scenario did not transpire in the projected period. In fact, quite the contrary happened, with global trade reaching a series of all-time highs. Recent events, however, may have made this scenario a lot more likely than most would have expected just a year ago.

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Impact ↓	*Top Recommendation* ↓
Cloud providers are responding to customer organizations' growing focus on sustainability by instituting more aggressive carbon-neutral corporate goals.	■ Incorporate sustainability goals into your cloud strategies by leveraging your cloud providers' environmental initiatives and advances that deliver additional business value like strengthening the brand equity of your organization.

Source: Gartner (June 2021)

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