

Magic Quadrant for Cloud Infrastructure and Platform Services

Published 1 September 2020 - ID G00441742 - 39 min read

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The capability gap between hyperscale cloud providers has begun to narrow; however, fierce competition for enterprise workloads extends to secondary markets worldwide. Infrastructure and operations leaders should evaluate cloud providers with a broad range of use cases and a wide market presence.

Market Definition/Description

Cloud computing is a style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service using internet technologies. Cloud infrastructure and platform services (CIPS) are defined as standardized, highly automated offerings, in which infrastructure resources (e.g., compute, networking and storage) are complemented by integrated platform services. These include managed application, database and functions as-a-service offerings. The resources are scalable and elastic in near-real time and are metered by use. Self-service interfaces are exposed directly to the customer, including a web-based user interface (UI) and an API. The resources may be single-tenant or multitenant, and can be hosted by a service provider or on-premises in the customer's data center.

The scope of this Magic Quadrant has changed, compared with its predecessor, the "[Magic Quadrant for Cloud Infrastructure as a Service](#)." Gartner has developed this Magic Quadrant to reflect the changing dynamics of cloud services offered and the ways that enterprise customers adopt them. Ultimately, hyperscale cloud providers, and the broad array of services they offer beyond infrastructure as a service (IaaS), have found strategic importance in Gartner's enterprise clients and the Magic Quadrant needed to evolve to reflect as much.

The scope of the Magic Quadrant for CIPS includes IaaS and integrated platform as a service (PaaS) platforms. These include application PaaS (aPaaS), functions as a service (FaaS), database PaaS (dbPaaS), application developer PaaS (adPaaS) and industrialized private cloud offerings that are often deployed in enterprise data centers.

Understanding the Vendor Profiles, Strengths and Cautions

CIPS providers that target enterprise and midmarket customers generally offer high-quality service, with excellent availability, good performance, high security and good customer support. Exceptions will be noted in this Magic Quadrant's evaluations of individual providers. When we say "all providers," we specifically mean "all the evaluated providers included in this Magic

Quadrant,” not all CIPS providers in general. Keep the following in mind when reading the vendor profiles:

- **All the providers have public cloud IaaS and PaaS offerings.** Most also offer, or are in the process of building, industrialized private cloud offerings, in which every customer is on standardized infrastructure and cloud management tools. In some cases, the provider’s industrialized, on-premises offering may share similarities to hyperconverged infrastructure (HCI), but tethered to the cloud. However, this may not resemble the provider’s public cloud service in architecture or quality. A single architecture and feature set and cross-cloud management, for both public and private CIPS, make it easier for customers to combine and migrate across service models as their needs dictate. They also enable the provider to use its engineering investments more effectively. Gartner is beginning to describe the notion of cloud-provider-managed infrastructure, wherever it may exist, as “distributed cloud.”
- **All the providers target midmarket businesses and enterprises, as well as other companies that use technology at scale.** Some of the providers may also target small businesses and startups. Just because a provider targets a segment, however, does not necessarily mean that it is well-suited to that segment’s needs. Furthermore, not all providers have the capacity to serve very-large-scale customers, and some have capacity constraints in particular regions.
- **All the providers offer basic cloud IaaS – compute, storage and networking resources as a service.** They also offer additional value-added capabilities, notably cloud software infrastructure services – typically middleware and databases as a service – including PaaS capabilities. These services, along with IT operations management (ITOM) capabilities as a service (especially DevOps-related services), are a vital differentiator in the market, especially for Mode 2 agile IT buyers.
- **All the providers claim to have high security standards.** However, the extent of the security controls provided to customers varies significantly. All the providers evaluated can offer solutions that will meet common regulatory compliance needs, unless otherwise noted. All the providers have undergone SOC 1, SOC 2 and SOC 3 audits, as well as SSAE 16, ISO/IEC 27001, ISO/IEC 27017 and ISO/IEC 27018 audits. This provides a relatively high level of assurance that the providers are adhering to generally accepted practices for the security of their systems, but it does not address the extent of controls offered to customers.

Security is a shared responsibility. Customers need to correctly configure controls, and they may need to supply additional controls beyond what their providers offer. Furthermore, providers vary in their degree of transparency as to how services are architected, although customers typically have access to third-party assessment reports under a nondisclosure agreement (NDA).

- **Monthly compute availability service-level agreements (SLAs) of 99.95% and higher are generally the norm.** They are typically higher than availability SLAs for managed hosting. Service credits for outages in a given month are typically capped at 100% of the monthly bill;

however, some providers have caps as low as 25%. This availability percentage is typically non-negotiable, because it is based on an engineering estimate of the underlying infrastructure reliability.

- **Single-instance compute SLAs have become common for providers in this Magic Quadrant.** It might be more accurate to say that there are usually two SLAs – one for the compute service, and one for individual instances. Some providers have a compute availability SLA that requires customers to use compute capabilities in at least two fault domains (sometimes known as “availability zones” or the like).
- **Many providers have additional SLAs.** These cover network availability and performance, customer service responsiveness and other service aspects.
- **Infrastructure resources are not normally automatically replicated into multiple data centers.** Customers are responsible for their own business continuity. Some providers offer optional disaster recovery solutions.
- **All providers offer per-second metering of virtual machines (VMs).** Some can offer shorter metering increments, which can be more cost-effective for short-term batch jobs. Unless otherwise noted, providers charge on a per-VM basis.
- **Providers are increasingly offering bare-metal physical servers on a dynamic basis.** These are priced by the second. Providers with a bare-metal option are noted as such.
- **All the providers partner with carrier-neutral colocation exchanges.** This enables customers to obtain connectivity from a variety of carriers that are located in these facilities. In addition, many customers require a small amount of supplemental colocation in low-latency proximity with their cloud provider. For example, they may have a large-scale database, specialized network equipment or legacy equipment, such as a mainframe.
- **Some providers offer software marketplaces.** In these marketplaces, software vendors specially license and package their software to run on that provider’s cloud IaaS offering. Marketplace software can be automatically installed, and can be billed through the provider, although the software vendor often provides support.
- **All providers offer enterprise-class support with 24/7 customer service.** This is provided via phone, email and chat, along with an account manager. Some offer a lower level of support, but allow customers to pay extra for enterprise-class support.
- **All the providers will sign contracts with customers, can invoice and can consolidate bills from multiple accounts.** All providers offer online sign-up and credit card billing, because they recognize that enterprise buyers prefer contracts and invoices. Some will sign “zero dollar” contracts that do not commit a customer to a certain volume.
- **Some providers will sign a U.S. Health Insurance Portability and Accountability Act Business Associate Agreement (HIPAA BAA).**

- Unless otherwise noted, all providers will sign the following contract addendums:
 - An EU Data Protection Directive (95/46/EC) data-processing agreement (DPA), which includes the model clauses
 - An EU General Data Protection Regulation (GDPR) DPA
- **Managed and professional services are an optional but important accelerator for customer success.** Almost all providers rely heavily on managed service providers (MSPs) and system integration (SI) partners for these services. However, most providers offer their own first-party professional services and some also offer first-party managed services offerings.
- **All of the evaluated providers offer a portal, documentation, technical support, customer support and contracts in English.** Some can provide one or more of these in languages other than English. Most providers can conduct business in local languages.

The service provider descriptions are accurate as of the time of publication. Our technical evaluation of service features took place between January 2020 and March 2020.

Format of the Vendor Descriptions

When describing each provider, we first summarize the nature of the company, then provide information about its industrialized cloud IaaS offerings in the following format:

- **Locations:** Cloud data center locations by country, languages in which the company does business and languages in which technical support can be conducted.
- **Recommended Uses:** These are the circumstances under which we recommend the provider. They are not the only circumstances in which it may be a useful provider, but they are the scenarios for which, in Gartner’s opinion, the provider is well-suited.

For a detailed technical description of CIPS offerings, along with a use-case-focused technical evaluation, see “Critical Capabilities for Cloud Infrastructure and Platform Services, Worldwide.”

We also provide a detailed list of evaluation criteria in [“Solution Criteria for Cloud Integrated IaaS and PaaS.”](#) A detailed assessment of each provider against these criteria can be found in the Solution Scorecards. The results are also available in Gartner’s Cloud Decisions portal (see [“Cloud Decisions’ Cloud Compare: Perform Real-Time IaaS Pricing and Performance Analysis”](#)).

Magic Quadrant

Figure 1. Magic Quadrant for Cloud Infrastructure and Platform Services





Vendor Strengths and Cautions

Alibaba Cloud

Alibaba Cloud (also known as Aliyun in Chinese) is a Niche Player in this Magic Quadrant. This Magic Quadrant evaluation is focused on Alibaba Cloud’s international business, which is headquartered in Singapore, and our technical assessment was performed using the international service.

Locations: Alibaba Cloud’s operations are geographically diversified with multiple regions in China. In addition, it has a presence in the U.S. (East and West Coasts), Germany, Australia, Indonesia, Japan, India, Malaysia, Singapore, the United Arab Emirates (UAE) and the U.K., as well as the Hong Kong market.

Recommended Uses: Cloud-first digital business workloads for customers that are (1) based in China or Southeast Asia and wish to leverage Alibaba Cloud’s relationship with its parent

company, or (2) need to locate cloud infrastructure in China. Alibaba Cloud is focused on expanding its successes in Asia to geographies that are still in competition, such as the Middle East.

Strengths

- Alibaba Cloud is the market share leader for CIPS in China, where it has high customer satisfaction and strong ties to the Chinese public sector. Alibaba Cloud is also poised to capitalize on significant increases in cloud spending in neighboring Asian countries, such as Malaysia and Indonesia, given its outsized presence in the region.
- Gartner clients frequently comment about their satisfaction with Alibaba Cloud's data analytics and database solutions. Clients often use such data analytics capabilities to improve the ability to sell in digital channels, which is particularly attractive in the retail and fast-moving consumer goods (FMCG) markets.
- Alibaba Cloud leverages its parent company's dominance in e-commerce operations to help traditional enterprises build new digital channels and begin earning digital revenue.

Cautions

- Alibaba remains a mostly China-focused vendor, with limited customer adoption elsewhere. It is especially true in Europe, India and North America, where geopolitical headwinds create a challenging barrier to adoption.
- Alibaba Cloud's international offering does not have the full capabilities of the China offering, nor the feature depth of its major global competitors. Furthermore, there are often discrepancies between Alibaba's documentation and the functionality available in its console and command line interpreter (CLI).
- Alibaba Cloud is a mere 8% of Alibaba Group's total revenue, and the cloud business unit continues to operate at a single-digit financial loss. Furthermore, Alibaba's market share in China is under pressure from competitors.

Amazon Web Services

Amazon Web Services (AWS), a subsidiary of Amazon, is a Leader in this Magic Quadrant.

Locations: AWS groups its data centers into regions, most of which contain at least three availability zones (data centers). It has multiple regions across Japan and the U.S., in addition to regions in Bahrain, Canada, France, Germany, Ireland, the U.K., Australia, India, Italy, Singapore, South Africa, South Korea, Sweden and Brazil, as well as the Hong Kong market. It also has two regions dedicated to the U.S. federal government. There are two China regions, which require China-specific AWS accounts.

Recommended Uses: AWS is a very strong performer in most Gartner use cases, and a strong candidate for hybrid cloud and edge use cases. AWS has a future focus on attempting to own

increasingly larger portions of the value chain that delivers cloud services to customers.

Strengths

- AWS continues to have a commanding lead across many of the CIPS market's critical dimensions, including total market share and capabilities of offerings. AWS has the largest share of the worldwide market in IaaS and database PaaS offerings.
- AWS has the skills, resources and motivation to vertically integrate and deliver solutions to customers end to end. The company can design everything from the silicon in its servers to the embedded OSs in edge devices and the complete stack of software in between.
- AWS is an exceedingly well-run business from a financial perspective and generates more than 50% of the operating income for all of Amazon. Unlike some of the other providers in this Magic Quadrant, AWS's healthy margins stand to improve its parent.

Cautions

- The growing concerns about Amazon's size and reach, coupled with AWS's leadership position, give pause to some of its partners and customers. Furthermore, AWS risks alienating software developers, which are its core constituency, as a result of the company's skirmishes with the open-source software (OSS) communities. Notably, a broad range of AWS offerings have benefited from OSS, without material contribution in kind by AWS.
- AWS has poor cohesion across its ever-expanding sets of offerings. The company's leadership position in IaaS and dbPaaS creates a misleading halo effect for other offerings. The organizational design of AWS that allows its developers to operate as semiautonomous units creates inconsistencies among products, rather than a cohesive whole, particularly for new services. Furthermore, the effective use of AWS requires an application builder's mindset and, when coupled with poor cohesion, can be daunting to many enterprises.
- Customers continue to believe incorrectly that AWS reduces prices broadly; however, the decreases are often not universally applied across all services. For example, the most frequently provisioned storage for AWS's compute service has not experienced a price reduction since 2014, nearly half the life of the company, despite dramatically decreasing prices in the market for the raw components.

Google

Google is a Leader in this Magic Quadrant.

Locations: Google has multiple regions across Japan and the U.S., as well as a presence in Belgium, Singapore, Finland, Germany, the Netherlands, the U.K., India, Australia, Brazil, Canada and, Switzerland, as well as the Hong Kong and Taiwan markets.

Recommended Uses: Google has evolved by enhancing its strengths and attacking its limitations to providing a strong offering in every use case, other than the edge use case. Google has a future

focus on building out hybrid capabilities and partnerships with telco providers.

Strengths

- Google's open-source contributions, such as Kubernetes and TensorFlow, have been market-moving innovations that have changed the course of enterprise IT. Such innovations have served to enable other cloud service providers, but also brought developer "mind share" to Google Cloud Platform (GCP). Google's long-term strategy is to bring additional open-source-focused partners into GCP as managed services.
- During the past year, GCP has experienced a noticeable increase in year-over-year market share in terms of IaaS and dbPaaS, albeit from a lower base, relative to other providers in this Magic Quadrant. Google has also made significant gains by closing a number of critical capability gaps between GCP and Microsoft Azure, its nearest competitor in terms of market share and capabilities.
- Gartner clients continue to associate GCP with its big data and data science capabilities, stemming from the use of services such as BigQuery and Dataproc. However, the company is pressing into new territory with Anthos, GCP's container and Kubernetes-based middleware layer, which is designed to support the development and deployment of cloud applications in a hybrid and multicloud model.

Cautions

- Some of Gartner's clients remain cautious about Google's commitment to serving the needs of enterprise clients when put in the context of SAP's preference for Microsoft Azure, and GCP's slowness in executing on some highly touted partnerships. GCP lacks enterprise-focused aPaaS capabilities and support for Oracle, and it continues to struggle with having an enterprise mindset in the field.
- From a financial perspective, GCP's revenue is a small fraction of overall Google revenue and GCP's criticality to the overall business is not as clear as its competitors. Furthermore, GCP's success may erode the company's overall healthy gross margins.
- Google's much-vaunted network capabilities have been the source of a number of GCP outages during the last year, with devastating impact on customers. One outage was multiregional in scope, affecting GCP customers and Google consumer services, such as G Suite and YouTube. This resulted in complete GCP network unavailability for some customers.

IBM

IBM is a Niche Player in this Magic Quadrant.

Locations: IBM has previous generation infrastructure in multiple data centers in the U.S., along with data centers in Canada, Mexico, Brazil, France, Germany, India, Italy, the U.K., the Netherlands, Norway, Australia, India, Japan, Korea, Sweden and Singapore, as well as the Hong Kong market. IBM offers Gen 2 services in the U.S., the U.K., Germany, Australia and Japan.

Recommended Uses: The best use cases for IBM Cloud are lift and shift, extended enterprise and the cloud, which is enhanced with the Red Hat technology and particularly strong for multicloud requirements. IBM has an investment focus that includes hybrid cloud and industry-focused cloud services.

Strengths

- IBM Cloud differentiates itself from the other hyperscale providers by leveraging its extensive history with the Power Systems family of compute infrastructure. This supports workloads as diverse as SAP HANA, Oracle ERP and newer styles, such as those focused on deep learning. Furthermore, IBM Cloud has significantly improved overall VM provisioning times and control plane improvements.
- IBM Services acts as a built-in channel and MSP for enterprises on IBM Cloud, which distinguishes it from other cloud providers that rely on third parties. IBM, as one company, is able to provide enterprises with transformational services to become more agile and the cloud infrastructure in which to deploy their agile workloads.
- IBM has transitioned to messaging around hybrid and multicloud computing. It offers capabilities and tooling to enterprises, allowing them to choose the cloud environment best for their specific application requirements, positioning IBM Cloud as a niche or specialty offering during the selection process.

Cautions

- IBM Cloud remains a complex platform resulting from legacy offerings and uneven product development gains. Although IBM launched Gen 2 infrastructure in 2019, the new IaaS offering contains a subset of the capabilities of SoftLayer, and is only available in five countries. Notably, IBM was 10 years late to market with cloud software-defined networking (SDN) capabilities. It continues to lack broad platform support for identity and access management (IAM), despite promoting innovative efforts for the financial services sector.
- IBM promotes a hybrid cloud narrative using OpenShift as a common substrate that allows portability among cloud providers or otherwise disparate environments. However, this approach will result in limited enterprise benefits, because it requires generic use of cloud provider features.
- IBM Cloud has negligible worldwide market share in the application PaaS category. Some of IBM's aPaaS offerings, such as IBM Cloud Functions, have scant adoption, which reflects the company's diminishing mind share among developers who perceive IBM as a provider of legacy technologies. Furthermore, some of IBM Cloud's efforts to court software developers through open-source initiatives have yet to produce results.

Microsoft

Microsoft is a Leader in this Magic Quadrant.

Locations: Microsoft calls Azure data center locations “regions.” There are multiple Azure regions in the U.S., Canada, the U.K., Germany, France, Australia, India, Norway, the UAE, Switzerland, Japan, Korea and South Africa. There are also regions in Ireland, Italy, the Netherlands, Singapore and Brazil, as well as the Hong Kong market and six regions for the U.S. federal government (two of which are dedicated to the U.S. Department of Defense).

Recommended Uses: Microsoft is strong in all use cases. This includes the extended cloud and edge computing use cases, where many of the other vendors struggle. Azure is particularly well-suited for Microsoft-centric organizations. Microsoft has an investment focus on making architectural improvements to the Azure platform and providing a broad range of enterprise-focused services.

Strengths

- Microsoft Azure offers a complete end-to-end set of solutions related to a broad range of workloads and applications. This is evident from Microsoft Azure’s partnerships with Oracle, SAP and VMware, continues with Azure’s capabilities with respect to containers and serverless, and ends with compelling solutions for the edge and hybrid environments.
- Microsoft is making a concerted effort to better serve software developers, particularly through its efforts with OSS. Microsoft leads the hyperscale cloud providers in terms of market share in the application developer PaaS segment with its suite of tools that include Azure DevOps and Github. Microsoft’s Visual Studio Codespaces, which is currently in beta, is the first compelling cloud-hosted application developer environment that bridges use of public cloud and ultrapopular developer tooling, such as Visual Studio Code.
- Mainstream enterprises often have strategic alignment with Microsoft, giving Azure significant sales advantages in this segment of the market. Furthermore, Microsoft Azure has particularly strong mind share with Gartner’s enterprise clients in Europe.

Cautions

- Microsoft has the lowest ratio of availability zones to regions of any vendor in this Magic Quadrant, and a limited set of services support the availability zone model. As a result, Gartner continues to have concerns related to the overall architecture and implementation of Azure, despite resilience-focused engineering efforts and improved service availability metrics during the past year.
- Microsoft does not provide any form of guaranteed capacity to customers; even prepaid agreements and reserved instances are not capacity guarantees. When there were COVID-19-related customer-affecting capacity shortfalls in multiple European regions over a multiweek period, a small number of customers were unable to provision reserved instances or capacity for which they had already paid.
- Microsoft’s Unified Support can be very expensive, especially for those customers who have not historically had support services covering their entire Microsoft portfolio. Although

Microsoft field sales technical competence has improved during the past year, and Microsoft is improving Azure technical support, Gartner clients continue to report concerns with the quality of these experiences.

Oracle

Oracle is a Niche Player in this Magic Quadrant.

Locations: The Oracle Cloud Infrastructure (OCI) data centers are grouped into regions, some having only one availability zone, such as those in Australia, Brazil, Canada, India, Japan, the Netherlands, Saudi Arabia, South Korea and Switzerland. Regions with three availability zones are located in the east and west of the U.S., Germany, and the U.K.

Recommended Uses: With the significant enhancements made during the past year, Oracle is now well-positioned to handle broad lift-and-shift use cases (not just those limited to Oracle applications) and hybrid workloads. Oracle has a future focus on expanding the worldwide geographies it serves with competitive capabilities.

Strengths

- Oracle has demonstrated its commitment to the market with a significantly increased worldwide presence during the past year in terms of OCI regions served with a single availability zone and new PaaS capabilities. Oracle continues to expand its cloud services into regions such as the Middle East where a significant number of clients are already customers of other Oracle products. Notably, OCI is the only hyperscale cloud platform in this Magic Quadrant with a data center in Saudi Arabia, due to a challenging political climate that prevents others from entering.
- Oracle is distinguished among most companies of its lineage in that it has developed thoughtfully architected, hyperscale cloud architectures that are competitive with the more-established cloud providers. OCI has made substantial year-over-year gains related to required IaaS and PaaS capabilities, as defined by Gartner. Furthermore, Oracle delivers all capabilities simultaneously into all regions worldwide, unlike its competitors.
- A growing number of Gartner clients are evaluating the prospect of deploying Oracle Dedicated Region Cloud@Customer, a compelling on-premises cloud solution that has complete feature parity with OCI. Customers also frequently consider deploying Oracle EBS using public cloud IaaS, and OCI naturally lands at the top of the list. Most customers have needs that extend beyond EBS, and Oracle is able to introduce partner offerings from Microsoft Azure in these cases.

Cautions

- Most Gartner clients interested in the OCI partnership with Microsoft Azure are intent on limiting adoption of OCI services, favoring Azure as the strategic choice in the equation. Some

of this is due to an unfounded perception of OCI's viability, and others result from negative experiences with Oracle in general.

- A number of modern, PaaS-layer capabilities now offered by OCI, such as FaaS, may not see immediate adoption in the typical OCI customer base. Despite OCI's year-over-year gains in offering such capabilities, customers should view some of these gains as being nascent until a reasonable number of Oracle's customers adopt the capabilities, which may never happen.
- Oracle has relatively low market share in the public cloud dbPaaS segment, which is particularly significant for a company with a history tied to its database offerings.

Tencent Cloud

Tencent Cloud is a Niche Player in this Magic Quadrant.

Locations: The Tencent Cloud data centers are grouped into regions, some having only one availability zone, such as those in Australia, Brazil, Canada, Japan, the Netherlands, Russia, Singapore, South Korea and Thailand. Regions with two or more availability zones are located in China, India and the U.S., as well as the Hong Kong market.

Recommended Uses: Tencent Cloud is mainly focused on China, serving multinationals in China or Chinese multinationals expanding overseas. It is best-suited for gaming and cloud-native workloads operated primarily in China, as well as gaming companies worldwide.

Strengths

- Tencent Cloud has strong synergies between its digital service ecosystem and its cloud services. The company has expertise in gaming, social networking and digital e-commerce with Western gaming companies, using Tencent's network and cloud services to deliver services inside China and Chinese companies to deliver services outside China.
- Tencent Cloud now has larger IaaS market share on a worldwide basis than IBM and Oracle, and it has the technical acumen to be a formidable challenger to Alibaba Cloud, its most important domestic rival.
- Tencent Cloud has grown quickly, and the company has made public statements about large future investments in the CIPS market. Furthermore, Tencent Cloud is distinguished by being the only hyperscale cloud provider with a region in Russia.

Cautions

- Tencent Cloud has limited presence and brand recognition outside China. Tencent operates only three regions outside China with more than one availability zone, and nearly half of its international data centers are operated by a partner. Furthermore, Tencent Cloud has a small international field sales and technical presence.

- Tencent Cloud has nascent presence among international enterprises. Most of its overseas cloud resources are consumed by gaming customers. Furthermore, outside China, the company has no MSP ecosystem, no support for Oracle, limited migration tooling or services, and no marketplace of third-party-certified applications.
- Tencent Cloud is often a fast follower in this market and demonstrates less original innovation than the market leaders. As such, Tencent Cloud often takes direction from the leading cloud providers with features and pricing models.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

No vendors were added or dropped because this is the first publication of the Magic Quadrant for CIPS.

Inclusion and Exclusion Criteria

To qualify for inclusion, vendors need:

- **Market participation.** They must sell public cloud IaaS as a stand-alone service, without the requirement to use any managed services (including guest OS management) or to bundle it with managed hosting, application development, application maintenance, or other forms of outsourcing. They may, optionally, also sell a private or hybrid offering that uses the same architecture, but is single-tenant.
- **Market traction and momentum.** They must be among the top global providers for the relevant segments (public and industrialized private cloud infrastructure and platform services, excluding small deployments of two or fewer VMs). They must have ISO 27001-audited (or equivalent) data centers on at least three continents. They must have at least one public cloud IaaS offering that meets the following criteria:
 - **If the offering has been generally available for more than three years:** A minimum of \$250 million in 2019 revenue, excluding all managed and professional services; or more than 1,000 customers with at least 100 VMs.
 - **If the offering has been generally available for less than three years:** A minimum of \$50 million in 2019 revenue, excluding all managed and professional services, as well as a growth rate of at least 50% exiting 2019.
- **Business capabilities relevant to Gartner clients.** The vendor must offer the public cloud IaaS service globally (i.e., it must be purchasable outside their home region), be able to invoice, offer

consolidated billing and be willing to negotiate customized contracts. It must have 24/7 customer support (including phone support). There must be an option for English-language localization of the contract, service portal, documentation and support.

- **Technical capabilities relevant to Gartner clients.** They must have public cloud IaaS and PaaS services that are suitable for supporting mission-critical, large-scale production workloads, whether enterprise or cloud-native. Specific generally available, first-party service features must include:
 - Software-defined compute, storage and networking, with access to a web services API for these capabilities
 - Cloud software infrastructure services facilitating automated management, including, at a minimum, monitoring and autoscaling
 - A managed dbPaaS offering
 - An offering that functions as a service with integrated HTTP API gateway platform
 - Publicly available software development kits (SDKs) in three or more programming languages
 - A distributed, continuously available control plane supporting a hyperscale architecture
 - Real-time provisioning for compute instances (small Linux VM in five minutes, 1,000 Linux VMs in one hour) and a container service that can provision Docker containers in seconds
 - An allowable VM size of at least 16 vCPUs and 128GB of RAM
 - An SLA for compute, with a minimum of 99.9% availability
 - The ability to securely extend the customer's data center network into the cloud environment
 - The ability to support multiple users and API keys, with role-based access control (RBAC)

Evaluation Criteria

Ability to Execute

We evaluated vendors' Ability to Execute in this market by using the following criteria:

- *Product/Service:* Service providers were evaluated on the capabilities of their CIPS offerings to support all use cases being evaluated. We evaluated the breadth and depth of the feature sets, self-service capabilities, automated system management and suitability to run a broad range of workload types. These criteria are important to buyers that want to purchase the most-capable, feature-rich services.
- *Overall Viability (Business Unit, Financial, Strategy, Organization):* Providers were evaluated on:

- The success of their cloud IaaS business, as demonstrated by current revenue and revenue growth since the launch of their services
- Their financial wherewithal to continue investing in the business and to execute successfully on their roadmaps
- Commitment to their current offerings, with no plans to execute disruptive platform transitions or migrations in the next two years
- Organizational commitment to this business, and its importance to the company's overall strategy

This criterion is important to buyers that prefer to purchase services from large vendors with ample financial resources, or from vendors that have a position of market leadership and are continuing to invest aggressively in the business. It is also important to buyers that are concerned about their long-term strategic investment in a particular vendor, or want to avoid potentially disruptive service changes.

- *Sales Execution/Pricing*: Providers were evaluated on their ability to:
 - Address the range of buyers for IaaS, including the different audiences in each mode of bimodal IT
 - Adapt to "frictionless selling" with online sales, immediate trials and proofs of concept
 - Provide consultative sales and solutions engineering
 - Be highly responsive to prospective customers
 - Offer value for money

This criterion is important to buyers that value a smooth sales experience, the right solution proposals and competitive prices.

- *Market Responsiveness and Track Record*: This market is evolving extremely quickly, and the rate of technological innovation is very high. Providers were evaluated on how well they have historically been able to respond to changing buyer needs and technology developments, rapidly iterate their service offerings, and deliver promised enhancements and services by the expected time. This criterion is important to buyers that value rapid delivery of cutting-edge capabilities.
- *Marketing Execution*: Providers were evaluated on:
 - Their mind share and brand awareness in the market

- Their ability to convey marketing messages based on their ability to deliver real business value, not empty hype or misleading “cloudwashing” (i.e., the practice of rebranding or remarketing an existing offering under a cloud label without offering all the attributes of a cloud service)
- The clarity and accuracy of their marketing messages, compared with their actual service offerings

This criterion is important to buyers that prefer to buy from well-known vendors.

- *Customer Experience:* Providers were evaluated on
 - The quality and responsiveness of their account management and technical support;
 - The ease of use of their self-service functionality
 - The capabilities of their customer portal (additional functionality such as monitoring, reporting and trouble ticketing)
 - The usefulness of their documentation and customer communications
 - The quality of their SLAs
 - The ease of doing business with them
 - Overall customer satisfaction

This criterion is important to buyers that value the aspects of the vendor relationship and capabilities beyond the IaaS platform itself.

- *Operations:* Providers were evaluated on:
 - Their ability to meet their goals and commitments, including their track record of service delivery
 - The quality of their response to outages
 - Their approach to emergency and scheduled maintenance
 - Their ability to meet timelines that are communicated to customers and to the market

This criterion is important to buyers that want a reliable, predictable service experience.

Table 1: Ability to Execute Evaluation Criteria

Evaluation Criteria ↓	Weighting ↓
Product or Service	High
Overall Viability	High
Sales Execution/Pricing	Medium
Market Responsiveness/Record	High
Marketing Execution	Medium
Customer Experience	Medium
Operations	Medium

Source: Gartner (September 2020)

Completeness of Vision

We assessed vendors' Completeness of Vision in this market by using the following criteria:

- *Market Understanding:* Providers were evaluated on their understanding of the wants and needs of three different buying constituencies in this market – enterprises, midmarket businesses and digital businesses. This applies to technology companies or digital business units embedded in nontechnology businesses, currently and in the longer term, as the use of IaaS matures. This criterion is important to buyers that value a provider's understanding of the market's evolution and broader business trends, which affect a provider's ability to plan a successful long-term strategy.
- *Marketing Strategy:* Providers were evaluated on their ability to articulate their position in the market and their competitive differentiation, and to communicate these messages clearly and consistently, both internally and externally. This criterion is important to buyers that believe providers should have a clear focus and direction.
- *Sales Strategy:* Providers were evaluated on their understanding of the buying centers for the market, the ways buying centers want to engage with sales, and strategies for adapting the sales force, online channels and partner channels to IaaS. This criterion is important to buyers that value a provider's ability to grow its business over the long term.
- *Offering (Product) Strategy:* Providers were evaluated on the breadth, depth, quality and differentiation of their service roadmaps, as relevant to the use cases under evaluation, with an emphasis on self-service, management capabilities (traditional and DevOps-oriented), and

overall feature set. This includes cloud software infrastructure services. This criterion is important to buyers that want a provider that will lead the market in service capabilities.

- *Business Model*: Providers were evaluated on their overall value propositions and their strategies for providing solutions for the use cases under consideration, not just raw infrastructure elements. This included evaluating how IaaS fits into their broader product portfolios and strategies. This criterion is important to buyers that view IaaS as part of an integrated set of solutions from a particular provider.
- *Vertical/Industry Strategy*: Providers were evaluated on their ability to offer targeted services for particular vertical markets, such as government, biotechnology, media and entertainment, and retail. This includes sales and marketing to such verticals, their ability to meet specialized compliance needs, and vertical-specific solutions. This criterion is not directly important to most buyers, except to the extent that a provider has a vertical-specific offering that is relevant to them or meets their specific regulatory compliance requirements.
- *Innovation*: Providers were evaluated on the level of investment in the future of their business, and the quality of those investments, whether financial or human capital. This includes aspects such as the deployment of engineering resources, investments in new technology, mergers and acquisitions, and partnerships and alliances. This criterion is important to buyers that care about leading-edge capabilities, and the strength of a provider’s ecosystem.
- *Geographic Strategy*: Providers were evaluated on their ability to expand their offerings beyond their home region, serving the needs of multinational businesses, as well as adapting their offerings to other geographies. In particular, this included their strategies for international sales and support, as well as their data center footprints and internationalization efforts. This criterion is important to buyers that want to use a global vendor.

Our evaluation of Completeness of Vision remains similar to that of the 2018 version of this Magic Quadrant. However, we continue to increase our expectations for the breadth and depth of a provider’s vision, encompassing technical capabilities and business alliances that create a supporting partner ecosystem focused on traits that make providers suitable for strategic adoption.

Table 2: Completeness of Vision Evaluation Criteria

Evaluation Criteria ↓	Weighting ↓
Market Understanding	High
Marketing Strategy	Medium
Sales Strategy	Medium

Evaluation Criteria ↓	Weighting ↓
Offering (Product) Strategy	High
Business Model	Medium
Vertical/Industry Strategy	Low
Innovation	High
Geographic Strategy	Low

Source: Gartner (September 2020)

Quadrant Descriptions

Leaders

Leaders distinguish themselves by offering a service suitable for strategic adoption and having an ambitious roadmap. They can serve a broad range of use cases, although they do not excel in all areas, may not necessarily be the best providers for a specific need and may not serve some use cases at all. Leaders in this market have appreciable market share and many referenceable customers.

Challengers

Challengers are well-positioned to serve some current market needs. They deliver a good service that is targeted at a particular set of use cases, and they have a track record of successful delivery. However, they are not adapting to market challenges sufficiently quickly, or do not have a broad scope of ambition.

Visionaries

Visionaries have an ambitious vision of the future, and are making significant investments in the development of unique technologies. Their services are still emerging, and they have many capabilities in development that are not yet generally available. Although they may have many customers, they might not yet serve a broad range of use cases well.

Niche Players

The Niche Players in the market for cloud IaaS may be excellent providers for particular use cases or in regions in which they operate, but they should ultimately be viewed as specialist providers of cloud IaaS. They often do not serve a broad range of use cases well or have a broadly ambitious roadmap. Some may have solid leadership positions in markets adjacent to this market, but have developed only limited capabilities in cloud IaaS.

Context

The global spread of COVID-19, the novel coronavirus, has driven organizations to rethink the ways they work and operate. Many employees have been told to work from home and to use videoconferencing and online collaboration services. Not only does this stress the limits of back-end supporting services, which in many cases are cloud services, but it significantly increases the volume of traffic in the networks connecting users to their services.

The COVID-19 pandemic has left many organizations unsure whether their business continuity strategy is sufficiently robust. Some hard questions related to the use of cloud services in situations like this are being asked, including:

- Is the public cloud model sufficiently scalable and resilient to handle unforeseen spikes in demand?
- Do public cloud providers maintain excess capacity to rapidly deploy new services when needed?
- Are supporting infrastructure requirements sufficiently robust to ensure continued access to public cloud services?
- Can a public cloud service continue to deliver services when support personnel are affected by illness?
- Is the telecommunications and networking infrastructure prepared to handle the increase in traffic volume as organizations leverage the internet to access services?
- Are there any concerns around the security (physical, perimeter, customer data, etc.) of cloud data centers as the workforce performing those functions are being asked to work from home?

Market Overview

The worldwide market for CIPS is being dominated largely by four hyperscale providers: Alibaba Cloud in China and surrounding Asian countries, and AWS, Google and Microsoft in most other parts of the world.

The nonhyperscale providers have largely been relegated to specialized scenarios — primarily scenarios that require deep support for legacy technologies, or that have specific location requirements that cannot be met by a hyperscale cloud provider. In general, the hyperscale providers offer a broad range of capabilities, and can meet enterprise requirements for availability, performance, security, regulatory compliance, service and support.

Most enterprises have adopted CIPS strategically, and have a broad range of workloads on IaaS and PaaS, including production applications. Midmarket businesses are the most likely to believe that cloud services, such as IaaS, will replace nearly all their data center infrastructures during the next five years. Late-adopter enterprises that have not yet piloted CIPS begin with new applications.

Both public multitenant and private single-tenant offerings are available; however, the distinction between public and private cloud IaaS is blurring, as CIPS providers extend their regions into enterprise data centers and edge locations. Gartner is beginning to describe the broader picture of public cloud services existing in different physical locations as “distributed cloud.”

Distributed cloud refers to the distribution of public cloud services to different physical locations, which may include enterprise data centers, while operation, governance, updates and evolution of the services are the responsibility of the originating public cloud provider.

Distributed cloud supports tethered and untethered operation of like-for-like cloud services from the public cloud “distributed” out to specific and varied physical locations. This enables a key characteristic of distributed cloud operation – low latency compute where the compute operations for the cloud services are closer to those who need the capabilities. This can deliver major improvements in performance, as well as reducing the risk of global network-related outages.

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability: Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

Market Responsiveness/Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This “mind share” can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive

technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

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