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# Magic Quadrant for Distributed Hybrid Infrastructure

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I&O leaders are seeking infrastructure platforms that offer centralized control across diverse deployment scenarios. The distributed hybrid infrastructure market addresses this need by offering standardized full-stack infrastructure deployments in public cloud, on-premises and edge locations.

## Strategic Planning Assumption

Despite cloud migration and container adoption, 70% of data center x86 workloads will continue to use hypervisor-based virtualization through 2027 (down from approximately 80% in 2020).

## Market Definition/Description

Gartner defines distributed hybrid infrastructure as offerings that deliver cloud-native attributes, which can be deployed and operated where the customer prefers. This is a key distinction to public cloud IaaS, which is based on a centralized approach. Offerings are software and/or integrated hardware with a unified control plane.

Distributed hybrid infrastructure provides the foundation for the deployment of applications in a distributed manner that retains a cloud or cloud-inspired approach. In doing so, it improves agility and flexibility for the workloads outside of public cloud infrastructure.

The must-have capabilities for distributed hybrid infrastructure include:

- Integrated vendor-engineered solution comprising virtual compute, storage and networking services.

- Vendor-developed infrastructure resource management control plane.

The standard capabilities for distributed hybrid infrastructure include:

- Management portal that provides a secure, automated full stack solution for operating and supporting the distributed infrastructure.

- Ability to deploy the infrastructure in multiple locations that must include on-premises customer data center and a public cloud.

- Complete programmable API access enabling "infrastructure as code."

The optional capabilities for distributed hybrid infrastructure include:

- Ability to deliver the distributed hybrid infrastructure solution as a service.

- Vendor supplied facilities or other deployment options like colocation, edge and remote locations.

- Integrated hardware (either supported by the same vendor that offers the software; or certified for the integrated software, but managed by the enterprise, the vendor that provides the software or a third-party partner).

- Additional platform services (e.g., as-a-service add-on offerings like DBaaS, DRaaS).

- Product integration with traditional enterprise infrastructure systems (e.g., Directory Services, ITSM, etc.).

- Metered consumption based services where the customer is charged only for what they consume.

- Scalable and elastic where the offering will provision and deprovision resources to fit the customer continuous requirements (e.g., bursting to the public cloud or dynamic preemptive ordering).

- Ability to orchestrate bare metal servers.

- Ability to orchestrate containers or integrate with third-party kubernetes distribution.

# Magic Quadrant

Figure 1: Magic Quadrant for Distributed Hybrid Infrastructure

CHALLENGERS / LEADERS / NICHE PLAYERS / VISIONARIES magic quadrant chart. Plotted vendors: Microsoft, Amazon Web Services, VMware, Oracle (Leaders); Nutanix (Challengers); IBM (Visionaries); Alibaba Cloud, Huawei, Tencent Cloud (Niche Players). Axes: ABILITY TO EXECUTE (vertical), COMPLETENESS OF VISION (horizontal). As of August 2023. © Gartner, Inc

**Vendor Strengths and Cautions**

**Alibaba Cloud**

Alibaba Cloud is a Niche Player in this Magic Quadrant. This evaluation is focused on Alibaba Cloud's international DHI solutions, which are offered through the Alibaba Cloud international subsidiary, headquartered in Singapore. Alibaba Cloud's DHI offerings are available worldwide, although a significant portion of its revenue is generated from China and Southeast Asia. Alibaba's DHI strategy is rooted in extending its Apsara architecture to create a more integrated and consistent user experience across central, regional and edge locations. Over the past year, the vendor launched international service for CloudBox on-premises data centers, dedicated sovereign cloud regions, and PolarDB, a serverless global relational database. Alibaba performs best for use cases requiring cloud-native capabilities and those with stringent application SLAs.

*Strengths*

- **Vision:** Alibaba's international marketing of its Apsara Stack and distributed offerings such as CloudBox and Edge Node Service (ENS) have been limited. However, its overall vision for hybrid and distributed cloud computing is comprehensive and comprises a full range of edge, private cloud, dedicated cloud and public cloud solutions.

- **Public cloud infrastructure**: Alibaba's combined infrastructure as a service (IaaS) and platform as a service (PaaS) portfolio is the most comprehensive of the Chinese cloud providers, and its global partner network is larger. A majority of the most popular Alibaba Cloud services are available in both its public cloud and Apsara private cloud environments.

- **International data center footprint**: Alibaba maintains 15 public cloud regions outside of China across all geographies except Latin America and Africa. Only four regions outside of China are single AZ.

*Cautions*

- **Global DHI deployments**: Apsara Stack has had some success outside of China, notably in Southeast Asia and India. However, although Alibaba claims it is available for purchase in North America and Europe, Gartner has observed very few DHI production customer deployments in these regions.

- **Customer support in Europe and North America**: While Alibaba maintains two regions each in the U.S. and in Europe, its local sales and service presence is very limited. Live technical support internationally is provided in English and Mandarin only.

- **International customer experience**: International customers report lower satisfaction with their overall Alibaba Cloud experience than for other vendors in this Magic Quadrant.

**Amazon Web Services**

Amazon Web Services (AWS) is a Leader in this Magic Quadrant. This evaluation focuses on AWS hybrid cloud solutions: AWS Outposts, providing fully managed solutions extending AWS services to customer data centers, colocation facilities, and other customer on-premises locations; AWS Snow Family (AWS Snowcone and Snowball Edge), integrating AWS-owned systems as a service for the edge; and AWS Local Zones, deploying extension of an AWS Regions services closer to customers. AWS serves a global customer base across various sectors and sizes. Over the past 12 months, AWS delivered vertical-specific distributed cloud offerings, including AWS Snowblade for the U.S. Department of Defense Joint Warfighting Cloud Capability (JWCC) contract customers. It also added private 5G managed service and expanded Local Zones to 30 metros globally. AWS DHI offerings are best-suited for cloud-native, edge and hybrid cloud scenarios.

*Strengths*

- **Established public cloud provider**: AWS DHI solutions are appealing to the broad range of existing AWS public cloud customers looking to extend their service to the data center and the edge.

- **Delivery model**: The AWS Outposts fully managed delivery model matches strongly to customer demands for simplicity and a hands-off approach to infrastructure management.

- **Portfolio of services**: AWS has been steadily increasing investment in its DHI product portfolio to create solutions and capabilities for financial services, public sector and telco customers.

*Cautions*

- **Multicloud**: AWS DHI solutions will not be able to serve customers that require multicloud integration for infrastructure services.

- **Disconnected operations**: AWS Outposts products are not designed for disconnected operation, which will not appeal to customers with limited cloud connectivity.

- **Product navigation**: Some Gartner clients cite difficulties navigating through the available AWS DHI solutions and services. This is because different AWS DHI solutions serve different subsets of AWS APIs, instance types and procurement options.

**Huawei**

Huawei is a Niche Player in this Magic Quadrant. Huawei Cloud Stack Online is an extension of Huawei Cloud, using the same architecture, cloud services and APIs. Although the majority of revenue comes from China, in 2022, Huawei stated its intention to expand and provide services in 170 countries worldwide. During the past 12 months, Huawei has continued to expand its capabilities across Southeast Asia and the Middle East as well as Latin America. Its clients tend to be midsize to large enterprises and telecommunications carriers. Huawei's solution is suited to those seeking a centralized control plane and large-scale hybrid solution spanning on-premises and Huawei Cloud locations.

*Strengths*

- **Market share in China**: Huawei has a strong position in the IaaS market in Greater China (second-largest revenue in 2022). Organizations can look to Huawei as a strong choice to meet requirements in this region.

- **Telecommunications expertise**: Huawei has a strong history of serving the needs of the telecommunications sector worldwide.

- **Portfolio**: Huawei continues to develop innovative capabilities in adjacent markets (including public cloud and 5G). Organizations looking for a network-centric DHI solution will find Huawei a contender to meet such requirements.

*Cautions*

- **International availability**: Not all products and services are available outside China. This will require organizations to confirm availability of required functionality in all locations where it would be deployed.

- **Geopolitical concerns**: The U.S. sanctions have continued to impact Huawei's supply chain, product planning and market expansion strategy outside China. This has raised concern among risk-averse organizations operating outside China.

- **Ecosystem**: Although it has an established partner network, Huawei has limited traction for its DHI solutions with partners outside China. This limits its appeal for partners in international markets and its applicability to multinational organizations.

**IBM**

IBM is a Visionary in this Magic Quadrant. Its DHI offering is based on IBM Cloud Satellite, which is the hybrid cloud management solution, IBM Storage Fusion HCI platform, and Red Hat OpenShift to provide a container environment. Additionally IBM provides DHI deployment options Power Virtual Server and Power Private Cloud. IBM is a global provider, and its clients tend to be large and midsize enterprises. Over the past year, IBM has added metering for containers on IBM Power Private Cloud and provided enhanced resilience and backup capabilities for Kubernetes. IBM's DHI solution is well-suited for hybrid, cloud-native and assured workloads.

*Strengths*

- **Distributed cloud-native infrastructure**: IBM delivers a consistent platform across its own and other public clouds using OpenShift and IBM Cloud Satellite, enabling modernized applications to be in a hybrid multicloud environment.

- **Business-critical applications**: IBM is uniquely positioned to aid customers with the integration of business-critical applications across platforms, including IBM Z and IBM Power and x86, into a modernized hybrid solution using OpenShift, Cloud Satellite and IBM Power Private Cloud.

- **Market focus**: IBM has targeted cloud offerings for regulated industries, such as financial services and retail, with capabilities to support industry-specific requirements.

*Cautions*

- **Product navigation**: While IBM's individual products have strong capabilities, its overall DHI offering is complex and hard to navigate, and requires self-assembly by the end user.

- **Virtual machine support**: IBM's DHI solution utilizes KubeVirt as part of Red Hat OpenShift to manage virtual machines on x86 systems. KubeVirt is relatively new and is yet to be demonstrated as ready for large-scale enterprise implementations.

- **Inconsistent offerings**: While IBM has a number of offerings available "as a service," it does not have a consistent program that covers all of the products encompassed in its DHI offering. This leads to complex management of SLAs and different charging mechanisms for different products.

**Microsoft**

Microsoft is a Leader in this Magic Quadrant. This evaluation focuses on Azure Stack HCI, Azure Arc and hybrid Azure Kubernetes Service (AKS). Microsoft Azure Arc extends the Azure platform to data centers, edge and multicloud environments. Azure Stack HCI is a bare metal hyperconverged infrastructure solution that can be deployed at customer locations using the Azure Arc framework. Hybrid AKS is a managed Kubernetes service capable of provisioning and maintaining a Kubernetes cluster on-premises. With a global customer base, Microsoft DHI focuses on financial services, retail and manufacturing sectors. Recent releases include VM and

Kubernetes life cycle management, AKS Edge Essentials and a Dell APEX integrated solution. Microsoft DHI is best-suited for the edge, assured and hybrid infrastructure workloads.

### Strengths

- **Track record:** Microsoft is an established provider offering both public cloud services and on-premises data center solutions, with a demonstrated track record and good understanding of the needs of the DHI market.

- **Ecosystem support:** Microsoft DHI customers tap into a robust global ecosystem that encompasses direct sales partners, OEMs and the pervasive presence of Azure Cloud. This dynamic setup yields significant advantages to meet diverse requirements effectively.

- **Unified hybrid control plane:** Azure Arc-enabled services are designed to extend Azure controls and processes to other public cloud, private cloud and edge deployments.

### Cautions

- **Operations:** Some Gartner clients are reporting difficulty managing the entire solution seamlessly as it may require multiple administration tools spanning multiple generations of Microsoft solutions.

- **Scalability:** An individual cluster of Azure Stack HCI cannot exceed 16 host nodes, limiting its applicability for large data center modernization scenarios.

- **Offering complexity:** Some Gartner clients cite the complexity of rightsizing, building and integrating hybrid solutions from different software, hardware and management components. Others cite confusion resulting from the multiple products in the Azure Stack portfolio.

### Nutanix

Nutanix is a Challenger in this Magic Quadrant. The Nutanix Cloud Platform (NCP) is the Nutanix DHI solution that is covered in this analysis. Nutanix is a global provider. Over the past year, Nutanix has enhanced its offering by adding support for Nutanix Cloud Clusters (NC2) on Azure in addition to expanded support for AWS and enhanced built-in security controls across the stack to identify, protect, detect, respond, and recover from threats. Nutanix has specific focuses on the public sector, financial services and healthcare verticals. The Nutanix Cloud Platform is suited to hybrid infrastructure, cloud-native apps and edge use cases.

### Strengths

- **Market position:** Nutanix is a market leader in hyperconverged infrastructure software. Numerous customers use HCI software as a stepping stone to hybrid cloud.

- **Simplicity:** Nutanix customers often cite the offering's ease of use, including the ability to manage multiple hypervisors, which can streamline management and migration.

- **Licensing:** A Nutanix Cloud Platform license is portable across multiple server hardware solutions as well as AWS and Azure cloud providers. This makes it simpler for customers to implement hybrid cloud.

## Cautions

- **Single pathway:** For customers with a "cloud first" approach that do not wish to take an HCI path to enable hybrid cloud, Nutanix will be an unlikely choice.

- **Financial maturity:** Nutanix has demonstrated positive cash flow and not generally accepted accounting principles (GAAP) profitability. Still, some Gartner clients have expressed concerns over the fact that Nutanix has yet to reach consistent profitability by GAAP standards.

- **Consumption models:** For customers seeking as-a-service consumption-based models, Nutanix itself does not provide this option consistently across its entire product portfolio. This can create a complex consumption-based purchase structure when choosing numerous Nutanix products as a solution.

**Oracle**

Oracle is a Leader in this Magic Quadrant. Oracle's DHI offering is made up of Oracle Dedicated Region, Oracle Cloud@Customer and Oracle Roving Edge Infrastructure. Oracle is a global provider, and its DHI customers tend to be large enterprises with significant existing investment in other Oracle products. Over the past 12 months, Oracle has reduced the infrastructure and minimum spend requirements for its Dedicated Region by 33%. It also added an Oracle Alloy control plane that allows partners to deliver regional cloud services, while maintaining the relationship with the end customer. Oracle's DHI solution is suited for hybrid infrastructure, assured workloads and edge use cases.

## Strengths

- **Operational consistency:** Oracle Dedicated Region provides a complete Oracle Cloud Infrastructure (OCI) at the customer site with feature parity with a public OCI region. This contrasts with its peers that typically offer a limited set of services at a customer site.

- **Delivery model:** OCI DHI has a variety of delivery models to meet customer use cases. They range from a fully managed delivery solution that appeals to clients who simply want to use services and not deal with infrastructure management to a fully air-gapped customer-managed solution for high-security or sovereign clouds.

- **Pricing:** Many OCI services such as egress costs and compute instances are priced lower than the equivalents from other hyperscale vendors, and on-premises pricing is the same as in the cloud.

## Cautions

- **Customer sentiment:** Oracle is often cited for its high-pressure sales tactics and likelihood of audit postpurchase. As a result, many enterprises resist expanding their use of Oracle technologies.

- **Support for midsize enterprises:** Oracle's DHI solution is focused on large enterprise customers. The significant investment in on-premises hardware and data center space and

power limits the uptake of the solution in smaller enterprises.

- **Edge solution:** OCI's edge solution, Roving Edge, is primarily designed around the ruggedized device edge. OCI does not have a more optimal DHI solution for the remote office/branch office.

**Tencent Cloud**

Tencent Cloud is a Niche Player in this Magic Quadrant. Tencent offers a distributed public cloud solution managed through the Tencent Kubernetes Engine Distributed Cloud Center. It also has a private cloud or hosted option utilizing Tencent Cloud Enterprise, which employs the Tencent cloud-native suite as its control plane. Tencent Cloud is mainly focused on serving multinational customers in China or Chinese multinational customers expanding overseas. Enhancements made over the past year include extending its distributed cloud capabilities around a Kubernetes model and adding database services to its offerings. Tencent is best-suited for media, gaming and e-commerce customers.

*Strengths*

- **Roadmap:** Tencent has a committed international DHI roadmap. Its Tencent Cloud Content Delivery Network (CDN) is integrated with Tencent Edge Zones, and it offers private cloud environments with customer-dedicated clusters as well as local public cloud capacity with cloud-dedicated zones.

- **Business model:** Tencent aims to be a strong option for international companies looking to enter the Chinese market. It is also a logical choice for existing Tencent customers in China looking to expand internationally.

- **Open-source technologies:** Tencent shows commitment to industry-leading open-source technologies that can run on a variety of third-party hardware. Customers familiar with Kubernetes may find their learning curve with Tencent Cloud services to be shorter than with other more proprietary PaaS alternatives.

*Cautions*

- **Service portfolio:** Some key distributed cloud products that Tencent sells in China, such as Tencent Edge Zones, are not available internationally, and Tencent has not committed to future General Availability (GA) dates. Tencent currently has very few customers that have deployed both public and private cloud solutions outside of China.

- **Marketing strategy:** Tencent has repeatedly rebranded and repositioned its distributed hybrid and edge solutions over the past few years. This reflects a potential lack of clarity within the company about how to best cater to international audiences and effectively compete in the global market.

- **Industry solutions:** Tencent's industry-specific focus is immature outside of China. Its historical strengths in gaming and social networking are evident in its PaaS services, but not in any DHI solutions tailored for these markets.

**VMware**

VMware is a Leader in this Magic Quadrant. VMware Cloud Foundation (VCF) is the VMware DHI offering that is covered in this analysis. VMware is a global provider. It has continued to enhance VCF over the past year. These enhancements include AI platform integration for scaling high-performance workloads and the purpose-built VMware Ransomware Recovery solution. VMware's key vertical markets include financial services, government, communications/media, high tech, healthcare and retail/wholesale. VMware Cloud Foundation is an applicable offering for hybrid infrastructure, assured workloads, cloud native applications and multicloud use cases.

*Strengths*

- **Installed base**: VMware is a leader in software-defined infrastructure and has a significant installed base globally. VMware users will find a path to leverage their skills to transition to DHI for virtualization and containers.

- **Multicloud vision**: Among the offerings in this Magic Quadrant, VMware Cloud Foundation has the widest range of availability from hyperscale cloud providers including AWS, Google, IBM, Microsoft and Oracle in addition to hundreds of cloud service providers globally. This positions VCF well for future multicloud requirements.

- **Cloud management strategy**: VMware's Aria Suite of products provide automation and operations capabilities that span on-premises and public cloud DHI locations.

*Cautions*

- **Price perception**: Based on Gartner client interactions, VMware offerings are often perceived as some of the more costly options in the market.

- **Multicloud implementation**: VMware cloud partners provide the VCF offering with varying degrees of self-management. This introduces complexity and potential inconsistency in multicloud VMware DHI customer experience.

- **Pending acquisition**: Gartner clients have expressed concerns about the potential impacts to pricing and support based on Broadcom's pending acquisition of VMware. Broadcom announced its intention to acquire VMware on 26 May 2022. At the time of this evaluation, however, Broadcom and VMware operate as separate entities. Gartner will provide further insight as more details become available.

## Inclusion and Exclusion Criteria

To assist Gartner clients in vendor selection, Magic Quadrant and Critical Capabilities research identifies and then analyzes the most relevant providers and their products in a market. Gartner uses by default an upper limit of 20 providers to support the identification of the most relevant providers in a market. On some specific occasions, the upper limit may be extended by Gartner Methodologies where the intended research value to our clients might otherwise be diminished. The inclusion criteria represent the specific attributes that analysts believe are necessary for inclusion in this research.

To qualify for inclusion, providers:

- Must sell a DHI offering aligning to the DHI market definition.

- Must show evidence of 60 enterprise customers deploying products in distributed hybrid scenarios or must have generated over $50 million in total ARR contract value as of 31 May 2023.

- Must show evidence that all DHI production customers' deployments are across on-premises and at least one hyperscale public cloud environment.

- Must rank among the top 15 organizations in the Customer Interest Index as defined by Gartner for this market. Data inputs used to calculate last 12-month DHI customer interest use a weighted mix of internal and external inputs that reflect vendor customer sentiment, customer interest and customer engagement.

- Must have DHI deployments available in at least one global hyperscale public cloud provider (see Forecast Analysis: Cloud Infrastructure and Platform Services, Worldwide).

- Must have for all DHI offerings at least 10 production customers per region in on-premises data centers in at least three out of seven global regions (North America, Europe, Asia/Pacific [excluding China], Latin America, China, Middle East and Africa).

- Must have the following business capabilities:

  - Be the primary developer and IP owner of all software components of DHI with an exception of open-source based products. If any part of their technology is based on open source, they should be one of the top 10 open-source project contributors.

  - 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.

  - Managed services minimum availability not lower than 99.9%.

- Must have the following technical capabilities relevant to Gartner clients:

  - The ability to deploy and operate the DHI where the customer prefers, including on-premises, outsourced and/or colocated.

  - The ability to deploy and operate the DHI in one or more hyperscale public clouds.

  - Integrated vendor-engineered solution comprising software-defined compute, software defined storage and software-defined networking services.

  - Vendor-developed DHI control plane that provides a secure, automated and integrated capability for onboarding, operating, life cycle management of infrastructure and supporting the distributed infrastructure on-prem and in the public cloud.

- The ability to address three out of five use cases defined in the Critical Capabilities.

**Magic Quadrant Exclusion Criteria**

Offerings are excluded from this Magic Quadrant if they are exclusively marketed and sold as container management infrastructure products and can't accommodate virtual machine infrastructure.

## Honorable Mentions

Gartner tracks more than 20 vendors in this market. Nine vendors met the inclusion criteria for this Magic Quadrant, but the exclusion of a vendor does not mean the vendor and its products lack viability. Following are several noteworthy vendors that did not meet all inclusion criteria but that could be appropriate for clients, contingent on requirements.

**Google Cloud Platform**

Google Distributed Cloud Hosted (GDCH) is serving customers with specific data residency, security or privacy needs. The service encompasses end-to-end delivery and setup, if needed. Google Distributed Cloud Edge (GDCE) is a managed solution that brings Google Cloud services closer to data sources. Google handles infrastructure management, including automatic software updates and thorough hardware and software monitoring.

**Red Hat**

Red Hat OpenShift, in conjunction with OpenShift Virtualization, forms a cohesive solution that merges the capabilities of containers and virtual machines within a unified platform. This software-defined solution offers deployment flexibility, extending its reach to various customer-preferred locations such as the edge, public cloud or data center environments.

**SUSE**

Harvester is SUSE's HCI solution based on KubeVirt, which integrates with Rancher enterprise container management platform. Harvester operates on bare metal and offers integrated virtualization and storage, supporting both virtual machines and containerized environments. When used together, Rancher and Harvester streamline Kubernetes cluster management with multicluster control and flexible infrastructure support that can extend to edge locations for practical application modernization.

# Evaluation Criteria

## Ability to Execute

### Table 1: Ability to Execute Evaluation Criteria

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

Source: Gartner (September 2023)

## Completeness of Vision

### Table 2: Completeness of Vision Evaluation Criteria

| Evaluation Criteria ↓ | Weighting ↓ |
|---|---|
| Market Understanding | High |
| Marketing Strategy | Medium |
| Sales Strategy | Medium |
| Offering (Product) Strategy | High |

| Evaluation Criteria ↓ | Weighting ↓ |
|---|---|
| Business Model | Medium |
| Vertical/Industry Strategy | Low |
| Innovation | High |
| Geographic Strategy | Medium |
| | |

Source: Gartner (September 2023)

## 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. However, 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 supporting multiple geographies, verticals and deployment models.

### 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 might not adapt to market challenges quickly enough or do not have a broad scope of ambition. These vendors have the potential to establish themselves across the broader, global market, but have not yet done so.

### Visionaries

Visionaries are typically vendors that are focusing on strong innovation and product differentiation, with the potential to significantly disrupt the market if execution improves. 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 or may have a limited geographic scope.

### Niche Players

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

## Context

Infrastructure and operations (I&O) leaders aspire to modernize their IT infrastructure through the integration of innovative technologies, while embracing the principles of cloud-native platform engineering.

I&O leaders embarking on the journey of DHI that spans on-premises, cloud and edge domains should consider the following recommendations:

- Strategic Direction: Craft a comprehensive hybrid platform strategy that aligns with your organization's long-term objectives, integrating on-premises, cloud and edge components cohesively.

- Use Case, Workload Analysis and Prioritization: Conduct an in-depth analysis of your workloads and applications. Review their needs and applicability for DHI platform, and analyze performance, capacity metrics, SLAs and data requirements specific to each environment.

- Strategic Vendor Collaborations: Forge partnerships with DHI vendors offering unified solutions across the spectrum of on-premises, cloud and edge, ensuring full stack infrastructure alignment and the DHI solution applicability for the majority of the use cases.

- Security and Regulatory Compliance: Implement robust security evaluation for DHI solutions, taking into account your unique requirements data sovereignty, compliance, and access controls to ensure both agility and security.

- Leveraging Edge Advantages: Harness the capabilities of DHI edge solutions to streamline latency-sensitive tasks, elevating performance and delivering enhanced user experiences at the source by enabling centralized management and standardized solution delivery.

- Resource Management: Evaluate DHI control plane resource management and orchestration tools that enable hybrid cloud management across all deployment domains. Pay special attention to integration with existing systems and the capability to create infrastructure as code by leveraging available DHI management APIs.

- Comprehensive Testing and Validation: Prioritize comprehensive testing and validation of your distributed hybrid setup, identifying and addressing potential performance bottlenecks, integration and operational intricacies. Pay special attention to the ability for the DHI solution to function disconnected from the cloud control plane.

By embracing these recommendations, I&O leaders can confidently steer their organizations through the intricacies of distributed hybrid infrastructure, seamlessly integrating on-premises,

cloud and edge environments to drive operational excellence and strategic success.

# Market Overview

This Magic Quadrant for Distributed Hybrid Infrastructure is the first version of this Magic Quadrant.

The market for distributed hybrid infrastructure was formed to address the need of I&O leaders to deploy standardized infrastructure platforms for any deployment scenario. Distributed hybrid infrastructure solutions attract customers that want a cloud IaaS solution (including compute, whether based on virtual machines, bare metal or containers; storage; and network services) — without PaaS. DHI can be deployed where the customer prefers, whether on-premises, in the public cloud or on the edge.

The DHI market has emerged at the convergence of two trends: the adoption of distributed cloud solutions, extending public cloud services to noncloud environments, and the deployment of full-stack software-defined platforms or hyperconverged solutions in public cloud environments.

In this evolving market scenario, organizations are strategically recalibrating their approach, considering a diverse range of options at their disposal. Cloud-inspired on-premises solutions, championed by providers like VMware and Nutanix, offer a compelling distributed hybrid infrastructure avenue. Currently, these software solutions that facilitate smooth integration with existing infrastructures are being deployed on public clouds, contributing to the development of robust hybrid cloud architectures. This hybrid framework facilitates centralized control across an array of environments, encompassing on-premises, public cloud and edge infrastructure. The inherent orchestration and management capabilities of these solutions address the intricate operational needs of modern businesses.

Simultaneously, the assessment extends to the realm of distributed public cloud IaaS. Innovative solutions like AWS Outposts, Oracle Cloud@Customer, Alibaba Apsara and Microsoft Azure Stack are redefining boundaries, extending the reach of public cloud services. By venturing beyond conventional limits, these solutions empower organizations to deploy public cloud services in diverse, noncloud locations. This decentralized approach aligns with the escalating demand for computing resources that are both decentralized and centrally controlled.

As the concept of "pure IaaS" continues its evolution, the market dynamics are shaped by this convergence of on-premises, cloud-inspired solutions and the expansive reach of public cloud capabilities into distributed environments. I&O leaders navigating this landscape face a nuanced decision-making process. Their considerations span a spectrum of factors, including control, flexibility, scalability, and the strategic alignment of infrastructure with overarching business objectives. Evaluating DHI solutions is challenging in the face of the increasingly innovative on-premises infrastructure platforms versus the advance of distributed cloud solutions.

The market's defining attributes revolve around the distribution of the entire infrastructure stack, highlighting a paramount emphasis on centralized control and comprehensive management across an array of diverse infrastructure environments. This landscape also encompasses the

pivotal hybrid functionality, facilitating seamless deployment across on-premises, public cloud and edge infrastructure domains.

## Acronym Key and Glossary Terms

| Assured workloads | This represents the organizations that require a high security environment for the operation of regulated or legislated workloads where sensitive and/or confidential data will be processed. |
|---|---|

## Evidence

Placement on the Magic Quadrant for Distributed Hybrid Infrastructure is based on Gartner's view of a vendor's performance against the criteria noted in this research. Gartner's view on vendor placement on the Magic Quadrant is heavily influenced by more than 1,400 inquiries and one-on-one meetings with Gartner clients regarding distributed hybrid cloud solutions, end-user surveys, Gartner conference kiosk surveys, Gartner conference session polling data, gartner.com Research Circle polls and Gartner Peer Insights. The included vendors submitted comprehensive responses to Gartner's Magic Quadrant survey on this topic, which were used as the basis for subsequent vendor briefings and follow-up meetings, product demonstrations, and correspondence.

Additionally, this research drew input from other Gartner analysts, industry contacts and public sources, such as U.S. Securities and Exchange Commission filings, articles, speeches, published papers and public domain videos.

## 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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