Invest Implications: Market Guide for Server Virtualization

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The server virtualization market continues to expand — to cloud hosting and toward edge — while evolving to support modernized infrastructure requirements. This market guide evaluates new approaches to server virtualization and highlights key vendors providing software and hardware solutions.

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Market Guide for Server Virtualization

COMPANY IMPACT

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Investment Implications

Server virtualization is a core component in the majority of compute infrastructure. It improves hardware utilization, workload portability, automation and availability. It should be considered a method of abstracting an underlying infrastructure layer — be it the operating system or server hardware for networking, storage or compute (including memory). It can include open-source and/or proprietary technology, as well as embedded or bundled features provided within other offerings (typically, a server hardware component, an infrastructure as a service [IaaS] offering, an operating system or an infrastructure stack).

Server virtualization is associated with virtualized compute for general-purpose/industry-standard server workloads in data center environments. Today, server virtualization includes locations such as public cloud and edge, additional infrastructure resources (storage and network), and workload-specific requirements. Server virtualization technologies include: hypervisor-based virtualization and OS-based virtualization, which is the underpinning for containers. The increasing range of...
server virtualization technologies and deployment scenarios leads to confusion in functionality (and in terminology).

The virtualization host is the classic hypervisor-based technology today. One or more virtual machines (VMs) coexist, each housing its own guest operating system. The hypervisor is able to support different OS types, with each isolated in its own VM. I&O leaders can choose their preferred hypervisor and typically integrate it with their preferred data center infrastructure.

Virtualization host with hyperconverged infrastructure (HCI) is delivered by hypervisor-based server virtualization supplied as part of the HCI stack. HCI integrates virtualized storage functionality in a separate VM or as an extension to the hypervisor (and sometimes network functionality). Administration is simplified by a unified administrative graphical interface. In geographies with slower adoption of hypervisor-based virtualization, HCI is the primary driver of increasing usage of server virtualization (notably, China).

Public cloud IaaS providers typically deploy virtualization hosts. These are used as the basis to offer virtual machines for consumption. For the vast majority of hyperscale IaaS providers, the consumer does not have a choice in the underlying hypervisor. Where there is a choice of hypervisor, bare-metal server infrastructure is used (often integrated with hardware assist).

Options for hybrid virtual infrastructure (including HCI) are increasing as public cloud infrastructure adds additional bare-metal offerings for continued support of consolidating current application portfolios. Common locations include data center, remote office, hosting provider, managed service provider (including outsourcer) and hyperscale public cloud IaaS provider.

What to Watch For

The representative vendors in this Market Guide come from different starting points, and they range from software megavendors to hardware and hyperscale cloud providers. The range of pricing and licensing options varies accordingly and will play an increasingly important role in virtualization strategy as market dynamics continue to evolve in 2021 and beyond.

Hypervisor-based virtualization of x86 server infrastructure remains the most widely used form of server virtualization technology within enterprise environments today. However, new infrastructure offerings (including HCI and IaaS) can reduce the need or ability to choose the hypervisor.

In 2021 and beyond, use of OS-based virtualization will continue to grow, especially for new application workloads. Application backlog will be a major inhibitor to faster adoption of containers by enterprises.

Cloud hosting for hypervisor-based server virtualization has rapidly emerged as an option for selected enterprise use cases (including data center consolidation and disaster recovery).

Some key server virtualization trends include:
Through 2024, more than 75% of data center x86 workloads will continue to use hypervisor-based virtualization (down from 80% in 2020, and despite cloud migration and container adoption).

Less than 15% of enterprise applications will run in a container environment by 2024 (up from 5% in 2020 and constrained by technical debt, application backlog, skills and budget).

By 2023, at least 70% of AI deployments at the edge will use containers (for application delivery and management).

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