Magic Quadrant
for x86 Server Virtualization Infrastructure

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The number of installed server VMs and containers has nearly doubled in the past year as competition improves, virtualization adoption expands, the midmarket heats up, desktop virtualization drives more workloads to servers and workloads are deployed by cloud computing providers.

WHAT YOU NEED TO KNOW

As of mid-2011, at least 40% of x86 architecture workloads have been virtualized on servers; furthermore, the installed base is expected to grow five-fold from 2010 through 2015 (as both the number of workloads in the marketplace grow and as penetration grows to more than 75%). A rapidly growing number of midmarket enterprises are virtualizing for the first time, and have several strong alternatives from which to choose. Virtual machine (VM) and operating system (OS) software container technologies are being used as the foundational elements for infrastructure-as-a-service (IaaS) cloud computing offerings and for private cloud deployments. x86 server virtualization infrastructure is not a commodity market. While migration from one technology to another is certainly possible, the earlier that choice is made, the better, in terms of cost, skills and processes. Although virtualization can offer an immediate and tactical return on investment (ROI), virtualization is an extremely strategic foundation for infrastructure modernization, improving the speed and quality of IT services, and migrating to hybrid and public cloud computing.

MAGIC QUADRANT

Market Overview

The x86 server virtualization infrastructure market is the foundation for two extremely important market trends: infrastructure modernization and cloud computing. For infrastructure modernization, virtualization is being used to improve resource utilization, improve the speed of resource delivery and encapsulate workload images in a way that enables automation. Virtualization is also being used as a basis for cloud computing – both private and public. In the last year, the number of server virtual containers and VMs more than doubled, due to:

- Growth in workloads
- Rapid growth in customer adoption
- Increased use of hosted virtual desktops (HVDs; on servers)
- Increased use of cloud IaaS

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- Significant growth in midmarket enterprises beginning to virtualize for the first time

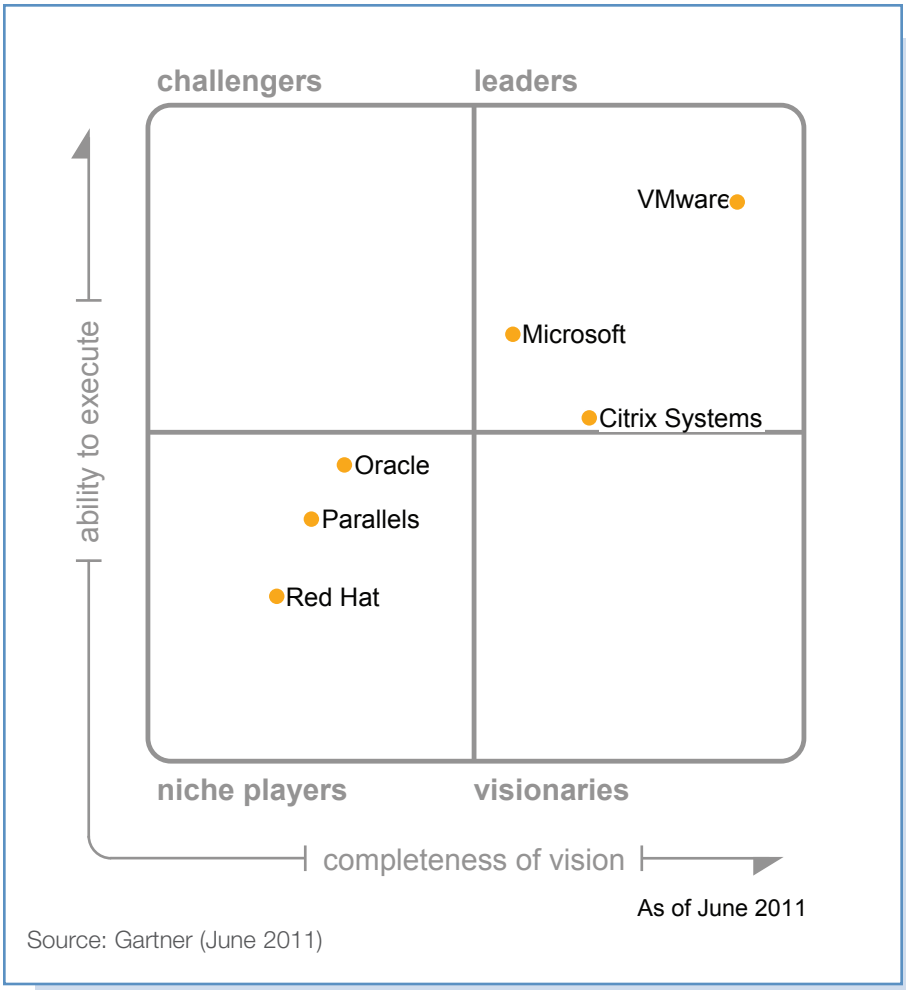
- Maturity of product offerings

Interoperability between service providers and enterprises is becoming more important, as enterprises plan to build architectures that can enable workload migration to and from cloud providers, and hybrid cloud computing ("cloudbursting").

x86 server virtualization infrastructure provides the foundation for new management and automation tools, new security architectures and new process methodologies. Although the technologies in the x86 server virtualization infrastructure market are simply enablers, these technologies will be used by vendors to drive customers to higher-level management and automation technologies. Choices made at the lower layers matter.

The market is becoming very competitive – both in terms of product offerings and in terms of overarching visions for the road map to cloud computing. VMware remains the market share and technology leader, but the market is growing rapidly, and competitors like Microsoft and Citrix Systems have a larger share now than they did a year ago. While the majority of Global 1000 enterprises have been virtualizing for several years, many smaller enterprises and those in emerging economies are just starting out, or haven't started yet. These enterprises have several viable alternatives from which to choose. In addition, as the cloud computing paradigm continues to evolve, cloud service providers offering IaaS want to make interoperability with their service offerings easy. A key trend in service providers is a shift to support better interoperability with existing enterprise virtualization infrastructures – in many cases, expanding their support for the same technologies that enterprises are using.

Figure 1. Magic Quadrant for x86 Server Virtualization Infrastructure



Source: Gartner (June 2011)

Market Definition/Description

The x86 server virtualization infrastructure market is defined by organizations that are looking for solutions to virtualize applications from their x86 server hardware or OSs, reducing underutilized hardware and associated costs, and increasing flexibility in delivering the server capacity that applications need. In 2011, we are adding HVDs (in server VMs) to the list of workloads covered by this market.

Solutions for this market leverage:

- Hypervisors to create VMs

- Shared OS virtualization technologies (also called "containers")

- Server virtualization administrative management (base frameworks)

- Server virtualization embedded management (live migration and basic automation of administrative management functions)

Not included are higher-level management functions, such as operational automation tools that deal with virtual resources, application performance tools that leverage and monitor virtualization, disaster recovery tools that leverage virtualization, desktop provisioning and brokering software, etc.

Inclusion and Exclusion Criteria

Vendors that were eligible for inclusion in this Magic Quadrant met the following criteria:

- They must provide x86 server-based solutions to virtualize applications from OSs, or OSs from x86 server hardware, using:
  - Hypervisors
  - Container technology
- They must provide basic administrative tools for those solutions:
  - Administrative management frameworks/suites for hypervisors/containers
  - Embedded virtualization management technology (e.g., live migration)
- They must have at least 100 different organizations using their generally available products as of 1 April 2011.

Open-Source Communities (e.g., Xen and KVM Hypervisors) Versus Vendor-Embedded Open-Source Software Business Models

The x86 server virtualization infrastructure Magic Quadrant includes only commercial vendor-based offerings, and not individual positions and evaluations for open-source software (OSS) projects, such as KVM and Xen. The omission of Xen and KVM as OSS projects follows the same decision used in the 2010 Magic Quadrant. To reiterate, open-source projects would be penalized in the Magic Quadrant as a consequence of being a community-sponsored development, compared with the specific financial and marketing goals of vendors using the same underlying technology. Magic Quadrant positions established for Oracle and Citrix for Xen, and Red Hat for KVM achieve higher scores in marketing understanding, marketing strategy and sales strategy, compared with the open-source versions of Xen and KVM. Only skilled organizations that use OSS tools, or customized their own, will succeed without commercial vendor support.

External service providers (ESPs), startups and entrepreneurs who have the necessary in-house skills can use open source to develop, test, configure, build and maintain their own environments. Since ESPs are more likely to have the technical skills and shave margins in their services and product offerings to keep costs low, they will most likely develop and deploy their automation tools on a license-free OSS version of the hypervisor.

Users have the choice of selecting either vendor-specific implementations of virtualization or OSS-community-supported projects, including the types of virtualization (OS hosted versus hypervisors) inclusive of monitoring and management tools, or a build-your-own approach, with self-maintenance or support of ESPs. The self-maintenance and integration approach avoids subscription support licenses and vendor dependencies, but will add to internal support costs if skills are minimal or infrastructures are poorly implemented, resulting in more-frequent outages and downtime.

Dropped

Novell

Attachmate (formerly Novell)

Since last year's Magic Quadrant, we have reconsidered the inclusion of SUSE (formerly Novell) and decided to omit it. There are several reasons for the omission:

- SUSE originally based its strategic virtualization direction on the Xen hypervisor (since 2003) as part of the SUSE Linux Enterprise platform (well before the advent of KVM in 2007), but now offers a richer, heterogeneous, hypervisor-neutral approach to virtualization (with both Xen and KVM).
- The evolution of the heterogeneous approach has led to a strategy that is called the "perfect guest," in which SUSE Linux can be employed as a guest on all major virtualization platforms, as a more strategic direction going forward.
- SUSE has formed alliances with Citrix, Microsoft and VMware to deliver cooperative support of SUSE Linux Enterprise as a guest OS on each of their hypervisors.
- The perfect guest virtualization strategy will be targeted as a business by delivering management tools above the hypervisor layer in multivendor, heterogeneous environments.
- The Attachmate Group's acquisition of Novell closed 27 April 2011, and has created a separate business unit around SUSE Linux Enterprise and the former Open Platform Solutions unit of Novell, while virtualization management has been transferred to NetIQ, another business unit of The Attachmate Group. This represents an organizational shift from how Novell approached virtualization management, to an integrated approach expected from NetIQ.

Thus, it is premature to evaluate SUSE's vision and execution (e.g., marketing, sales, etc.) for the Magic Quadrant until a greater level of market understanding is achieved. Here's what to watch for from The Attachmate Group's SUSE and NetIQ business units related to virtualization:

- How NetIQ delivers automation tools for virtualization and WorkloadIQ (formerly Intelligent Workload Manager)
- How SUSE prioritizes and enhances marketing and sales resources from its headquarters in Nuremberg, Germany

- How NetIQ (Operational VMware Management) will integrate the Novell virtualization solutions as part of its virtualization strategy

- How the Microsoft relationship of cross-platform heterogeneity and management progresses for SUSE's and NetIQ's benefits to customers

Evaluation Criteria

Ability to Execute

We evaluated technology providers on the quality and efficacy of the processes, systems, methods and procedures that enable IT provider performance to be competitive, efficient and effective, and to positively affect revenue, retention and reputation. Ultimately, technology providers are judged on their ability and success in capitalizing on their vision.

Ability to execute in server virtualization is not simply about product features, but also very much about maintaining a constantly changing business model in a very dynamic trend. Good products could fail, and poor products could be very successful, based on effective vendor execution.

Product/Service: Core goods and services offered by the technology provider that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets, skills, etc., whether offered natively or through OEM agreements/ partnerships. Key factors that are evaluated include: range of OSs and applications supported; scalability and efficiency; elasticity; maturity; embedded resource management; management features to reduce administrative burden; ability to administer the holistic, virtualized ecosystem; administrative scalability; and integration with third-party enterprise management providers.

Overall Viability (Business Unit, Financial, Strategy, Organization): An assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood of the individual business unit to continue to invest in the product, continue offering the product and advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The technology provider'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. Customers included are both enterprises and service providers.

Market Responsiveness and Track Record: The 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 provider'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 of the product/brand and organization in the minds of buyers. This mind share can be driven by a combination of publicity, promotional, 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), the availability of user groups, service-level agreements, etc.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, such as skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis (see Table 1).

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product/Service	high
Overall Viability (Business Unit, Financial, Strategy, Organization)	high
Sales Execution/Pricing	high
Market Responsiveness and Track Record	low
Marketing Execution	high
Customer Experience	standard
Operations	low

Source: Gartner (June 2011)

Completeness of Vision

We evaluated technology providers on their ability to convincingly articulate logical statements about current and future market direction, innovation, customer needs, and competitive forces, and how well they map to the Gartner position. Ultimately, technology providers are rated on their understanding of how market forces can be exploited to create opportunities for providers.

In the server virtualization market, vendor understanding and articulation of the strategic path for virtualization (expanding into the foundation for the future of infrastructure architecture and operations, and extending toward cloud computing) is particularly important and differentiating.

Market Understanding: The ability of the technology provider to understand buyers' needs, and to translate those needs 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 wants with their added vision. The market includes enterprises with their own strategies to build private cloud solutions, and cloud computing providers.

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: A 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: A technology provider's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set, as they map to current and future requirements. Interoperability between enterprises and service providers (and between providers) is also growing in importance.

Business Model: The soundness and logic of a technology provider's underlying strategic business proposition.

Vertical/Industry Strategy: The technology provider's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including verticals (both enterprises and service providers).

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

Geographic Strategy: The technology provider'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 the geography and market (see Table 2).

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	high
Marketing Strategy	high
Sales Strategy	standard
Offering (Product) Strategy	standard
Business Model	standard
Vertical/Industry Strategy	standard
Innovation	standard
Geographic Strategy	low
Source: Gartner (June 2011)	

Leaders

Citrix and Microsoft have joined VMware in the Leaders Quadrant by increasing vision and execution respectively. Although market share leader VMware continues to set the standard in products and the pace in terms of strategy, Microsoft has increased its market share (especially among midmarket customers new to virtualization), and Citrix is leveraging its desktop virtualization strengths and its free XenServer offering to expand its server virtualization share. The road map from virtualization to cloud computing is rapidly evolving, and executing will be very important during the next year as this market continues to rapidly evolve and grow.

Challengers

Now that Microsoft has moved from the Challengers Quadrant into the Leaders Quadrant, there are no obvious Challengers on this Magic Quadrant. However, with the delivery of richer functionality, better sales execution and market share, and increased marketing, Oracle could become the next market challenger.

Visionaries

Citrix has increased its execution to move into the Leaders Quadrant. The most likely potential Visionary is Red Hat, which has begun to talk about an expanded vision of virtualization – CloudForms – and has joined several other vendors in an Open Virtualization Alliance.

Niche Players

Oracle, Parallels, and Red Hat remain Niche Players in this market. Parallels continues to be a strong choice for service providers focused on high-density deployments of specific applications, and it will likely leverage that strength to expand its offerings over time. Oracle remains an option for Oracle application and DBMS stacks on Oracle Linux. Red Hat is being considered for predominantly Red Hat consolidation and migration implementations.

Vendor Strengths and Cautions

Citrix Systems

Citrix is leveraging its position in desktop virtualization to grow its foothold in the server virtualization market as the third-place vendor in terms of market share. In addition, activations of the free edition of XenServer have improved Citrix's market share. However, converting those new customers to paying customers remains a challenge. In the past year, Citrix has released XenServer 5.6 and 5.6 Feature Pack 1, including scalability improvements and dynamic memory control.

Key to Citrix's strategy is its ability to leverage a very large and loyal customer base of all its products (of which there are more than 200,000). These customers typically use a variety of Citrix products/technologies, with XenApp as the product holding most of the mind share. Although Citrix has been successful selling XenApp, the company recognizes that the market opportunity for the desktop is much larger than XenApp can address, so Citrix requires a position within the hosted virtual desktop (HVD) market to grow its installed base.

To that end, Citrix offers XenDesktop as an umbrella set of technologies that are needed to deliver the desktop; it includes XenApp, Provisioning Services, XenClient (a Type 1 hypervisor for PCs) and XenServer. Citrix's strategy has served it well, since XenDesktop has emerged as the product of choice for most HVD customers. This rapid adoption of XenDesktop has carried XenServer into VMware-centric organizations. And while VMware ESX continues to be a broadly used hypervisor in XenDesktop deployments, many enterprises are beginning to question the viability of supporting a different VM infrastructure when they could reduce costs by using XenServer.

Further, Citrix has expanded on its vision for private cloud computing with Project Olympus, its commercial offering of OpenStack. One goal is to become the "open" alternative to Microsoft and VMware. However, there is competition for that mantle, as Red Hat promotes KVM and its own vision for openness in virtualization and cloud computing.

In server virtualization, Citrix and Microsoft have a somewhat complicated relationship. While Citrix supports Hyper-V and has a long-term partnership with Microsoft, winning at the desktop hypervisor layer is also important if Citrix is going to expand its management, automation and cloud business further. As a result, Citrix's go-to-market strategy regarding how it competes with/complements Microsoft remains confusing for many customers and channel partners. Marketing and sales execution remain key future success factors for Citrix.

Strengths

- Vision for becoming the "open" alternative for virtualization through to cloud computing
- Rich product capabilities for relatively low cost (starting with free XenServer edition)
- Ability to leverage its desktop virtualization market position and installed base for XenServer sales
- Bundling of XenServer with other Citrix products
- Very large and loyal channel

Cautions

- Business model – converting free product activations into revenue for maintenance and management tools
- Marketing execution and reach
- Open-source software (OSS)-based competition (especially from Red Hat with KVM)
- Continued market and strategy complexity in its partnership with Microsoft

Microsoft

Microsoft has been growing market share significantly since its launch of Hyper-V in 2008, and the subsequent addition of live migrations in Hyper-V R2 in late 2009. The company's success has been primarily occurring among midmarket customers new to virtualization, where it is winning at least 30% of the time.

One of Microsoft's key strengths – its low price – is also a weakness when it comes to influencing the channel to promote its product, rather than its competition. However, when evaluated objectively, Hyper-V and System Center Virtual Machine Manager (SCVMM) usually meet the requirements for midmarket or branch office deployments. In the past year, Microsoft has also released Windows Server 2008 Service Pack 1, with enhancements such as dynamic memory for Hyper-V. At the hypervisor and basic administration level, Microsoft has closed most of its technology gaps with market leader VMware (which tends to have an advantage with higher-level management and automation tools). The most significant hypervisor difference continues to be Microsoft's reliance on a parent operating system on each virtualization host – which carries the benefit of a proven driver architecture, but the burden of potentially more planned downtime for patching and maintenance (however, Microsoft's patch record to date for its parent operating system has been good).

In the past year, Microsoft has begun to lay out a broader virtualization road map for cloud computing, including Hyper-V Cloud, which includes some technology, white papers, consulting services and partnerships. While the vision is coming together, Microsoft's Hyper-V customers tend to be smaller enterprises or branch offices in larger enterprises – where private cloud computing is less likely to be deployed. Microsoft's challenge to become a leader in private cloud computing will be to convert existing VMware users to Hyper-V and System Center. In addition, service providers are cautious about leveraging Hyper-V for their own cloud-based offerings, given that Microsoft is a major service provider competitor with Microsoft Azure.

Strengths

- Administrative environment that is familiar to Windows administrators
- Midsize enterprise installed base of Windows
- Strength of solution and price for midsize enterprises
- Company financial strength

Cautions

- Difficulty converting or surrounding strong VMware installed base, especially in large enterprises
- Competing with VMware for channel and service provider influence
- Hypervisor dependence on a running copy of Windows as a parent operating system

Oracle

Oracle Virtual Machine (Oracle VM) is Oracle's implementation of the Xen hypervisor that also leverages intellectual property acquired from Sun Microsystems and Virtual Iron. Oracle has been gradually integrating these technologies into a more coherent and packaged solution – but the resulting products haven't been shipped yet. Oracle is converging on Oracle VM Manager to manage its virtualization portfolio. This includes Oracle VM (an x86 architecture product, based on Xen, which is covered here), Oracle VM Server for SPARC (based on Sun LDOM technology), Oracle Solaris Containers and potential software appliances using Oracle VM, storage and other related virtualized infrastructure. This

management unification is an important direction and foundation for Oracle virtualization products, because it builds an integrated approach to selling virtualized DBMS and application server hardware, software solutions, attached storage, and Oracle-based management solutions. Among competitive x86-hypervisor-based solutions, Oracle has chosen to certify its software solely on Oracle VM. Most of the customer references that Gartner investigated stated that certification was their primary reason for choosing Oracle VM.

In addition, Oracle favors Oracle VM for software licensing and pricing, for example, with processor pinning (allowing the specification of a limited number of processors being used by a VM, which can reduce software costs). Oracle's corporate strategy is "integrated but open," which encompasses the company's infrastructure stack. While Oracle solutions are optimized to work with one another, they still work with supported third-party vendors as well. Oracle VM is a solid and maturing solution for Oracle-centric architecture, and it is becoming a valuable component of an integrated Oracle-managed architecture as more management features are added. We are receiving a growing number of inquiries from clients considering and using Oracle VM. Several clients have reported difficulties in migrating and managing storage when using Oracle VM live migration, but we expect this to be addressed in the forthcoming release.

For 2011, we have combined our analysis of Oracle in this Magic Quadrant based on Oracle VM (predominantly) with Oracle Solaris Containers (specifically for the x86 architecture). There is a large and respectable legacy installed base running Oracle Solaris Containers predominantly on SPARC, but a much smaller installed base running Oracle Solaris on x86 that we focus on for this Magic Quadrant. Oracle Solaris Containers offers a lightweight solution that sacrifices portability and application coverage for price, ease of use and multiversion Oracle Solaris support. As part of the Oracle portfolio, Oracle Solaris Containers offers shared operating system virtualization capabilities for tactical x86 deployments. Oracle Solaris Containers provides differentiated benefits for x86 Oracle Solaris users – higher virtualization density, and reduced operational costs due to fewer operating system instances – something that hypervisor-based solutions cannot do (however, this technology is available for Oracle Solaris on x86 only, and not Oracle Linux). In this sense, Oracle Solaris Containers and Oracle VM can be complementary solutions, targeted at different application requirements.

Strengths

- Preferential licensing and certification of Oracle software using Oracle VM
- Oracle's overall software installed base and financial strength
- Strong solution in Oracle-managed stack
- Oracle Solaris Containers complements Oracle VM as a lightweight alternative to a hypervisor

Cautions

- Oracle focuses on an "Oracle only" virtualization market and user requirements
- Oracle has been slow to the market with promised product enhancements to Oracle VM (notably Storage Connect)

Parallels

Parallels Virtuozzo Containers is a shared operating system virtualization solution available for Linux or Windows operating systems. It allows multiple applications to run in lightweight, separate containers offering processor affinity and memory protection and isolation. Compared with hypervisor-based solutions, Parallels Virtuozzo Containers can reduce operating system software and administration costs, in much higher densities. Parallels also offers portability and live workload migration. The whole architecture of containers allows a workload and container the ability to spin up faster with less performance overhead than VM solutions.

Originally, Parallels Virtuozzo Containers focused strictly on the service provider market. With the growth of enterprise virtualization, Parallels entered that market several years ago, without much success. Since last year's Magic Quadrant analysis, Parallels has shifted its strategy to refocus on service providers exclusively. This focus has been a popular decision among its service provider customers, who felt that the lack of focus was making Parallels less responsive to their requirements – but it is much improved now. As cloud computing evolves, Parallels is positioned well with service providers, but may eventually need to expand its footprint into enterprises building large, hybrid cloud computing environments. For smaller businesses that may move more services to cloud service providers, Parallels will need to influence them (through channels, service providers, etc.) to move to Parallels-based solutions. For now, Parallels offers the best solution for service providers building high-density, but isolated, solutions around common workloads, such as Web serving.

Parallels Server 4 Bare Metal which is based on a hypervisor architecture, is not covered in this Magic Quadrant because we have not been able to find enough references using it. However, Parallels' success with containers, and common management and automation tools, creates an opportunity for expansion with Bare Metal in the service provider market.

Strengths

- Unique and innovative multioperating system, container-based solution, including live migration and increased isolation
- Parallels Virtuozzo Containers is the leading product with a containers-based solution for service providers
- Reduced administrative and operating system software costs, and higher density compared with hypervisor-based solutions

Cautions

- Importance of an enterprise customer base (and "on-ramp") as hybrid cloud computing evolves
- Extends operating system kernel code, which causes the potential for software errors or conflicts (primarily with Windows)
- Dependence by many workloads on a single host operating system

Red Hat

Red Hat continues to enjoy significant market success in the Linux distribution business with a share in the range of 58% in 2010. With its large Linux installed base, Red Hat has an opportunity to gain a foothold in the virtualization market. It's taken Red Hat more than seven years to create a coherent hypervisor/virtualization solution. Its acquisition of Qumranet in September 2008 – an Israeli-based, open-source development organization for a Linux kernel-based hypervisor – was a tactically smart move. Until that point, the only viable alternative for an OSS hypervisor was Xen (which Red Hat supported). However, when the Xen OSS development team was acquired by Citrix, Red Hat chose to be proactive by acquiring Qumranet and KVM developer expertise, rather than following in the path of Citrix (XenServer), which owned the chief developers. It has taken Red Hat three more years to improve the robustness of KVM for enterprise production use, and to develop a robust and functional ecosystem in which to compete.

Although KVM is getting some platform vendor endorsements (such as from IBM), the enthusiasm and strong independent software vendor (ISV) ecosystem, so prominent in driving Linux to worldwide recognition and acceptance, has lagged for Linux virtualization. As a result of the market's confusion, the slow pace of the ecosystem, superior Unix and mainframe alternatives, and Red Hat shouldering most of the marketing burden, Linux virtualization market share, and KVM specifically, has lagged behind VMware, with low single-digit market share.

Since Gartner Magic Quadrants are not predictors or forecast models, the aforementioned comments on timing and penetration reflect a current position statement on Red Hat, but not a forecast of future potential. For example, on the positive side, Red Hat is endeavoring to raise its level of visibility in cloud computing and made an announcement with IBM on 17 May 2011 about the Open Virtualization Alliance, which includes BMC Software, HP and Intel, among others. We believe that the alliance is recognition that driving more participation in a Linux ecosystem (instead of relying only on Red Hat's limited marketing resources) is mandatory to the growth of Linux virtualization. And if Red Hat's virtualization does not succeed as the Linux OS distribution and model has, then prospects for Linux as an important cloud building block may also lag, since virtualization is nearly a sine qua non of cloud computing. On the other hand, the alliance is also a very late response to the dominance of VMware and growing share of Microsoft Hyper-V.

Gartner's client contacts reveal cautious interest in Red Hat virtualization. We are still experiencing relatively low interest levels in Red Hat Enterprise Virtualization (RHEV). While this period could still be predominantly proofs of concepts and development/test environments, we are more likely to encounter clients that have made commitments to VMware (or others) and are cautious about making additional commitments that expand required toolkits and administration skills. We also detect sensitivity on pricing. Perceptions that OSS should result in a lower total cost of ownership (TCO) are being challenged by Red Hat's virtualization pricing model for guest operating systems. Red Hat's pricing model tends to escalate by the number of VMs under support. Unlimited VM support on four-socket configurations with premium 24/7 support can more than triple a base RHEL subscription. Red Hat marketing and sales execution will be crucial in overcoming powerful market players like VMware, Microsoft, Oracle and Citrix. The lower Red Hat Magic Quadrant criteria scores associated with marketing and sales execution have been the primary causes for the lack of progress from last year's Magic Quadrant.

We reiterate from last year's Magic Quadrant that, by 2012, Red Hat must show rapid uptake in upselling its accounts to activate KVM with RHEV management features. The biggest change from last year is that users are less ambivalent about KVM and RHEV capabilities, but are still hanging back from strategic long-term commitments.

Strengths

- Strong and loyal RHEL customer base opportunity (mostly unvirtualized)
- Integrated hypervisor with Linux kernel (e.g., leveraging mature scheduling)
- Performance and security
- Ease of access and installability
- Leadership of the core KVM OSS development community

Cautions

- Limited sales and marketing execution
- The majority of virtualized RHEL instances today are running on VMware
- Limited ecosystem of tool vendors
- RHEL VM guest pricing tiers are inhibitors to rapid market expansion in the company's own user base
- Limited production use of dynamic mobility

VMware

VMware continues to set the standard in the x86 server virtualization infrastructure market, but competition has been gaining share in this rapidly growing market. vSphere 4.1 was released in 2010, and will be the last release to support the ESX "classic" hypervisor architecture (which uses a Linux-based service console). VMware has made it clear that all future releases will require ESXi, which reduces the footprint of the hypervisor significantly (reducing the size of the single point of failure, and reducing planned downtime).

With regard to the desktop, VMware continues to expand and deliver on its existing offerings of View, ThinApp and VMware Workstation. The integration of View and ThinApp has provided customers a fairly comprehensive solution that provides clients the ability to scale HVD deployments to projects that are larger and more complex than seen in prior iterations of the product. VMware has also articulated its future vision of the desktop under Project Horizon, which integrates legacy Windows PC functionality with cloud-based applications and services delivered to broader audiences and customers.

VMware has also been expanding the vision for virtualization as a basis for a private cloud, delivering vCloud Director in 2010. While moving up the stack, VMware faces serious competition for new business, primarily in the midmarket, where VMware's features are less valuable, and entry price is more important. However, VMware seems to be winning at least 60% of new midmarket customers – in large part due to a well-structured channel, but also due to strong mind share developed over the past 10 years. Except for very small deployments, VMware's price remains high, which continues to be the No. 1 concern customers have with VMware. VMware will continue to be challenged to move up the IT stack into private and hybrid cloud computing for its more-advanced and larger customers, while, at the same time, competing for new, mostly smaller, customers, whose requirements are less deep.

One emerging area of success for VMware is the cloud infrastructure service provider market. Thousands of service providers are now using vSphere, and a growing number are involved in the vCloud initiative. These service providers are trying to balance a desire for differentiation and low cost with access to the large VMware installed base. VMware's challenge and opportunity is to enable a certain amount of differentiation for these providers while maintaining a standard for interoperability with enterprise vSphere and vCloud deployments.

Strengths

- Virtualization strategy and road map that lead to private and hybrid cloud computing
- Technology leadership and innovation
- High customer satisfaction
- Large installed base (especially among large enterprises), and a large and growing number of service providers in the vCloud initiative

Cautions

- Maintaining revenue growth as its market penetration exceeds 50%, and as midmarket growth drives prices down
- Maintaining mind share in the midmarket as competition grows (especially with Microsoft)
- Dependence on expansion into new and challenging adjacent markets (for example, IT and service automation, application architecture)

Vendors Added or Dropped

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

Evaluation Criteria Definitions

Ability to Execute

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

Overall Viability (Business Unit, Financial, Strategy, Organization): 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 pre-sales activities and the structure that supports them. This includes deal management, pricing and negotiation, pre-sales support and the overall effectiveness of the sales channel.

Market Responsiveness and Track 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.