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TECHNOLOGY ANALYSTS

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VMware Virtual Appliances 2.0: Ready for Broad-Scale Adoption

November 2008

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In September 2008, VMware announced a major set of enhancements to its industry-leading virtual appliances offering. This launch brings to market a new set of capabilities and services that will enable end users, ISVs and service providers to more easily and effectively develop, deploy and manage virtual appliances. The release – which we're dubbing "Virtual Appliances 2.0" – includes a tailored authoring environment, an upgraded program to establish production readiness, and an enhanced marketplace to drive business through software and service provider channels. These new initiatives squarely address a number of the issues that have prevented broader adoption of the technology to date.

With this announcement, VMware has solidified its role as the technology and market leader in virtual appliances. We believe that the new offering will help to accelerate the availability of virtual appliances across a variety of market segments and application areas, while strengthening VMware's position as the industry's preferred platform for authoring and deployment.

A Good Start... but Challenges Remain

Since VMware first introduced virtual appliances in 2006, the software packaging and delivery format has provided multiple benefits to both independent software vendors and end users. By restricting the build to a single, streamlined OS and removing the need for customer installation and configuration, virtual appliances have enabled ISVs to deliver higher quality and more secure software, while reducing testing, maintenance and support costs. Users have enjoyed greater reliability, more rapid deployment, and simpler management and support of their applications.

Given these compelling benefits, an increasing number of vendors and end users alike are packaging, distributing and running their applications as virtual appliances. In fact, a whole new ecosystem has developed to support this rapidly growing market. As a case in point, more than 20 new VMware OEM partners have begun distributing their applications as virtual appliances over the past nine months, including tier 1 vendors such as BEA, EMC and McAfee.

Enterprises and small to medium enterprises (SMEs) are not merely consumers of these appliances; a number are beginning to package their in-house applications in this format as well. For example, the US Bureau of the Census, a government agency, now

views virtual appliances as the preferred format in which to package and deploy new software. In order to streamline the deployment and management of software for the upcoming 2010 census without taxing its already overburdened IT staff, the Bureau has put multiple virtual appliances into production, in areas such as storage management, system monitoring, machine polling and security. By eliminating the need for manual builds, testing and installation, this approach has allowed the agency to reduce the time required to evaluate and deploy new software from weeks down to days or even hours, and in the process has increased server utilization while simplifying ongoing management.

To bolster and support these efforts, partners such as JumpBox, rPath and VirtualAppliances.net provide tools and services that assist developers in building their software in the required format; and operating system vendors such as Novell, Red Hat and Ubuntu offer their Linux distributions as thin OSs. This substantial ecosystem, in turn, has led to a healthy and expanding marketplace. The VMware Virtual Appliance Marketplace (VAM) now features more than 900 offerings in a broad range of categories. Virtual appliances are also increasingly enabling managed services and other software-as-a-service (SaaS) offerings, including compute clouds such as Amazon EC2.

But despite this growing infrastructure and market momentum, a number of challenges remain before virtual appliances can become truly pervasive. On the technical front, a general lack of tools and specifications has inhibited the development, deployment and management of virtual appliances. For instance, both ISV and IT developers would benefit from an easy-to-use authoring system that enabled them to build and custom-configure each virtual appliance to include the minimum set of OS and middleware components and services required to run the application. Further along in the lifecycle, tools and standards are needed to facilitate the deployment, monitoring and management of virtual appliances, and to ensure they run effectively in a production environment. One part of this challenge is the need for standard interfaces or "hooks" to allow a virtual appliance to be seamlessly integrated with – and take full advantage of – underlying virtual infrastructure services. Up until now, VMware has attempted to gauge the "production readiness" of a virtual appliance through a platform-centric certification program focused on testing reliability and manageability, but not necessarily all of the criteria required to measure suitability for enterprise deployment.

Several market-oriented challenges must also be overcome. Though the number of component, tool and service providers has grown considerably during the past year, an even larger ecosystem is required to attract mainstream vendors and end users to the new model. In particular, the market would benefit from additional suppliers of thinned-down, "JeOS" (Just Enough Operating System) components, as well as specialists to train developers and assist in the building and testing process. Beyond that, the sheer number of enterprise-caliber virtual appliances must grow. Though VMware

boasts more than 900 virtual appliances in its current catalog, only a small percentage of these feature enterprise-level applications from top-tier providers. The virtual appliances model must continue to attract service providers – not just existing MSPs, but also traditional ISVs that have hesitated to re-architect their applications to transition to the SaaS model. Finally, to ensure ISVs a large market based on a single, cross-platform standard, industry participants must enable the portability of virtual appliances across all major hypervisors and virtual disk formats by continuing to invest in the Open Virtual Machine Format (OVF).

So how does VMware's new series of virtual appliance initiatives address this array of challenges?

Leading Technology to Streamline the Virtual Appliances Lifecycle

With this announcement, VMware has re-asserted its virtual appliances leadership in three major areas: technology, market and vision.

From a technology standpoint, VMware's latest set of offerings expands and enriches the capabilities at each stage of the virtual appliances lifecycle. At the beginning of the lifecycle, VMware Studio provides hardware appliance and software vendors with a purpose-built environment for authoring and configuring virtual appliances. The web-based GUI includes quick-start templates and allows developers to customize the look-and-feel and boot experience of each appliance. VMware Studio helps to automate management tasks using a command line interface (CLI) and creates the virtual appliance in an industry-standard OVF or VMX zip format. Using VMware Studio, developers can easily build and custom-configure streamlined virtual appliances, eliminating those OS and middleware components that are not needed to run an application.

Moving to later stages of the lifecycle, VMware Studio enables authors to include a number of tools in the guest environment that facilitate virtual appliance deployment and management. Developers can readily integrate their appliances with VMware virtual infrastructure, providing access to VMware VMotion, High Availability and VirtualCenter management capabilities; as well as with third party management solutions. In addition, VMware Studio creates a patch repository that allows partners or end users to automatically update virtual appliances already in the field with patches from both operating system vendors (OSVs) and ISVs. Driven by enhancements to VMware Update Manager, the new update model enables administrators to refresh a virtual appliance to ensure it is running the latest software revisions or to bring it into compliance with established policies. These management capabilities reduce ongoing maintenance costs and provide higher quality software for the end user. While the various guest facilities add a lot of value, they fortunately do not add a lot of code: VMware estimates an average size of less than 40 MB per virtual appliance, a footprint which is in the realm of existing management (e.g. MOM) agents.

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Accelerating Adoption through "Virtual Appliances 2.0"

VMware Virtual Appliances 2.0 enhances the process and criteria for determining the production readiness of a virtual appliance. VMware has formalized this new approach in the VMware Ready Program, which is now available to partners building solutions for VMware infrastructure. Rather than focusing on a platform-centric certification process, the VMware Ready Program enables partners to validate virtual appliances that conform to best practices in areas such as security and usability and are optimized for VMware infrastructure.

The umbrella VMware Ready Program incorporates existing hardware certification programs and will cover not only virtual appliances, but also infrastructure areas such as storage, networking, security and management. VMware Ready for virtual appliances will immediately include operating system vendors and virtual appliance authoring toolkit vendors such as Novell and rPath. In fact, all the major virtual appliance authoring vendors have already signed up for the VMware Ready Program. We believe that the VMware Ready Program will simplify and accelerate the validation and release of new virtual appliances from VMware partners, while providing customers with reliable, production-ready solutions.

VMware has also made significant strides in this new release from a market perspective, starting with the upgrade of its Virtual Appliance Marketplace (VAM) to a 2.0 version. VAM 2.0 is an electronic, virtual appliance marketplace that aims to provide end users with an Amazon.com-like customer experience, including tools and recommendations to guide the consumer to make the right choice. The site will provide a virtualization-focused channel in which partners can sell solutions and services that can be tightly coupled with VMware infrastructure. Partners will be able to bundle and distribute elements of VMware infrastructure, such as backup, availability and disaster recovery capabilities, with their application solutions. VMware also plans to drive users to the site through various means, including a hook in the free ESXi hypervisor that will invite new users to try out virtual appliances to meet their own solution needs.

The existing Virtual Appliance Marketplace is already one of the top 5 destinations on VMware.com, providing selected partners with hundreds of qualified leads per week, and we believe that the upgraded site will significantly increase traffic to the site as well as overall interest in virtual appliances. The new site should therefore attract a wave of new tool, component and service providers that will enrich the VMware virtual appliance ecosystem. As a result, we expect VAM 2.0 to create a significant new revenue stream for VMware partners while accelerating virtual appliance adoption.

As part of the launch of Virtual Appliances 2.0, a number of new OEM partners have signed on to provide their applications as virtual appliances integrated with VMware infrastructure. These include top-tier players such as IBM, which is providing its Information On Demand Analytics solution (including Cognos Business Intelligence

Reporting); and Business Objects (now an SAP company), which will also be offering selected solutions as virtual appliances. The upcoming integration of the VMware Service Provider Program (VSPP) with VAM 2.0 will enable a number of new SaaS-based service providers to join the marketplace as well, including traditional ISVs that will be able to offer their applications as virtual appliance-based services without rewriting their existing code base. AT&T Hosting, Terremark and Joyent are companies already participating in the service provider program.

A Clear Vision of a Cloud-Based Future

Virtual appliances will clearly benefit from VMware's cloud-based computing initiatives that will begin to come to market in 2009. Whereas virtual appliances today typically run either on a single host or ESX Server cluster, in the future they will be dynamically accessible on internal clouds (across virtualized enterprise datacenters) and external clouds (powered by service providers). VMware's new Virtual Data Center Operating System (VDC-OS) will provide the next generation of virtual infrastructure to enable this transition. Based on the OVF standard, the new vApp model will enhance existing virtual appliance packaging capabilities, providing a container with metadata that describes the application stack, including network configuration, security level, and quality of service metrics. This descriptive data will greatly improve virtual appliance management and allow an organization to further optimize resource allocation, based on the pools of compute, storage and networking resources (or "vServices") available on internal and external clouds. More importantly, the cloud-based approach will ultimately enable a true, utility computing environment, in which application services packaged as virtual appliances will be available to users on demand. While much of the technology that will enable this vision is still being developed, at least one thing is clear: virtual appliances will play a prominent role in a virtualization enabled, cloud computing environment.

Taneja Group Opinion

With this VMware release, we believe that virtual appliances have crossed the chasm and will soon become one of the leading approaches for packaging and delivering software tools and applications. The new tools and programs VMware has introduced as part of this launch will ensure a much broader participation of tier 1 and 2 application providers and enable the market to rapidly reach critical mass. These developments, in turn, will lead mainstream users and service providers to adopt the new format, and expand the use of virtual appliances in the data center and cloud alike.

Having said all of this, much work still remains to be done. The leading virtualization vendors – particularly Citrix, Microsoft and VMware – must enhance their products to fully support OVF and related standards to ensure the near-effortless portability of virtual appliances across all major platforms. Then there is the lack of Windows-based virtual appliances. To address this issue, Microsoft needs to invest

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more fully in the virtual appliance concept, taking its participation several levels beyond the provision of Server Core installation options in Windows Server 2008. A set of tailored tools and revamped Microsoft licensing policies would go a long way towards enabling the volume availability of Windows-based virtual appliances.

In the meantime, VMware's leadership will help take virtual appliances to the next level, from both a technology and market standpoint, and allow a growing number of vendors and users – in small to medium sized businesses, the enterprise, and the cloud – to reap the benefits of the streamlined packaging and distribution format.