VMware Virtual SAN^{TM} Extends VMware® vSphere Hypervisor
to Deliver Simple, High-performance Storage for Virtual Machines

Overview
Today, Aug. 26, 2013 at VMworld® in San Francisco, VMware announced VMware Virtual SAN, a new software-defined storage solution that extends VMware vSphere® to pool compute and direct-attached storage. VMware Virtual SAN^{TM} clusters server disks and flash to produce simple, high-performance, resilient shared storage designed for virtual machines. It will unlock a new tier of converged infrastructure that brings data closer to applications and enables granular scaling of compute and storage resources. VMware Virtual SAN will be available via public beta in Q3 2013.

A New Chapter: Optimizing Efficiency and Utilization with Software-Defined Storage
Server virtualization has fundamentally changed the way compute is managed, resulting in changes to storage requirements. As virtual machines increasingly share the same infrastructure, storage workloads become less predictable, often leading to overprovisioning of resources. Due to its unique position in the stack, the virtualization platform opens up new opportunities to address these challenges. Through a software-defined storage approach, VMware will aim to bring the efficiency to storage that server virtualization brought to compute; and abstracting heterogeneous storage resources into logical pools that are consumed and managed using app-centric policies for automated provisioning of storage and data services.

VMware Virtual SAN Capabilities and Benefits
VMware Virtual SAN represents the first example of VMware's software-defined storage vision. It features a policy-driven control plane, app-centric data services and a virtual data plane in a fully integrated solution for direct attached disks. VMware Virtual SAN implements a distributed architecture that leverages SSDs for high-performance, read/write caching and hard disk drives (HDDs) for cost-effective data persistence.

Features include:

- **Seamless integration with VMware vSphere** – Built in to the VMware vSphere kernel, VMware Virtual SAN will deliver optimal performance and scalability. It is managed directly from the VMware vSphere Web Client™.

- **Simple, one-click deployment** – VMware Virtual SAN is simple to configure and deploy requiring a single click of a box.

- **Protection from failures** – Based on a highly available architecture, VMware Virtual SAN has no single point of failure. It relies on distributed RAID and cache mirroring to guard against data loss and can withstand disk, server and network level failures.

- **Virtual machine-centric, policy-based management** – VMware Virtual SAN implements a policy-based approach to storage management that enables specifying storage attributes such as capacity, performance, and availability, in the form of simple policies associated with individual virtual machines or virtual disks. With automated provisioning and management, customers will be able to increase agility by eliminating manual processes as well as improve upon Service Level Agreements (SLAs).

- **High-performance for Virtual Desktop Infrastructure (VDI) environments** – In performance testing, VMware Virtual SAN delivers the same VDI Density as an all SSD array at a quarter of the cost.

- **Self-tuning, dynamic load balancing** – VMware Virtual SAN automatically self-tunes and load balances dynamically, adapting to ongoing workload condition changes to maintain the policies of each virtual machine.

- **Integrated data services** – Data services such as backup, cloning, replication and snapshots will be delivered in software as app-centric virtual data services directly from VMware vSphere.

- **Interoperability with VMware Horizon View™ and VMware vCenter Site Recovery Manager™** – The solution can be deployed with VMware Horizon View in VDI environments to lower the total cost of ownership (TCO) and VMware vCenter Site Recovery Manager in disaster-recovery environments.

VMware Virtual SAN will simplify storage provisioning and management dramatically for virtual machines. Featuring a scale-out architecture that is fast, resilient and dynamic, VMware Virtual SAN will deliver significantly lower TCO in use cases such as VDI, test/development environments and disaster recovery targets. With its granular, scale-out approach, VMware Virtual SAN will enable customers to start small and add new servers as performance and capacity needs grow instead of incurring large upfront investments.

Additional Data Services
VMware vSphere Flash Read Cache™ and VMware Virsto™ are new application-centric data services that round out VMware's software-defined storage product portfolio. VMware vSphere Flash Read Cache is a new VMware vSphere 5.5 feature that virtualizes server-side flash to provide a high-performance read cache layer that lowers application latency dramatically. VMware Virsto enhances external SAN by accelerating performance without requiring additional hardware components while delivering highly efficient snapshots and cloning capabilities.

Comments on the News

Satinder Sethi, Vice President, Data Center Group, Cisco
"We believe the combination of the Cisco Unified Computing System and VMware Virtual SAN will improve the simplicity and reach of virtualized infrastructure. In just over three years, Cisco UCS has set the standard for virtualization-based IT solutions. Layering VMware Virtual SAN™ onto Cisco UCS will create a cost-effective, scalable storage option for our mutual customers."

Brian Payne, Executive Director of Server Solutions, Dell
"We're finding that customers are looking for server-based storage solutions when they do not have the data-center space, budget or feature-set needs for a separate storage array. Customers and leading analyst firms are recognizing Dell's portfolio of PowerEdge servers and external storage offerings that help address a broad range of requirements, and this collaboration with VMware takes us a step further in offering customers additional choice. By combining our storage optimized PowerEdge servers with VMware Virtual SAN™, customers will receive a single virtualized layer of compute and storage for a simplified solution."

Jeremy Burton, Executive Vice President, Product Operations and Marketing, EMC Corporation
"EMC and VMware together are defining a new class of highly integrated storage infrastructure to reduce cost and complexity in VMware environments for SMBs and SMEs. The combination of VMware Virtual SAN™ with EMC's market leading storage hardware and software portfolio will enable us to bring to market a best-of-breed offering that will expand the market opportunity for both companies."

Sean Hehir, Vice President, Strategic Business Development, Fusion-io

"Enterprises need to deliver responsive application performance amidst today's exploding data demands and tight budgets. Through its software-defined architecture, VMware Virtual SAN™ offers storage the operational efficiency that server virtualization brought to compute. Fusion-io is proud to provide application acceleration options for VMware Virtual SAN with our leading flash memory platform."

Christine M. Rice, Director of Industry Marketing for the Communications and Storage Infrastructure Group, Intel
"Intel and VMware share a vision for software-defined infrastructure, which promises a more dynamic, automated, and flexible infrastructure that can improve utilization of data center assets, reduce cost of operations, and speed the time to delivery of new services to the business. Intel and VMware are working together to provide foundational technologies that deliver on this vision, including intelligent storage solutions based on Intel® Xeon® E5 processors, Intel® Solid-State Drives Data Center Series, 10 Gigabit Intel® Ethernet Converged Network Adapters, and VMware® Virtual SAN™ software-defined storage. VMware Virtual SAN™ offers the simplicity of standard Intel-based servers with the benefits of a SAN, enabling enterprises to implement simple and intelligent storage solutions."

Jeff Hausman, Vice President, Information Availability, Symantec Corp.
"Together, Symantec and VMware continue to provide our customers with better performance, efficient storage management, and reliable business continuity that ensures high availability of business critical applications in their virtualized data centers. With today's VMware announcement, customers running our combined solutions can better leverage Flash and direct attached storage as part of their software defined data center."

Pricing and Availability
To secure product feedback and testing from as many customers and partners as possible, VMware Virtual SAN will be available for trial at no charge via a public beta program in Q3 2013. The public beta program will enable participants to download VMware Virtual SAN, provide product feedback, highlight bugs, and engage with the product management team. The public beta program will be available at: http://www.vmware.com/go/vsanbeta.

Pricing will be announced at general availability.

Additional Resources
- Read "VMware's Strategy for Software Defined Storage" blog post by Richard McDougall, Chief Architect, Application Infrastructure, VMware
- Learn more about the VMware Virtual SAN
- Learn more about VMware Flash Read Cache
- Learn more about VMware Virsto
- Go to the Software-Defined Data Center Press Kit
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the software defined data center; (v) the uncertainty of customer acceptance of emerging technology; (vi) rapid technological and market changes in virtualization software and platforms for cloud and end user computing and networking; (vii) our ability to attract and retain highly qualified employees; and (viii) geopolitical events and stability. These forward-looking statements are based on current expectations and are subject to uncertainties and changes in condition, significance, value and effect as well as other risks detailed in documents filed with the Securities and Exchange Commission, including our most recent reports on Form 10-K and Form 10-Q and current reports on Form 8-K that we may file from time to time, which could cause actual results to vary from expectations. VMware assumes no obligation to, and does not currently intend to, update any such forward-looking statements after the date of this release.

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