BETTER TOGETHER: OPTIMIZING VMWARE VSPHERE DEPLOYMENTS WITH DELL'S EQUALLOGIC INTEGRATION TOOLS

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In our view, VMware-based virtual server environments and the storage platforms that support them have evolved from the rapid growth phase of the last decade into a critical optimization phase. The drive so far had been cost containment. But now vSphere platform and the surrounding ecosystem have matured to the point where virtualization actually improves resiliency and agility. Therefore the organizations are starting to virtualize critical applications, desktops and even build flexible cloud environments.

This translates to an increasing demand for virtual server and storage solutions that are more tightly integrated with one another, deliver higher performance with greater resiliency, and are easier to provision, optimize, and protect. Storage today must compliment virtualization—not complicate it. VMware customers should take advantage of this transition phase to take stock of their virtualized assets—both server and storage—and identify any storage-related performance issues, single points of failure, and redundant tools and processes. With this knowledge in hand, we recommend investigating VMware's latest platform release, vSphere 5.0, and the storage and data protection features that have been added or enhanced.

In this Brief, we call out some storage-related highlights of vSphere 5.0, and then take a close look at how they have been enhanced and packaged by Dell into the EqualLogic PS Series storage solution. We'll show how Dell and VMware have combined forces to deliver an enterprise-class virtual server and storage environment that is highly optimized and directly addresses the performance, availability, data protection and complexity challenges common in today's business-critical virtualized data centers.

STORAGE OPTIMIZATION & DATA PROTECTION FEATURES IN VSPHERE 5.0

To start, ask yourself a few questions about your current VMware environment: Are you confident that you've placed each VM on the optimal storage resource? Is your hypervisor bogged down performing array-level storage management tasks? Are you maintaining too many VM and data snapshots? Do you have a comprehensive disaster recovery plan and can you test it easily? Do you need multiple management tools to configure storage for VMs?

If you hesitated to answer with a strong "yes" or "no" to each, you can likely benefit from the storage optimization and data protection features found in vSphere 5.0. This version allows VMware customers to virtualize even larger and more performance-hungry Tier-1 business-critical workloads. These are the applications that demand 24x7 availability and rock-solid performance—especially from the storage layer.

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Recognizing that virtual server and storage performance are inextricably linked, VMware has improved storage visibility, performance, and availability through a set of new and improved APIs and technologies. Highlights include:

ENHANCED VSPHERE VSTORAGE APIS FOR ARRAY INTEGRATION (VAAI)

The VAAI API suite is designed to improve overall virtual environment performance by offloading important storage tasks from the hypervisor to the array. This delineation of tasks results in improved storage performance for volumes shared by multiple virtual machines and enables quicker deployment of virtual machines using templates. It also frees up network bandwidth and compute resources by delegating storage intensive tasks to the array. For example, in vSphere 5, new primitives have been added and include array-based thin provisioning to reclaim dead space and prevent out-of-space conditions.

NEW VSPHERE STORAGE DISTRIBUTED RESOURCE SCHEDULING (STORAGE DRS)

Storage DRS is a new feature in vSphere 5.0. It enables intelligent virtual machine (VM) placement and load balancing based on storage I/O load and available capacity. Storage DRS automates data placement and optimizes ongoing storage utilization via a new vCenter managed object named datastore cluster, which allows vSphere to allocate storage resources optimally across a shared pool of linked storage devices, in much the same way that vSphere DRS does for compute resources.

NEW VSPHERE VSTORAGE APIS FOR STORAGE AWARENESS (VASA)

VASA is a new set of APIs that provide deeper visibility from vCenter into the capabilities of an underlying storage array's LUNs & datastores. VASA exposes capabilities such as drive type and speed, RAID level, thin or thick provisioning, replication state and more. VASA, in turn, allows vSphere to make better placement decisions for VMs and new datastores on the basis of storage profiles associated with certain workloads, latency, performance and capacity utilization.

IMPROVED VCENTER SITE RECOVERY MANAGER 5.0 (SRM)

SRM, VMware's highly-regarded business continuity and disaster recovery tool, supports development, management, testing and execution of multi-site failover and recovery plans. SRM leverages vSphere's VM mobility and protection features to simplify and automate DR planning and operations, dramatically lowering the cost and risk of failure. In SRM 5.0, VMware has added vSphere-based VM replication (as an adjunct to array-based replication), along with new automations for planned migrations, failback, and workload protection.

EQUALLOGIC TOOLS AND INTEGRATIONS: BUILT FOR VSPHERE 5.0

In order to help customers take maximum advantage of vSphere 5.0, Dell has worked closely with VMware through a long and successful partnership. Dell EqualLogic has consistently been one of the first storage solution providers to bring new VMware integration features to market, and the latest release of tools and integrations does not disappoint.

To simplify organization, we describe Dell's VMware tools and integrations below in categories that highlight the key benefits of each: better performance; simpler operations; and greater data protection for improved disaster recovery.

Leveraging VMware's Storage APIs for Better Performance and Utilization

EQUALLOGIC SUPPORT FOR VAAI

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The EqualLogic PS Series was one of the first storage systems to incorporate VAAI support in its firmware. This integration allows the array to perform important storage tasks on behalf of vSphere and thereby improve performance and utilization of the entire infrastructure. Tasks such as full hardware-accelerated data copy, fixed-zero writes, and volume locking are performed much more effectively in the array, freeing up VMware host compute resources and network bandwidth. Internal testing at Dell has shown that both host overhead and network traffic can be reduced by over 70%. Virtual machine provisioning was also shown to be significantly faster in these same tests. EqualLogic also includes support for added thin-provisioned stun awareness, which greatly reduces the impact of exceeding available space on a thin-provisioned volume. By delegating these tasks to the storage layer, customers can deploy new VMs from templates quickly and easily, and enjoy higher performance for shared storage volumes. Most recently. EqualLogic PS Series firmware version 6.0 has also introduced support for using SCSI unmap operations to recover unused space previously allocated to volumes. VMware vSphere 5.0 customers get better storage utilization with this volume unmap feature.

EQUALLOGIC VASA PROVIDER INTEGRATED WITH VMWARE STORAGE DRS

The EqualLogic VASA Provider provides integration with VMware's VASA APIs. Via the VASA Provider, the EqualLogic array can provide storage attributes to vSphere beyond what is available via the iSCSI provider alone, including drive types and speeds, RAID settings, snapshot reserve space, and more. With this detailed information, vSphere Storage DRS can perform more intelligent workload migrations and automated load balancing, thereby more accurately optimize storage latency, throughput, and capacity utilization across the virtual environment. Customers benefit from a detailed end-to-end view of storage attributes for each virtual workload directly from within the familiar vCenter Server management interface. This view includes EqualLogic array-level events and alarms related to capacity and availability—a single console tells the complete story.

EQUALLOGIC MULTIPATHING EXTENSION MODULE FOR VMWARE

The EqualLogic Multipath I/O (MPIO) feature integrates with and leverages the VMware vStorage APIs for Multipathing. Together, they provide multiple redundant network connections between vSphere and the underlying EqualLogic arrays. When all paths are operational, MPIO load balances across them for maximum performance. If a path fails, data availability is unhampered, albeit at a lower performance. When a path is restored, MPIO automatically returns to delivering load balanced performance. Under all circumstances, EqualLogic MPIO provides storage-aware, end-to-end management and visibility of data paths. This integration also helps increase storage scalability and lowers the burden on administrators by automating multipath configuration tasks.

Automating Storage and Virtual Desktop Operations for vSphere Administrators

EQUALLOGIC DATASTORE MANAGER

The Datastore Manager is a wizard-driven tool integrated directly into the vCenter console (Fig. 1). It automates three critical storage functions: datastore creation, expansion, and monitoring. Administrators can, with a few clicks, provision new SAN volumes and assign them to a vSphere cluster without using a separate GUI. The wizard minimizes the time needed to perform these provisioning tasks that otherwise are notorious for being a time sink.

EQUALLOGIC VIRTUAL DESKTOP DEPLOYMENT UTILITY

The EqualLogic Virtual Desktop Deployment Utility integrates with and dramatically simplifies operations for customers who have virtualized desktops with VMware View. It leverages the advanced thin clone capabilities of the EqualLogic PS Series to create space-efficient virtual desktops, maximizing storage utilization and offloading the host, improving VM density. Intuitive wizards guide the admin-

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istrator through the process of creating desktop pools, registering VMs with vCenter Server, and deploying pools with a few clicks (using thin clones on the array). Desktop refreshes and patches are automated as well.

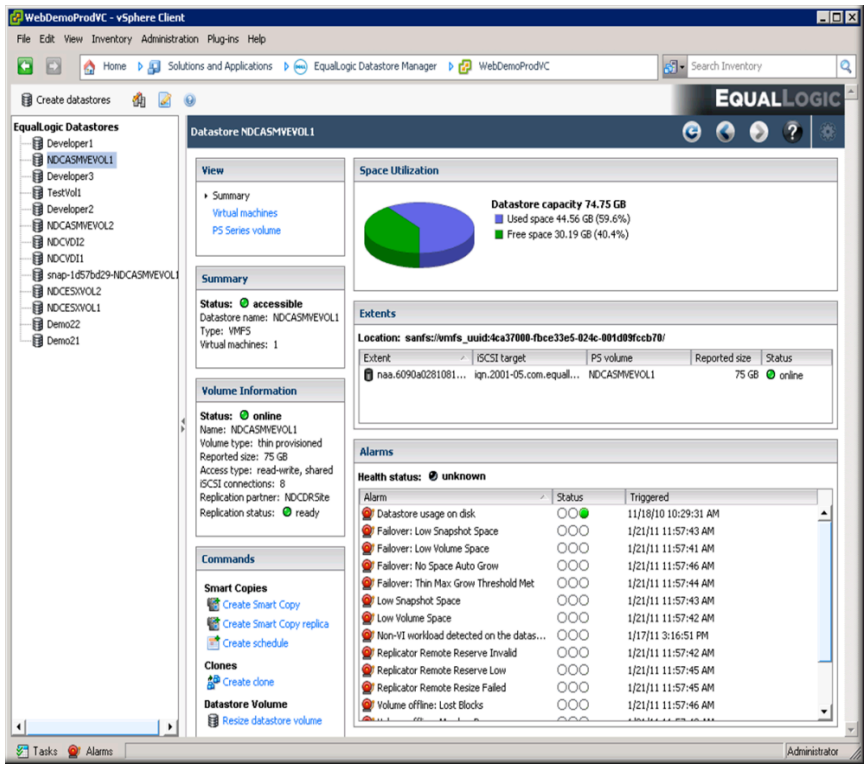
Protecting Virtual Workloads for Business-Critical vSphere Environments

The three products described below make up an integrated suite that can be used to build a comprehensive data protection strategy for all components of a virtual environment. The EqualLogic Auto-Snapshot Manager for VMware, the EqualLogic Auto-Snapshot Manager for Microsoft and the EqualLogic Storage Replication Adapter for VMware Site Recovery Manager, together act to protect data, applications and virtual machines, both locally and across a wide area network.

EQUALLOGIC AUTO-SNAPSHOT MANAGER/VMWARE EDITION (ASM/VE) 3.1

ASM/VE is Dell's popular data protection tool that coordinates vSphere's snapshot functionality with EqualLogic PS Series snapshots. Using context-sensitive menus and tabs in vCenter Server, an administrator can create hypervisor-consistent VM snapshots using the PS Series' array-based space-efficient snapshot features. The GUI takes the heavy lifting out of data protection processes by coordinating creation, recovery, and scheduling of PS Series Smart Copy snapshots, clones and replicas. With ASM/VE, Dell offers a radically simplified method for protecting every virtual workload in an enterprise. Further integration with EqualLogic's auto-replication allows snapshots to be replicated to remote sites automatically for disaster recovery operations.

Figure 1: Detailed information about each EqualLogic datastore is available directly in vCenter, to simplify storage operations for the VMware administrator. Wizards automate storage provisioning and management tasks.



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EQUALLOGIC AUTO-SNAPSHOT MANAGER/MICROSOFT EDITION (ASM/ME) 4.0

ASM/ME adds additional backup/restore capabilities for Microsoft workloads running in VMs. ASM/ME makes it easy to create online backups and rapid restores of NTFS file systems, Microsoft SQL Server datasets, and Microsoft Exchange Server datasets. Through integration with Microsoft Volume Shadow Copy Service (VSS), ASM/ME creates transaction-consistent array-based Smart Copy snapshots, local database volume clones, and remote replicas for Windows applications. A scheduler is included (with notification options) to further simplify backup operations.

EQUALLOGIC STORAGE REPLICATION ADAPTER (SRA) 2.2 FOR SITE RECOVERY MANAGER (SRM) 5.0

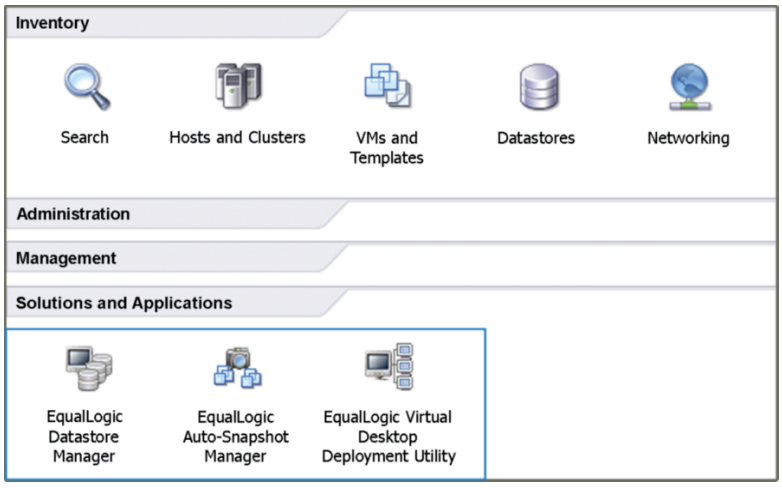
Building on the capabilities of ASM/VE, Dell EqualLogic has also integrated its powerful SAN-based Storage Replication Adapter with VMware's SRM, a popular disaster recovery (DR) planning and execution tool. SRM is a comprehensive process automation tool that steps the user through setting up and configuring complete disaster recovery plans that can span data centers. SRM also facilitates testing DR plans with no impact on production systems, and initiates automatic execution when failure is detected. SRM version 5.0 also includes automated failback to production systems once resources are available. Dell customers using SRM can take full advantage of EqualLogic's built-in, easy-to-use and cost-effective replication features to craft DR strategies that manage failover and failback quickly, securely, and reliably.

EQUALLOGIC HOST INTEGRATION TOOLS: PACKAGED FOR SIMPLICITY

To make it easy for VMware administrators to explore and use these integrations and tools, Dell EqualLogic has packaged the Datastore Manager, Auto-Snapshot Manager for VMware, and the Virtual Desktop Deployment Utility as a virtual appliance that can be downloaded and installed easily. These tools, along with the EqualLogic VASA provider, form EqualLogic's Host Integration Tools for VMware (HIT/VMware).

Once installed, HIT/VMware features are all tightly integrated into and accessible from the vCenter Server console (Fig. 2), eliminating any need to learn a new interface or change operations procedures. With HIT/VMware, vCenter is more automated and more powerful—and helps administrators get more performance and resiliency out of their EqualLogic storage solution. As with all EqualLogic software, HIT/VMware is included in Dell's all-inclusive pricing model.

Figure 2: All components of the HIT/VE toolset are integrated into the familiar vCenter Server management GUI, eliminating the need for administrators to swap between different tools.



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Source: Dell

TANEJA GROUP OPINION

The comprehensive suite of tools offered by Dell EqualLogic are designed to integrate tightly with VMware vSphere and simplify storage management, streamline and optimize VDI deployments, improve performance by offloading functions to the storage array, when appropriate, and deliver an end to end data protection that is second to none in the market. These tools work with vSphere 5 to build a resilient virtual infrastructure. Dell EqualLogic was an early pioneer in integrating with VMware, and its fine grained virtualized architecture has proven to work well in unison with VMware.

In our view, Dell EqualLogic continues to stand out as a leading choice in storage solutions for virtual environments. The EqualLogic PS Series' virtualized scale-out architecture by itself is a strong platform for a VMware virtual server infrastructure. When you add Dell's comprehensive, well-integrated and no-cost VMware-focused tools and integrations, however, the case for an EqualLogic platform becomes even stronger.

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