Software-Defined Storage Capabilities Enable New Converged Storage Tier

VMware and leading storage technology partners provide a three-component architecture for software-defined storage. It includes a policy-driven control plane where IT can set policies for capacity, performance, and availability requirements on a per–virtual machine basis and apply those policies to the rest of the virtualized infrastructure. It also includes virtualization of the data plane, which enables IT to abstract and pool the heterogeneous capabilities of the underlying storage infrastructure and advertise those capabilities to that software-driven control plane. Finally, it includes virtualization of application-centric data services, which are tightly bound to the hardware arrays, to enable a rich set of virtualized data services. By optimizing storage—often considered a premium resource—software-defined storage makes enabling a private cloud more affordable.

VMware Virtual SAN extends the hypervisor to pool compute and storage using local storage and flash technology as a new converged-infrastructure data-storage tier. When compared to the Microsoft private cloud offering, vCloud Suite delivers a faster, easier, more comprehensive, and lower TCO approach to storage (see Table 3).

TABLE 3. VMWARE DELIVERS NEW APPROACH TO SOFTWARE-DEFINED STORAGE

STORAGE		
VMWARE ADVANTAGES	**VMWARE VCLOUD SUITE**	**MICROSOFT PRIVATE CLOUD**
Lower TCO derived from logical pooling of storage tiers and software-defined storage	✓ Ability to create, manage, and consolidate different storage tiers VSAN integrates compute and storage with VMware vCenter management Use existing x86 and storage capabilities at a much lower cost	✗ No logical pooling: overprovisioning of resources and lower resource utilization No equivalent capability Storage Spaces is a traditional SAN replacement and is not a converged or software-defined solution; it is out of band from the virtualization infrastructure and requires separate maintenance
Faster provisioning, performance guarantees, and simplified, policy-based storage management	✓ Accelerated virtual machine placement and reduced time to provision using Storage Distributed Resource Scheduler (Storage DRS) Automatic enforcement of per–virtual machine SLAs across different storage classes Performance isolation for virtual machines, prevention of noisy neighbor problems, protection of service levels for applications Tiered storage based on performance characteristics using profile-driven storage	✗ Limited storage DRS capabilities require manual administrative action, leading to increased management effort and time to provision Storage QoS provides per–virtual machine disk IOPS limits, but does not have any cluster-level awareness of the data storage No profile-based automation Storage tiering requires the use of Storage Spaces
Mature ecosystem storage capabilities	✓ Tighter integration with broad storage ecosystem through APIs	✗ No ability to use storage information from arrays for policy enforcement