

# TAKE CONTROL OF YOUR VMs WITH PURE & VMWARE VVOLS

## SUMMARY

Managing virtual environments just got easier with VMware® Virtual Volumes and Pure Storage®. vSphere administrators are now empowered to deliver granular-level data services to assure per-VM SLAs, simplify per-VM management, and gain per-VM data portability for their mission critical applications.

## FOR VIRTUALIZATION ADMINS, IT'S OFTEN BEEN A CHALLENGE

Modern software-defined compute, or virtualization, introduced by VMware more than a decade ago, has become a standard technology used by the vast majority of data centers worldwide. However, over time, as environments have grown, the traditional VMFS-based implementation has opened up a plethora of challenges for the VM admin, including a lack of:

- VM-granular data services
- Storage policy-based management
- Compliance management
- Data portability
- Noisy neighbor identification
- 24-hour undo of accidentally deleted VMs
- VM-to-storage visibility
- Single point of policy management

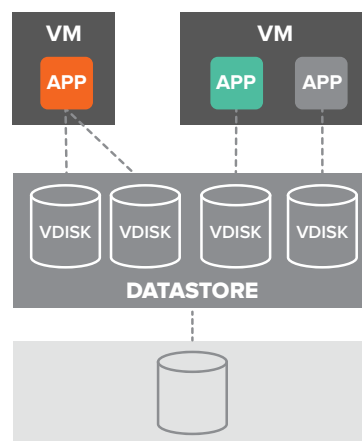


FIGURE 1. A VMFS-based environment lacks direct mapping to storage

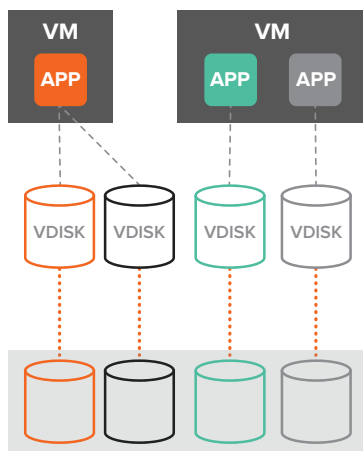


FIGURE 2. VM-to-storage parallelization

## NOW THERE'S A SOLUTION

VMware introduced Virtual Volumes (VVols) in previous vSphere releases to try to solve for these challenges, but past implementations with other storage providers proved complex. With the latest version of VVols (released with VMware vSphere 6.5) combined with Pure Storage, you have the simplest implementation available today to remove your virtualization management challenges. Get per-VM granularity that directly maps your VMs to Pure FlashArray volumes to help assure per-VM SLAs, simplify per-VM management, and gain per-VM portability – in addition to all the benefits of built-in Pure data services.

## WHAT MAKES PURE'S VVOLS IMPLEMENTATION SIMPLE?

Highly available and stateless VASA Provider hosted on the array

Full implementation in less than 5 minutes, in 3 easy steps

Rapid VMFS <-> VVols migration

Flexibly run 100% VVols or run a mixture with VMFS

## ASSURE PER-VM SLAs

### Granular Per-VM Data Services with Zero Cost Snapshots and Replication

With the latest VASA Provider 3.0, which exposes Pure's capabilities to vCenter, you can now utilize array-based storage services from Pure to each VM. VM Snapshots are now highly efficient FlashArray snapshots, which are created instantly, regardless of volume size. Because the snapshots are 100% deduplicated at the time of creation, no additional capacity is consumed on the storage. The snapshots are also not copy-on-write or redirect-on-write, which means zero performance impact to the VMs.

Pure's array-based replication is also a readily available service. You can take efficient snapshots and replicate them asynchronously to a secondary site for dev/test or instantly restore your snapshots to satisfy backup needs.

VM granularity allows for easy identification of noisy neighbor VMs, so no one VM can consume more than its fair share of resources, enabling all VMs to deliver on their SLAs respectively.

### Instant Per-VM Restore with Efficient Snapshots

Pure's snapshots can be created instantaneously, and are space efficient with zero impact on FlashArray performance. This enables rapid recovery of any VM, at any time.

### Rapid Troubleshooting with Granular Stats and Reporting

Easily keep up to date on the health and performance of VMs connected to stats monitored by the FlashArray – including data reduction, IOPs, bandwidth, and latency – via the Pure1® cloud-based management platform.

This enables you to rapidly address issues that may impact the SLAs of your individual VMs.

### Automated Compliance Checking

Storage Policy Based Management enables vCenter to perform automatic compliance checks of assigned data services per-VM. For instance, if you set a policy to snapshot a particular VM every 10 minutes, and then change that to 15 minutes, the VM will be marked non-compliant and admins can be alerted to course correct it.

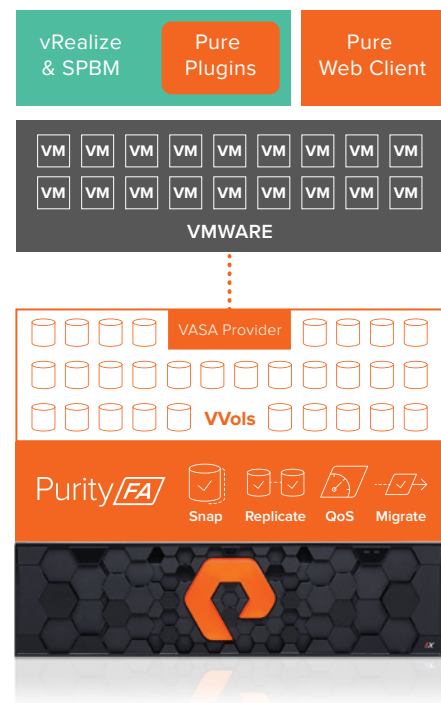


FIGURE 3. VVols & Pure FlashArray architecture

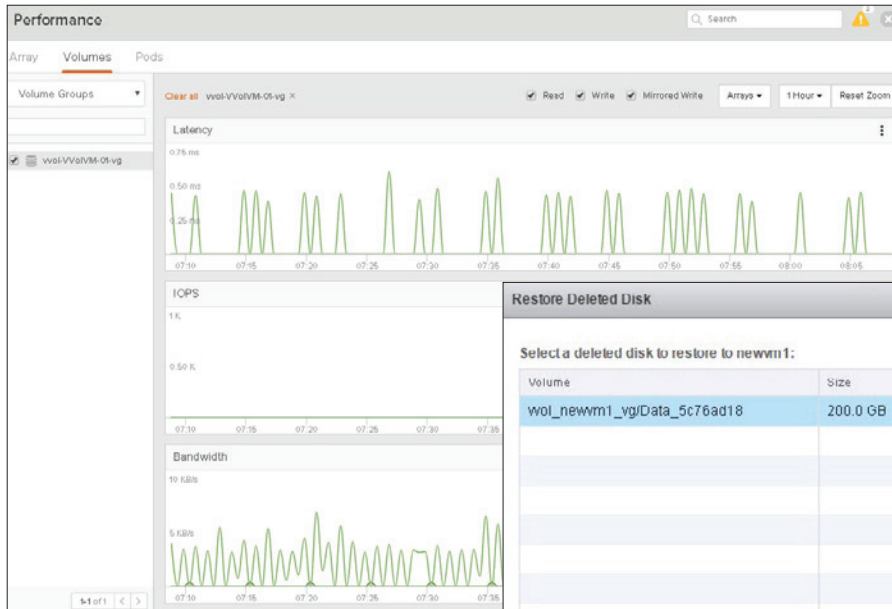


FIGURE 4. Performance Stats on FlashArray GUI

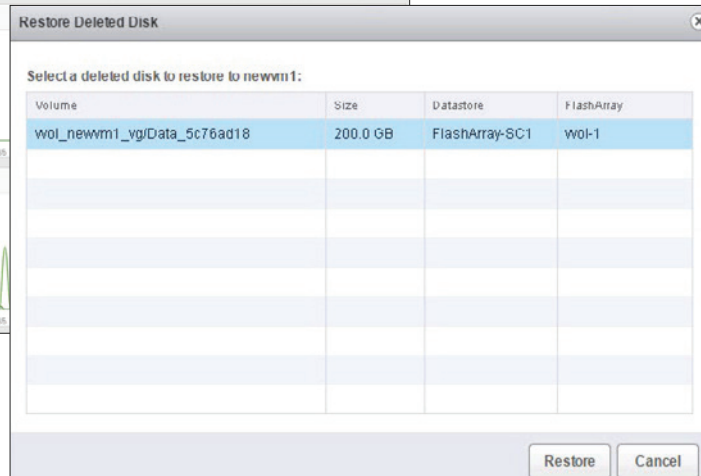


FIGURE 5. Rapid Restore of Deleted VVols via vSphere Web Client Plugin

## SIMPLIFY PER-VM MANAGEMENT

### Storage Policy Based Management

In addition to ensuring compliance, VVols on Pure FlashArray utilizes policy-based management to automate provisioning of VMs and align application requirements to available storage array data services. This streamlines operations and empowers the VM admin to gain more control with less dependency on the storage team.

### Rapid Recovery

Pure has developed safeguards against admin error with a 24-hour undo capability to rapidly recover accidentally deleted VMs without any pre-configured backup.

### Predictive Per-VM Performance and Capacity Planning

Leveraging Pure1 cloud-based management services, Pure1 Meta uses machine learning predictive analytics on the call-home telemetry data of Pure customers not only to help resolve potential issues, but to assist in better VM performance and capacity planning for workload optimization.

### Zero Rescans or UNMAP

Increase staff productivity without the need for lengthy SCSI rescans: you no longer have to wait for rescans within your virtualized environment each time a change is made to your VMFS datastores or storage. UNMAP disk space reclaiming procedures are also eliminated with VVols, so you instantly access new VMs and and resize existing VMs.

## GAIN PER-VM PORTABILITY

### Data Mobility

Unlock data within Virtual Volumes and Pure. In the traditional VMFS implementation, you cannot easily present data up to a physical server or other hypervisors, so it is difficult to share and move data. You can use techniques like Raw Device Mapping (RDM), but you lose VMware benefits like cloning, Storage vMotion, ease of provisioning, and built-in VMware snapshots.

Unlike other solutions, Pure's implementation of VVols enables administrators to effortlessly move data according to business demands – from a virtual server to a physical server, or physical back to virtual. Admins also have the ability to take snapshots and send them natively to the cloud (Amazon S3, for instance) which can then be used for archival or dev/test.

### Run it All on FlashArray

Migrating VMFS datastores to VVols, or vice versa, is a simple process with Storage vMotion. You have the flexibility to run both datastores on Pure FlashArray. Run general purpose applications or VDI on VMFS, and mission critical apps like Oracle®, SQL Server, or SAP® on VVols.

### Extending Pure's Value to VVols

With VVols, VM-granular data services can be delivered easily through vCenter and Pure FlashArray via the vStorage APIs for Storage Awareness (VASA) Provider. Seamlessly integrate and automatically configure a VASA Provider onto both FlashArray controllers in an active-active configuration for high availability during the Purity 5.0 upgrade process. Unlike other storage implementations, the Pure VASA Provider is entirely stateless, so no configuration is tied to or stored on the controllers. If one or both controllers go offline, you can simply replace controllers and services will immediately go back online.

When using VVols on Pure Storage, you can now control the management of your individual VMs, without dependencies on the storage team. And you get all the additional benefits of FlashArray – including not just ease of management and high performance, but also built-in, industry-leading data reduction capabilities, 99.9999% availability, non-disruptive upgrades, encryption, and Evergreen™ Storage.

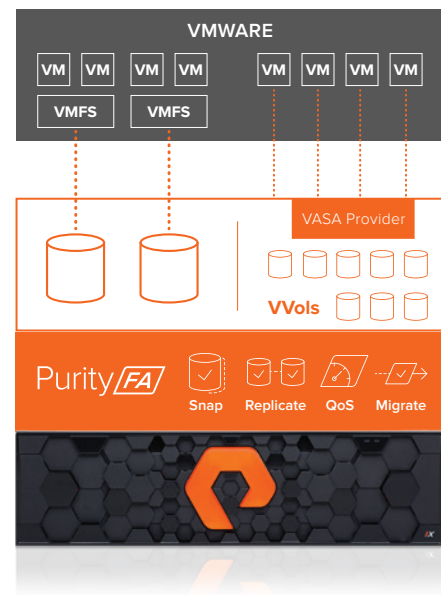


FIGURE 6. VVols & VMFS on Pure FlashArray