

# EMC AVAMAR FOR VMWARE

## Optimized Backup and Recovery for VMware Environments

### ESSENTIALS

- Optimized VMware Guest and Image-level backup
- Supports VMware vSphere
- Integrated into vCloud Suite and vRealize Automation
- Leverages Changed Block Tracking (CBT) and disk-level granularity for faster backup and recovery
- Thin-provisioned recovery
- Universal multi-threaded proxy with load balancing for increased throughput
- VM Instant Access from image stored on Data Domain Systems
- Centralized management fully integrated with VMware vCenter
- Integrated into vSphere Web Client
- Automated restore rehearsal
- Multi-tenancy for VMs across a single vCenter
- Global variable-length deduplication reduces total backup storage by up to 95 percent
- RAIN for high availability, daily data recoverability verification
- Extended retention: backup to VTL or tape for compliance
- Ideal for both virtual and physical servers, business-critical applications, NAS Servers, remote offices, desktops/laptops

### Leading IT Transformation

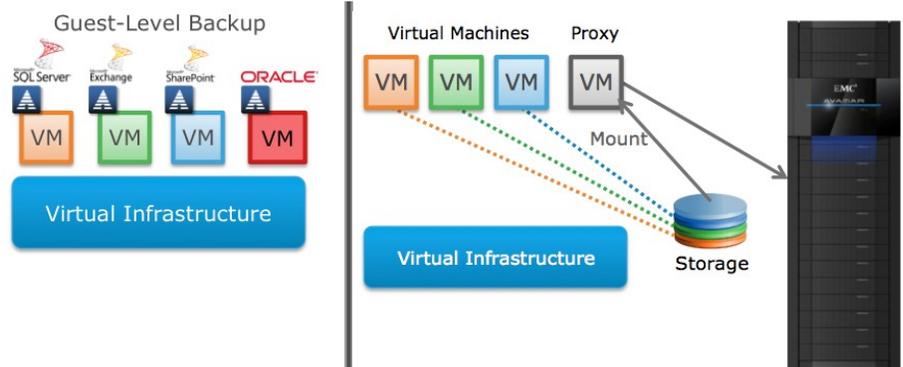
Server consolidation with VMware® provides many benefits to IT organizations, including reduced costs, simplified provisioning, faster server deployment, decreased data center footprint, and lower power consumption. As the total amount of data stored on virtual machines that share common resources increases, traditional backup solutions have difficulty meeting backup SLAs and prevent additional virtualization.

EMC® Avamar® provides variable-length client-side deduplication to accelerate the virtualization journey by providing extremely fast and efficient backup and recovery for the VMware environment. Avamar protects virtual machines (VMs) by deduplicating data at the client—so that only new, unique, sub-file, variable-length data segments are sent during daily full backups. This dramatically reduces the

daily impact on the virtual and physical infrastructure by up to 99 percent as compared to traditional full-backup methods. While traditional backup software moves upward of 200 percent of the primary backup data on a weekly basis, Avamar moves as little as two percent over the same seven-day period—removing backup bottlenecks and enabling even greater levels of virtualization. Avamar backs up data globally across physical and virtual servers. For virtualized environments, flexible backup options include guest- and image-level backups. Avamar is certified and tightly integrated into the VCE® Vblock™ Systems and VSPEX® converged infrastructure platforms.

### Guest-Level backup and Recovery

A lightweight Avamar agent is installed inside each virtual machine (VM) as a guest and deduplicates the data moving only the unique changed blocks through the ESX server to the Avamar Data Store. Since only changed blocks are moved, Avamar reduces resource contention and shortens backup times. Avamar achieves the highest levels of deduplication at the guest-level while providing application consistent hot backups. Fast file-level restore ensures business continuity with minimal latency.



"Optimized backup for VMware... Avamar does it unbelievably well!"  
- Stephen Rayda CTO at Purdue Pharma

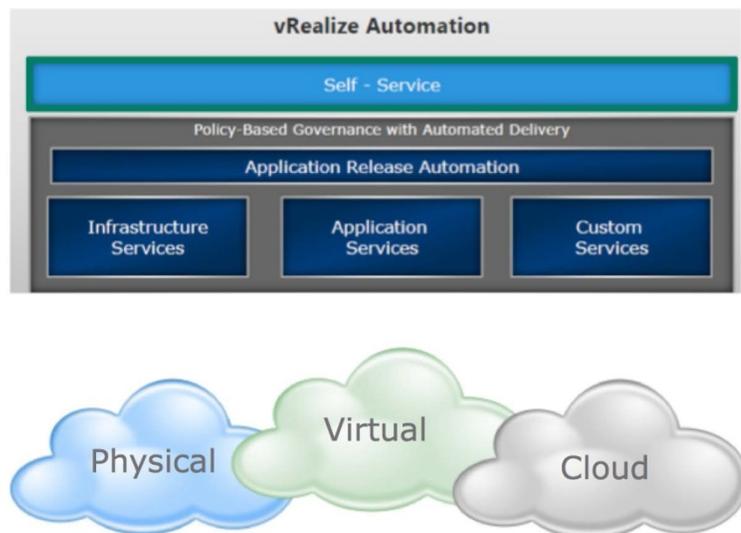
"The future of our primary business from a backup and recovery perspective is based on the Avamar platform. With the EMC solutions, we've been able to deploy a true Backup as a Service model and expand our primary business to offer compliant backup services." - Kevin Dohrmann CTO at Cosentry

"We experienced an explosion in costs with our disk-based managed service. EMC Avamar provides us with a cost-effective, centralised backup and recovery capability that is reliable, trustworthy and efficient. The solution has paid for itself in just eight months." - James Goodman Infrastructure Architect at Alliance Trust

## Image-Level backup and Recovery

Avamar is tightly integrated to the vStorage APIs for Data Protection (VADP) for agentless backups. Deduplication and backup executes on a multi-threaded universal proxy VM, off-loading the backup from any of the VMs where the applications are running.

Through vSphere, each VM is dynamically mounted to the proxy without physically moving data across the network, enabling Avamar to back up numerous virtual machines in just minutes. To maximize backup throughput, Avamar uses a load balancing algorithm across multiple proxy VMs. Instead of being locked into using only a single proxy for a set of VMs, Avamar leverages numerous proxies and sends a backup job to an available proxy. Automated proxy management is included providing zero-touch VMDK snapshot management and cleanup. Avamar also takes advantage of VMware's Changed Block Tracking (CBT) to further speed up the backup and restore processes. VMware presents only changed blocks to the Avamar software, where each block is broken into variable length segments and further evaluated for uniqueness. Only the unique segments are sent for backup, achieving the fastest backup possible. Conversely, the restore process also leverages CBT for faster recovery. Avamar understands the current state of the VM and determines the required blocks from the last backup, restoring the VM in just minutes. Avamar enables full VM or file-level restore to the original VM, an existing VM or a new VM—directly from the Avamar user interface. Also available with image backups is disk-level granularity that enables Avamar to back up specific virtual disks, thus reducing backup times and backup storage. Thin-provisioned recovery speeds the restore process and reduces required storage. For VM images stored on a Data Domain Systems, a VM can be instantly accessed and while running be vMotioned back to the production environment.



## Protecting vCloud & vRealize Deployments

Avamar provides the industry's most comprehensive solution for protecting VMware's vCloud Director (vCD) and vRealize Automation deployments. vCD & vRealize provision software-defined data center services as virtual data centers that provide virtualized compute, networking, storage and security resources. Avamar has embedded its backup and recovery services right into vCloud and vRealize, so they can be shared and distributed in a multi-tenant model, as a managed resource. These resources are assigned to Org VDCs, and through that assignment exposed to tenants

"We would not be able to reach our virtualization goals without the state-of-the-art backup and recovery that Avamar provides."

Craig Wuerzberger  
Systems Engineer at Sub-Zero  
Group, Inc.

#### CLIENT ENVIRONMENTS SUPPORTED OPERATING SYSTEMS

- VMware ESX
- vSphere 4.X, 5.X, 6.X

#### HARDWARE

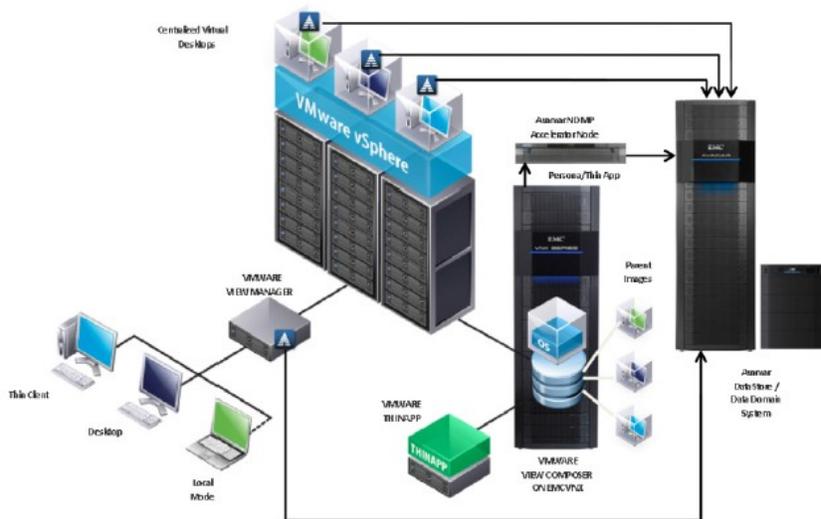
Flexible deployment options include Avamar Data Store, Avamar replicated single nodes, Avamar Virtual Edition, and Data Domain Systems via Data Domain Boost Software.

for consumption in protecting vApps. Avamar provides the first standard backup API for VMware cloud providers.

Service Providers and enterprise admins can backup native vCD & vRealize constructs by applying policies (e.g. Gold, Silver, Bronze) from a set of catalogs at the Org, vDC and vApp levels, which enables service tiers of protection. Other solutions today simply create service accounts for vCloud access and perform backup and recovery operations externally. With this native feature set extension approach, and providing all backup resources without an additional software package to orchestrate and manage, end-users will be confident to consume public cloud resources – accelerating adoption of hybrid clouds.

## Easily Manage the Virtual Environment

The Avamar user interface and its integration into vCenter simplify backup management of the virtual environment. Auto-discovery of all VMs and their protection scheme clearly provides insight of the protection status. It is very easy to define backup groups and policies. Avamar also provides Dynamic Policies, so as VMs are added to the group, they will automatically inherit the backup policy- making it even faster to manage the virtual environment and ensure all VMs are protected. Automated proxy management is included providing for zero-touch VMDK snapshot management and cleanup.



## Protecting a VMware View Environment

The best approach for protecting an entire VMware View infrastructure is to protect the key components independently using the Avamar client software agents. This approach helps companies avoid the infrastructure costs of duplicating the entire VMware View environment for the purposes of backup. As a best practice, user home directories and virtual desktop templates should be stored on a centralized shared storage device. Avamar's industry leading NDMP Accelerator node protects NAS storage devices that can access data using NFS, CIFS, or NDMP. Avamar enables the recovery of the individual components that make up the VMware View environment. Individual components can then be manually brought back into the VMware View environment based on the level of recovery required.

## CLIENT ENVIRONMENTS SUPPORTED OPERATING SYSTEMS

- VMware ESX
- vSphere 4.X, 5.X, 6.X

## HARDWARE

Flexible deployment options include Avamar Data Store, Avamar replicated single nodes, Avamar Virtual Edition, and Data Domain Systems via Data Domain Boost Software.

## Flexible Deployment Options

Avamar provides various deployment options depending upon specific use case and recovery requirements. The Avamar Data Store is a turnkey backup and recovery solution that integrates Avamar software with EMC-certified hardware and RAIN architecture for streamlined deployment and high availability. A replicated Avamar single-node or the Avamar Business Edition is ideal for smaller businesses or remote offices with strict SLAs. The EMC Avamar Virtual Edition consists of EMC Avamar software and a virtual storage appliance (up to 4TB) on a VMware ESX® Server a Hyper-V Server, or deployed on Microsoft Azure. Avamar is integrated through EMC Data Domain Boost software to send the VM image data directly to a Data Domain system. Now customers can unify their data protection process with the leading deduplication software and hardware in the industry; achieving the highest performance and most scalable backup and recovery solution. Avamar is integrated into VCE® Vblock™ Systems and VSPEX® converged infrastructure platforms for optimized VMware data protection.



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