

# EMC AVAMAR FOR VMWARE

## Optimized backup and recovery for VMware environments

### ESSENTIALS

- Data deduplicated at the client—before network transfer
- Optimized for protecting VMware Guest and Image (VMDK)
- Ideal for both virtual and physical servers, remote offices, LAN/NAS storage, desktops/laptops
- Support for all VMware vSphere 4 backup options
- Leverage Changed Block Tracking (CBT) for faster backup and recovery
- Proxy-server load balancing for increased backup throughput
- Centralized management fully integrated with VMware vCenter
- Reduces network bandwidth for backup by up to 99 percent
- Enables greater server consolidation
- Global deduplication reduces total backup storage by up to 95 percent
- RAIN for high availability, daily data recoverability checks
- Export deduplicated backup data to tape for long-term storage
- Flexible deployment options include Avamar Data Store, Avamar replicated single-nodes, Avamar Virtual Edition, Avamar software only

### NEVER BACK UP THE SAME DATA TWICE

Server consolidation with VMware® provides many benefits to IT organizations, including reduced costs, simplified provisioning, 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 trouble keeping up and prevent additional virtualization.

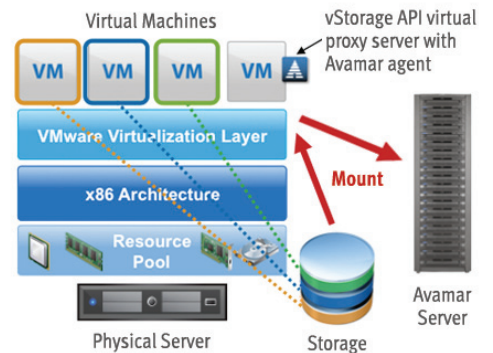
EMC® Avamar® provides client-side data deduplication to accelerate the virtualization journey by providing extremely fast and efficient backup and recovery for the VMware environment. Avamar protects virtual machines by deduplicating data at the client—so that only new, unique, sub-file, variable-length 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.

#### VMware Guest OS Backup



Avamar client software runs directly on each virtual machine

#### Image-Level Backup via vStorage APIs for Data Protection



Avamar client software runs on the proxy server

### GUEST-LEVEL BACKUP AND RECOVERY

Avamar is tightly integrated to VMware's vStorage API for Data Protection. At the guest level, a lightweight Avamar agent is installed inside each Virtual Machine (VM) and deduplicates the data within each VM. Avamar then moves only the unique changed blocks through the ESX server to the Avamar Data Store. Since only changed blocks are moved, this reduces resource contention and shortens backup windows. 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.



## CLIENT ENVIRONMENTS SUPPORTED

### OPERATING SYSTEMS

- VMware ESX
- VMware vSphere 4

### HARDWARE

Prepackaged EMC Avamar Data Store configurations for simplified deployment. Contact your EMC representative for more details on certified hardware platforms.

“ With EMC Avamar and its deduplication technology, the average run times of our backups have been reduced to minutes as opposed to hours. That’s because the rate of change for the data that must traverse our network at backup time—that is, all the data that has changed or is new—is typically less than one percent of the total that we used to have to back up. With VMware and Avamar Virtual Edition, we can cost-effectively back up satellite offices to their main facility, then replicate all that data back to headquarters and store it offsite.”

GREGG TINNELL  
SENIOR IT MANAGER  
BROWN-FORMAN

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## IMAGE-LEVEL (VMDK) BACKUP AND RECOVERY

The Avamar agent is installed on a Proxy VM, off-loading the backup process 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 round-robin 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. Avamar also takes advantage of VMware’s Changed Block Tracking (CBT) to further speed the backup and restore processes. VMware presents only changed blocks to the Avamar agent, 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 enables full VMDK or file-level restore to the original VM, an existing VM or a new VM—directly from the Avamar user interface.

## EASILY MANAGE THE VIRTUAL ENVIRONMENT

The Avamar user interface and its integration into vCenter simplifies backup management of the virtual environment. Auto-discovery of all VMs and their protection scheme (guest, image) clearly provides insight of the protection status, and more importantly which VMs are not protected. The Activity Monitor displays backup and restore operations. It is very easy to define backup groups and policies, quickly meeting the demands for protecting a dynamic virtual environment.

## 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 solution for presentation to the backup environment. As a best practice, user home directories and virtual desktop templates should be stored on a centralized shared storage device. Avamar has a specialized accelerator node to protect 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.

## FLEXIBLE DEPLOYMENT OPTIONS TO FIT YOUR EXACT NEEDS

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 is ideal for smaller businesses or remote offices with strict SLAs. The EMC Avamar Virtual Edition—the industry’s first deduplication virtual appliance for backup and recovery—consists of EMC Avamar software deployed as a virtual appliance. It enables a complete Avamar server on an existing VMware ESX® Server, leveraging the attached disk storage (up to 2 TB) and infrastructure. For application-specific backup, Avamar uses EMC Data Domain Boost software to send the VMDK 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.

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