DATA SHEET

EMC Avamar

The Big Picture

- Data deduplicated at the source (client) before transfer across the network
- Ideal for protecting VMware environments, remote offices, and LAN/NAS servers
- Up to 10x faster daily full backups; single-step recovery
- Reduces network bandwidth for backup by up to 500x
- Secure backup and replication via existing LAN/WAN links
- Global deduplication reduces total backup storage by up to 50x
- RAIN for high availability; daily server and data recoverability checks
- Export deduplicated backup data to tape for long-term storage
- Flexible deployment options: Avamar software only, Avamar Data Store, Avamar Virtual Edition virtual appliance for VMware

Next-generation backup and recovery with global, source data deduplication

Like many companies, exponential data growth, regulatory compliance, strict service-level agreements, and shrinking backup windows may be forcing your organization to rethink its data protection methods. As an IT manager, you may also be facing additional challenges brought on by aggressive virtualization strategies and the need to better protect data residing at remote offices.

Developed to solve the challenges associated with traditional backup, EMC® Avamar® backup and recovery software, equipped with integrated global, source data deduplication technology, facilitates fast, daily full backups for VMware® environments, remote offices, and LAN/NAS servers in the data center.

Unlike traditional backup methods, Avamar eliminates redundant sub-file data segments at the source (client) before data is transferred across your network and stored to disk. As a result, the network bandwidth required for backup is reduced by up to 500x—enabling fast daily full backups across existing WAN/LAN links and virtual infrastructure. Avamar also deduplicates your backup data globally, across sites and servers, reducing your required total back-end disk storage by up to 50x. Backup data can be encrypted in flight and at rest, enabling secure, cost-effective, long-term retention on disk.

The drawbacks of conventional data protection

One of the key drivers impacting backup performance is the amount of data that must be protected within the available backup window. Traditional solutions are inefficient because they back up everything—including duplicate data files and sub-file data segments that exist across your servers, desktops, laptops, and offices. When combined with traditional daily incremental and weekly full backup schedules, the impact of duplicate data is staggering. The sheer amount of data that must cross already congested networks, backup servers, and infrastructure often makes meeting short backup windows a significant challenge.

The impact is especially severe if you are dealing with virtual environments, remote offices, and NAS filers. In virtual environments, each virtual machine represents an individual backup job, often with concurrent or overlapping backup windows, and includes redundant operating system, application, and file data. Consequently, backups for virtual machines can often overrun backup windows and tax shared resources, leaving data unprotected and creating management issues for your backup administrators.

In remote offices, limited network bandwidth makes centralized, automated WAN-based backup nearly impossible. As a result, backup tasks frequently fall on the shoulders of non-technical local staff. Failure-prone tape-based hardware and ad-hoc manual processes often compound the challenges in ensuring consistently reliable remote office data protection.

Protecting NAS filers can pose a significant challenge too, especially when full backups fail to complete within the allotted timeframe, which can impact employee productivity and leave your data unprotected.

Traditional solutions also increase costs because extra storage capacity is needed to back up duplicate data. This is often exacerbated by data retention requirements for regulatory compliance. In addition, traditional backup often involves the shipment of physical tapes offsite, including unencrypted tapes, which can result in exposure of confidential information, theft, or data loss.

"Tape just wasn't doing the job for us. The Avamar solution gives us more effective data protection and puts us in a better position to restore lost data if necessary. In turn, we're able to recover failed systems faster and shorten time to recovery for customer-facing services."

Todd Gourd
manager of IT systems administration
Cherokee Nation Enterprises

Never back up the same data twice

EMC Avamar enables fast, efficient backup and recovery by reducing the size of backup data at the source—before it is transferred across your network and stored to disk. Unlike traditional solutions, Avamar leverages your existing physical and virtual infrastructure to deliver fast, daily full backups. Avamar also deduplicates backup data globally across your servers, desktops, laptops, and offices worldwide to reduce the total required disk storage by up to 50x. As a result, Avamar enables you to leverage the benefits of efficient long-term retention of backup data on disk while dramatically lowering your capital and operating expenses including floor space, power, and cooling.

Unlike traditional solutions, Avamar also provides daily full backups that can be quickly recovered in just one step—eliminating the hassle of restoring full and subsequent incremental backups to reach the desired recovery point. And backup data is encrypted during transit across the network and at rest for added security.

In addition, Avamar's centralized web-based management, and at-a-glance dashboard view, make it easy for you to protect hundreds of offices worldwide from a single location over existing network bandwidth.

Highly efficient data deduplication

The method for determining segment size is a key factor in eliminating redundant data at a sub-file level. Some solutions on the market use fixed-block or fixed-length segments when performing data deduplication. With this approach, even small changes to a dataset (for example, inserting data into the beginning of a file) can change all subsequent fixed-length segments in a dataset. Despite the fact that very little of the data has actually changed, the entire file will appear as new data that must be backed-up again.

Avamar solves this problem by examining the data to determine logical boundary points using variable-length data segments. In this way, Avamar gives you the most-efficient global, source data deduplication on the market—dramatically reducing the amount of data sent and stored, while eliminating backup bottlenecks and increasing performance.

EMC Avamar Data Store

Scalability, high availability, and reliability

Unlike many physical server deployments, the Avamar server uses a grid architecture that facilitates linear performance increases by simply adding storage nodes. Each incremental node increases CPU, memory, I/O, and disk capacity for the entire grid. When additional storage is added, data is automatically load-balanced without compromising deduplication efficiency or system performance.

When traditional backup solutions fail, your company is exposed to windows of potential data loss. Avamar eliminates single points of failure by employing patented redundant array of independent nodes (RAIN) technology to provide high availability and fault tolerance across nodes in an Avamar grid. In addition, Avamar system integrity is verified twice daily via internal system checkpoints. And Avamar verifies the recoverability of all backup data daily—so there are no surprises.

Optimized protection for VMware infrastructure

Avamar deduplicates your backup data globally, across your physical and virtual servers. For virtualized environments, flexible backup options include guest- or image-level backups that leverage the latest VMware vStorage APIs for Data Protection. In all cases, only new, unique sub-file, variable-length data segments are transferred across the virtual/physical infrastructure. Avamar can also deduplicate the data stored within your virtual disks (VMDK files), enabling efficient replication for disaster recovery. And, Avamar provides fast, single-step recovery of individual files or complete VMDK images.

Efficient export to tape

If you require the use of tape media, Avamar Data Transport makes it easy to export Avamar deduplicated backup data to physical tape for cost-effective, long-term storage. By leveraging Avamar's powerful deduplication technology, daily full backups can be efficiently stored on tape via EMC NetWorker® and other popular backup software. Avamar verifies data integrity for your peace of mind, and offers a searchable catalog to simplify recovery from tape. In addition, an intuitive interface, along with streamlined reporting, make the entire process easy to manage.

"[EMC] Avamar provides a huge time and cost savings for backup of multiple virtual machines."

Curtis Damhof
senior network administrator
St. Peter's Hospital

Flexible deployment options to fit your exact needs

Avamar gives you flexibility in solution deployments, depending on your specific use case and recovery requirements.

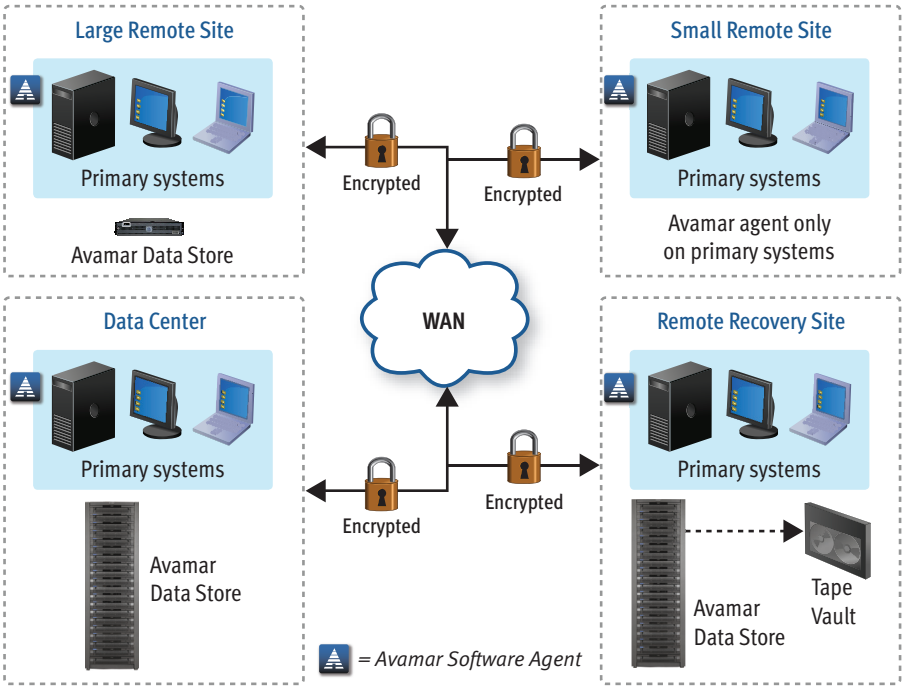
There are two convenient physical deployment options—EMC Avamar Data Store, a complete, pre-packaged backup and recovery solution that integrates Avamar software with EMC-certified hardware for streamlined deployment, and EMC Avamar software that can be deployed on a range of certified industry-standard servers. An entry-level Avamar Data Store configuration is ideal for remote offices when fast, local backup and recovery are priorities. For larger remote sites and data centers, a range of Avamar Data Store configurations provides the ability to retain the equivalent of petabytes of daily full backups that can be immediately recovered in a single step.

For environments standardized on VMware virtual infrastructure, EMC offers you a virtualized deployment option. The EMC Avamar Virtual Edition for VMware—the industry's first deduplication virtual appliance for backup and recovery—consists of EMC Avamar software deployed as a virtual appliance. It enables you to easily deploy a complete Avamar server on an existing VMware ESX™ Server, leveraging the attached disk storage and infrastructure for a fast return on investment. Since all aspects of the backup and recovery process are encapsulated and virtualized, control and management are also streamlined, reducing demands on your IT staff. Avamar Virtual Edition has the added benefit of cost-effective Avamar virtual-to-virtual, or Avamar virtual-to-physical server replication to meet your disaster recovery objectives.

"The [EMC] Avamar remote office solution enabled us to reduce administrative support requirements by 80 percent, reduce backup windows by 90 percent, and recover lost files and servers in minutes rather than hours."

Mike DePhillip
backup administrator
Virginia DMV

For smaller remote offices, lightweight, efficient Avamar software agents can be deployed on protected systems with no additional remote hardware required. This enables your data to be backed up directly over existing WAN connections to a central Avamar server at the data center, eliminating the need for local tape backups and the risk associated with offsite tape shipments. To protect your larger remote offices and provide faster recovery, data can be backed up to a local physical or virtual Avamar server, and then replicated to another Avamar server located at the disaster recovery site, hub site, or data center if required.



Avamar Desktop/Laptop further extends the power of Avamar to your end-users—anytime, anywhere. With data deduplication at the source, open-file backup, and CPU throttling, Avamar can quickly protect valuable data via existing network links. And since it operates in the background, Avamar is not disruptive to your end-users. Data is automatically backed up when a user logs in during normal backup windows, or users can initiate their own backups on demand. A streamlined interface enables them to recover their own data quickly and easily.

Avamar Feature	Avamar Benefit
Global, source deduplication	Backup data reduced at source (client) and globally; reduces daily full backup times by up to 10x, network bandwidth for backup by up to 500x, and cumulative backup disk storage by up to 50x
Secure, efficient use of existing LAN/WAN links	Data encrypted in-flight and at rest for security across existing LAN/WAN links; reduces or eliminates reliance on tape
High availability and reliability	RAIN architecture for fault tolerance across Avamar nodes; no single point of failure
Server health and data recoverability	Avamar server integrity and backup data recoverability verified daily
Centralized management	Simplifies remote office backup by leveraging data center experts; single pane of glass makes it easy to manage
Fast, single-step recovery	Recovers data (whole backups, files, or directories) immediately; no need to restore last good full and incremental backups
Export deduplicated data to tape	Lowers the cost of tape storage while providing a searchable, easy-to-manage interface
VMware infrastructure backups	Fast, efficient, daily full backups for VM guests and images
Physical and virtual Avamar deployment options	Best-in-class solutions to meet specific needs; same easy-to-manage interface

Specifications

Applications

DB2
IBM Lotus Domino
Microsoft Exchange
Microsoft SharePoint
Microsoft SQL Server
NDMP for NAS Filers (NetApp and EMC Celerra®)
Oracle
VMware

Operating systems

AIX
Free BSD
HP-UX
Linux
Mac OS X
Novell NetWare
Novell OES 2
SCO UNIX
Solaris
VMware vSphere4
Windows

Hardware

Prepackaged EMC Avamar Data Store configurations for simplified deployment; any certified Intel x86 server running Red Hat Enterprise Linux

Platforms supported

Please contact EMC for further details regarding certified hardware platforms.

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Take the next step

To learn how an EMC Avamar solution can make your backup and recovery processes more efficient and cost-effective, contact your local EMC sales representative or authorized value-added reseller, call us at 1-866-464-7381, or visit our website at www.EMC.com.