

# A V E R E

## Scale-out NAS for VMware

### Key Benefits

#### Performance

Intelligent tiering accelerates VMware boot storms and write-heavy workloads.

#### Scaling

Scale-out clustering enables storage to seamlessly keep pace with VM growth.

#### Cost Savings

5-to-1 reduction in disks, power, cooling, and space provides dramatic savings in CAPEX and OPEX.

#### Visibility

Avere UI provides unmatched insight into the operations of the entire VMware environment, including ESX hosts, VMs, and VMDK files.

#### Leverage Existing Infrastructure

Turbo-charge the performance of your existing NAS and add years to its productive life.

#### Data Sharing Over WAN

Accelerate performance and hide WAN latency while coherently accessing remote data.

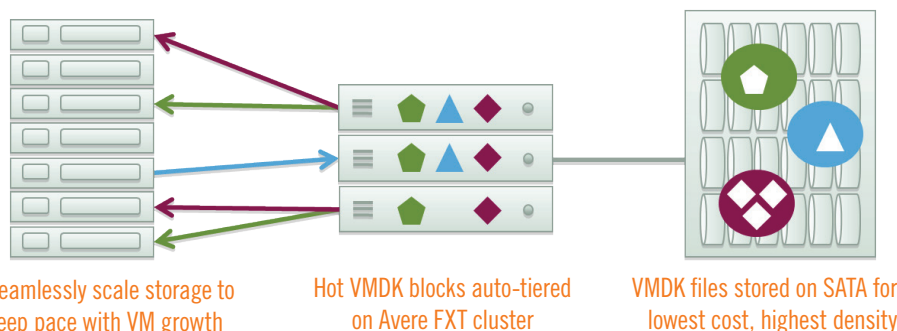
The Avere FXT Series of scale-out NAS appliances delivers unprecedented performance acceleration, cost savings, and operational visibility, proven in real-world VMware deployments. When compared to traditional NAS, the FXT Series provides better performance scaling through clustering, deeper insight into VMware operations, and a 5:1 reduction in disks, power, and space. For users who have felt obligated to implement a SAN to achieve high performance, Avere delivers equal or better performance with the convenience and familiarity of NAS.

### Challenge

Virtualization is revolutionizing the IT world by bringing great efficiency to the data center. VMware, the leader in server virtualization, enables the delivery of high performance servers with less hardware, power, and space than ever before. Virtualizing the servers, however, is only half the problem. Server virtualization puts great strains on the storage infrastructure. A storage solution that is powerful, efficient, and flexible is required to complement the virtual servers.

### Solution

FXT Series appliances from Avere use intelligent tiering to automatically place active VMware data on high-performance RAM, SSD, and SAS storage media and ensure the fastest response times for guest applications. Inactive data is managed on high-density SATA storage, delivering the maximum cost, power, and space efficiency. Clustering ensures that VMware data is always available and provides the flexibility to simply scale the performance of the solution as demand grows.



### Accelerate Performance

The Avere FXT Series provides performance acceleration that is purpose-built for VMware environments. FXT appliances tier the active portions of VMDK files at the block level to provide the most efficient use of the internal high-performance storage media. During times of high read access (e.g. boot storms) shared blocks

## Avere FXT Series Scale-out NAS

### Tiered File System

- Automatically places VMware data on optimal storage tiers
- Block-level tiering efficiently uses RAM, SSD & SAS and SATA resources
- Accelerates performance of read, write & metadata operations

### Scale-out Clustering

- Scale to 25 FXT appliances in a single NAS cluster
- Performance scales linearly to millions of ops/sec, tens of GB/sec
- Coherent, automatic balancing of load across cluster

### Visibility

- UI provides rich, historical statistics & graphical monitoring
- Visibility into entire VMware environment: ESX hosts, VMs & VMDK files
- SNMP support, XML-RPC interface, email & pager alerts

### VMware-specific Features & Best Practices

- Store VMDK files on SATA for the best density & lowest cost
- Auto-tiering of VMDK files at block-level for high performance and efficient use of FXT resources
- Non-disruptively add FXT cluster into existing VMware environments
- Load-balance of VMs across FXT cluster without copying data
- Linked clones for fast cloning & efficient use of FXT & storage resources
- Support for large (>1000GB) VMDK files



*Avere is VMware Ready certified.*

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are automatically replicated across all FXT nodes in a cluster to provide parallel access and maximum throughput to the hot blocks. VMware workloads are often write-heavy and Avere's unique write acceleration with internal NVRAM and logging file system speeds up both sequential and random writes.

### Scale Storage with VM Growth

VMware environments are constantly growing and Avere clustering provides a simple and non-disruptive way for the performance and capacity of the storage to keep pace. To handle the most demanding VMware environments, Avere supports up to 25 FXT appliances per cluster and linearly scales to millions of ops/sec performance and tens of GB/sec throughput. Virtual interface (VIF) load balancing enables even distribution of VMDK files across the FXT cluster without copying data. An FXT cluster can be seamlessly added to an existing NAS environments, bringing the benefits of scale-out clustering to non-clustered storage.

### Reduce Costs

Avere solutions are highly efficient and typically require 80% less total equipment than traditional NAS deployments, resulting in dramatic savings in storage capital expenses and ongoing operational expenses for power, cooling, and rack space. For existing NAS deployments, the FXT Series enables administrators to dramatically increase the performance of their systems without expensive controller upgrades or adding storage. For new deployments, the FXT Series enables administrators to meet their performance requirements with the highest possible storage density on the mass storage systems, using low-cost, high-capacity SATA drives.

### Visibility & Simplified Administration

A wealth of statistics and graphical display on the Avere user interface provide unmatched visibility into the operations of your entire VMware environment. The data provided goes beyond standard statistics and includes comprehensive analytics (e.g. hot VMDK files, hot ESX hosts) that give you unique tools to diagnose VMware environments. An Avere FXT cluster takes just minutes to configure, can be added to existing environments with no disruption, and VMDK data is automatically placed on the optimal storage tier based on file size, access frequency, and access pattern.

### Customer Quote

"We provide multiple levels of VMware managed services to our customers. Prior to Avere, this required a multitude of storage systems using a range of storage controllers from mid-level to high-end and a range of disk arrays from SATA to 15k SAS and was a challenge to administer. With Avere, we have standardized on mid-range controllers and high-density SATA disk arrays and use the Avere cluster to tune the performance to the desired level. Customer feedback on our premium service is that they are getting better performance from Avere than they can achieve on their local SAN storage. As a service provider we are all about efficiency and management simplicity and Avere, with its tiering, clustering, and UI analytics, provides what we need to keep our costs in check."

### Leading Provider of VMware Managed Services