

Samsung AutoCache

(TCO)

Solving data center bottlenecks
with simple, cost-effective use of
enterprise flash



Highlights

- Deploy without disruption of IT operations
- Introduce into data center without causing a schism between AutoCache™-enabled and non-enabled hosts
- Prevent performance degradation by pre-warming the target host with metadata from the source host
- Realize benefits immediately regardless of the type of flash disks in the server
- Protect data from failures by using AutoCache as a read cache

Gain greater VM density, efficiency and performance to eliminate bottlenecks

Today's data centers are bottlenecked by storage and network I/O contention. This disparity limits application performance and the ability to achieve the maximum return on investment (ROI) from VMware® servers.

Data centers often do not allow for the reconfiguration of existing infrastructure. Therefore, a bottleneck solution needs to fix this problem without any disruption to operations.

Samsung AutoCache is the only I/O caching solution designed specifically to increase virtual machine (VM) density and accelerate business-critical applications in virtualized servers. It is incredibly easy to deploy and maintain because it is totally transparent to system resources and fully integrates with native management infrastructure for the hypervisor.

Depending on the workload, AutoCache can increase VM density by two to three times with virtually no impact on IT operations. It requires no guest OS agents and no changes to current storage processes.

VM efficiency and performance are improved while maximizing system resource use, enabling data centers to reclaim idle CPUs to support more business applications.

Leverage intelligent use of flash devices in virtualized servers

AutoCache is an intelligent read cache with write-through and write-around capabilities, moving frequently accessed read I/O traffic off of network storage and into the host.

By attaching inside standard hypervisors, the AutoCache inspects all I/O from virtual machines and places hot I/O into a solid-state drive (SSD) with an NVMe, SATA or SAS interface.

Embedded intelligence supplies hot reads back to the VMs that request them without requiring any system administrator effort to modify the deployed storage or VM infrastructure.

AutoCache creates a universal cache for all VMs that automatically adapts to the changing workloads, shifting cache resources on the fly to the VMs that need them most. In addition, AutoCache supports any data store, whether connected by block protocols or a network file system (NFS).

Accelerate business-critical applications with greater VM density

AutoCache provides the following features to data center environments.

No disruption to IT operations

By deploying AutoCache, there is no need to change any proven processes or procedures. Data is protected in exactly the same way it is now — through the use of the data store. Backup and recovery do not change at all, nor does the use of VMware value-add features, such as vMotion®, DRS and Storage DRS™. They all just work as if AutoCache isn't there, but everything gets faster. Reports run quicker, VM density is improved, business-critical apps run faster, virtually everything runs better. Simply install AutoCache with a single VIB without rebooting the host. Within minutes performance improves so more VMs can be added.

vMotion transparent

AutoCache is vMotion transparent, which means that AutoCache can be introduced into a data center without causing a schism between AutoCache-enabled hosts and those without. VMs moved to AutoCache-enabled hosts will simply work faster than those on non-accelerated hosts.

vMotion performance consistency

When AutoCache is present on both hosts in a vMotion, the target host can be pre-warmed with metadata from the source host so that application performance is not degraded by virtue of the vMotion process.

Hardware agnostic

While Samsung strongly recommends the use of enterprise-class flash (commonly found on PCI-e flash offerings), this is not a limitation. If the servers already contain flash disks, whether they are PCI-e or SSD, AutoCache can still be installed and benefits can be seen immediately.

Fail-safe protects data

AutoCache operates as a read cache. If the flash fails, data will not be lost because it is protected by the proven, established data store. Workloads on the node with the failed flash will be limited to the non-accelerated speeds they would have had without AutoCache installed, but they will continue to operate.

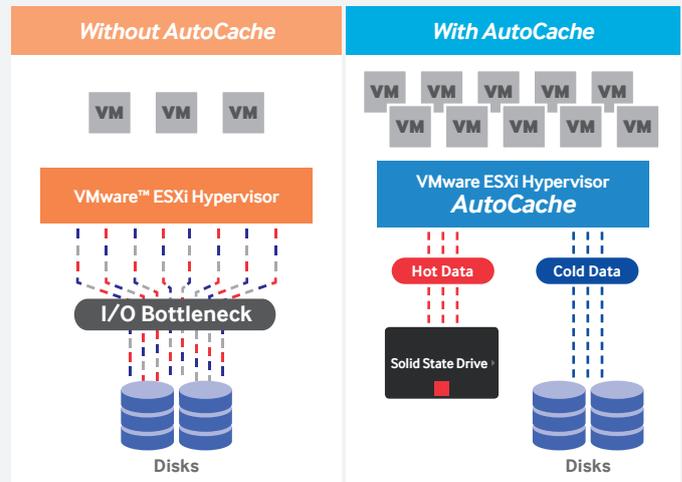


Figure 1. Solution comparison

Weigh the benefits of Samsung AutoCache

Reduced network load

Moving frequently read blocks off of network storage and into the host reduces storage network traffic.

Reduced network storage load

Removing frequently read I/Os from network storage leaves storage free to devote a higher percentage of its IOPS to writes.

Higher VM density

Eliminating I/O as a bottleneck allows for more VMs per host. Improvements of up to three times the density have been seen, though this is certainly workload dependent.

Lower VM CAPEX

More VMs per server means each VM costs less to operate up front.

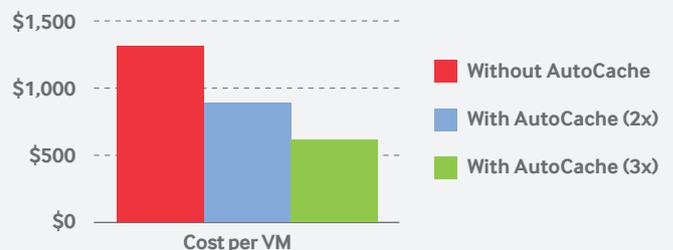


Figure 2. Cost per VM comparison

Eliminate network bottlenecks to increase number of VMs per host and lower operating costs

Less space, cooling and power required

Higher VM density means fewer servers to get the job done. Fewer servers occupy less space, require less cooling and consume less power, resulting in lower operational expenses.

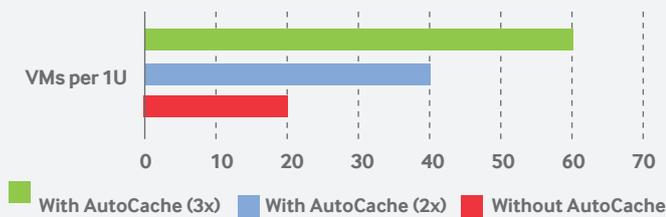


Figure 3. Available VMs per 1U

Simplify management in virtualized servers

AutoCache is managed within the standard VMware vSphere® client or VMware vCenter™ server framework by simply pointing and clicking on the AutoCache tab. The vCenter plug-in supports role-based administration for creating specific access rights through an easy-to-use interface. This function is particularly important to enterprises and cloud service providers (CSPs) that need to track specific usage of storage resources.

vCenter accounts can be created for customers or departments, granting varying degrees of AutoCache rights on a user basis rather than a machine basis. In turn, users can control the caching for their individual VMs.

Administrators and their users can modify both host- and VM-level cache settings, providing the flexibility to assign different system, VM and AutoCache access privileges. Usage data can also be collected over a month and the previous month's data may be exported for billing purposes.

In addition, AutoCache provides extensive analytics to quantify performance gains through intuitive, yet powerful, multilayered reporting. Administrators can acquire insight into resource utilization, I/O workloads and cache benefits. Reporting is available per host, per cached device and per guest VM. Both real-time and historical data are presented in the management interface.

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For more information

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2015-10