SOLUTION BRIEF

Accelerate VMware® with Tintri IntelliFlash™

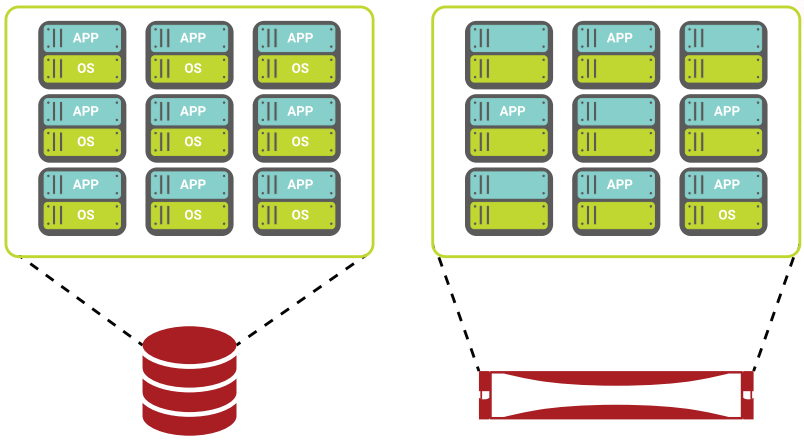
IntelliFlash

As you move more workloads to a virtualized environment, chances are your legacy storage based upon standard infrastructure will struggle to keep up. Each one of your virtual machines (VMs) is sending an I/O stream to the hypervisor for processing. As you deploy more VMs, this creates highly random I/O—also known as the I/O Blender effect—which can lead to high latency and unpredictable performance. The solution to this is Intelligent Infrastructure such as Tintri IntelliFlash.

IntelliFlash systems effectively manage random I/O streams to deliver consistently high performance at low latency and at one-third the cost per gigabyte of traditional storage systems. Each system includes a comprehensive set of data services and seamlessly supports different storage media (NVMe™ flash, performance flash, dense flash, and hard disks) under a single storage operating environment. You can choose the amount of flash storage to meet your performance needs. Get the lightning-fast performance of flash with the economics of disk. Experience Different!

Deliver Consistently High Performance

IntelliFlash is available in NVMe, all-flash, and hybrid configurations. NVMe is perfect for extremely low latency, burstable workloads. Go with NVMe or all-flash for virtualized workloads that require sustained low latency and very high IOPS. For a balance of performance and economics, choose a hybrid system. Add capacity with additional storage when needed.



All IntelliFlash systems are powered by the IntelliFlash Operating Environment. This proprietary operating environment employs several techniques to intelligently manage different storage media and neutralize the I/O Blender effect.

IntelliFlash uses the systems' high-speed storage layers (DRAM, NVDIMM, NVMe, and flash) as a high-performance cache. Data is organized and coalesced prior to landing on the capacity storage layer, turning random I/Os into sequential I/Os. Real-time deduplication then acts as a performance multiplier, freeing up space in the cache for even faster reads and writes. NVDIMMs accelerate cache writes and acknowledgment of I/O leading to extreme performance.

IntelliFlash systems automatically separate metadata from data. The metadata is then organized, aggregated, and stored on the highest performance storage tier. This stands in stark contrast with traditional storage solutions that interleave application data with metadata in one storage pool.

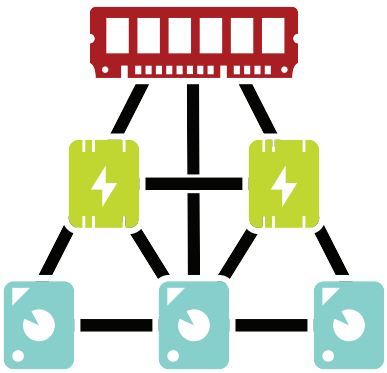
Moreover, IntelliFlash systems take advantage of vStorage APIs for System Integration (VAAI), which minimize I/O on the hypervisor and storage network by offloading storage operations like cloning and snapshots to the system. This means operations complete much faster and with reduced CPU overhead on the host.

Drive Down Storage Costs

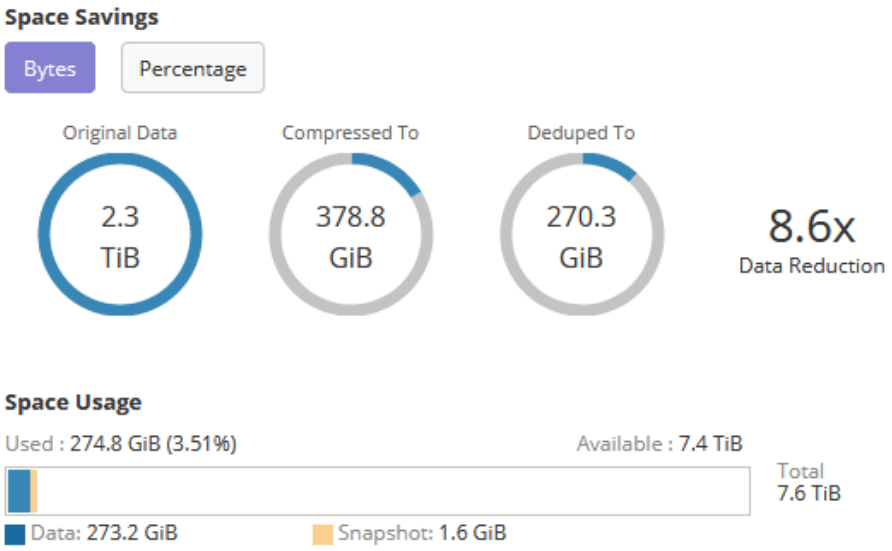
IntelliFlash systems are engineered for storage efficiency, allowing you to dramatically cut down your storage acquisition and operational costs.

Enable your VMs to run with just the storage they need. Thin-provisioned LUNs automatically allocate physical storage as data is being written. Any space that's been allocated but hasn't been consumed remains available for other VMs and applications.

All IntelliFlash systems use both real-time compression and deduplication, which can shrink the storage footprint up to 90% in VMware environments. Data blocks are compressed and redundant blocks are removed before they are written to disk. In a virtual environment, redundant OS images can be reduced to a single instance and stored in flash.



Tintri
Intelligent Infrastructure



Consolidate Workloads on a Single System

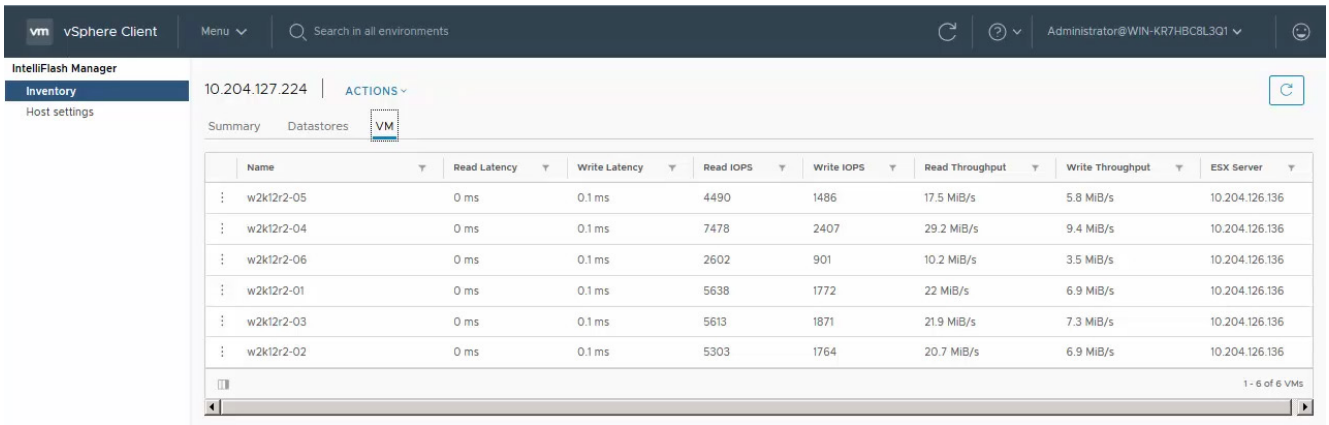
Get an even greater return on your investment by consolidating workloads. IntelliFlash systems support both block-level (iSCSI and Fibre Channel) and file-level (SMB and NFS) protocols, enabling you to deploy VMs, virtual desktops, databases, and user data on a single system.

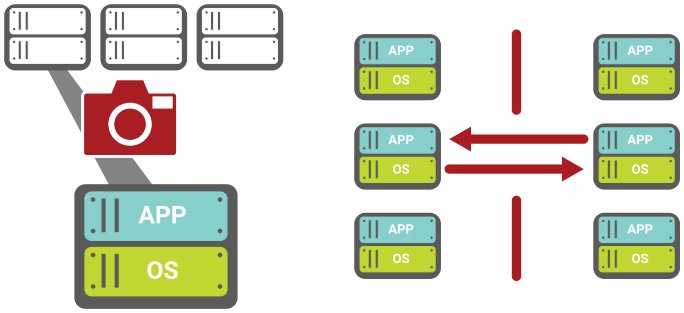
Choice of NFS and VMFS Datastores

There are two main approaches to deploying a VMware-based datastore in a virtual environment: file-based NFS and block-based VMFS (virtual machine file system). Each has its merits. You always have the flexibility to deploy VMs using both VMFS (iSCSI and FC) and NFS datastores—whichever meets your needs and preferences.

Virtualization-Aware Storage for Easy Administration

Legacy storage systems leave you "flying blind" when it comes to understanding the storage resources used by your virtual infrastructure. IntelliFlash systems are virtualization-aware, giving you greater visibility into what storage resources are used by each VM. Quickly and easily correlate VM and storage performance characteristics. For example, you can see which VMs are demanding the most IOPS. You can also track deduplication and compression rates on a per-VM basis. Armed with these insights, you can quickly identify and resolve any performance-related issues that may arise, accurately forecast longterm capacity requirements, and ensure the long-term health of your virtual environment.





What's more, the IntelliFlash vCenter plug-in you can provision datastores, manage snapshots and restores, and monitor I/O status, space usage and latency for all of your IntelliFlash systems from within the vCenter console. You can also script and automate data protection tasks via our programmable RESTful APIs.

Ensure the Availability and Protection of End User Data

End users expect their applications and data to be available 24x7. When deploying VMware on IntelliFlash systems, you'll benefit from the resilience, end-to-end data integrity, and high-availability features provided by the IntelliFlash architecture.

All of our systems include space-efficient snapshots and remote replication capabilities. Integration with VMware and VSS enables VM-consistent snapshots for VM images and application-consistent snapshots for application data. Instantaneous thin snapshots create space-efficient, point-in-time copies of data that can be replicated and instantaneously restored.

Additionally, IntelliFlash systems are fully redundant with no single point of failure. All media (NVMe, SSDs, NVDIMMs, and HDDs) in IntelliFlash systems are dual-ported and accessible through a pair of highly available, redundant controllers. The controllers are configured in an active/active manner and can be used simultaneously for data access.

Getting Started

Tintri is a VMware Technology Alliance Partner (TAP). Our solutions are optimized for server and desktop virtualization and help customers efficiently scale their infrastructure without the cost and complexity of traditional storage. Our integration with VMware provides superior value to customers using VMware vSphere® for server virtualization and VMware View™ for desktop virtualization.

Experience Different! For more information on how Tintri IntelliFlash systems can turbo-charge your business success through a simple, Intelligent Infrastructure, visit tintri.com/intelliflash.