IntelliFlash™ Features

Experience different! The Tintri IntelliFlash intelligent infrastructure is a fourth-generation storage solution portfolio that delivers an exceptional user experience. It does this through automation, analytic insights, and a variety of time-saving management features to drive your most valuable workloads in today's data centers.

Our comprehensive portfolio of all-flash and hybrid storage systems is powered by a common IntelliFlash Operating Environment. This intelligent platform includes several patented technologies designed to deliver consistently high performance at low latency while maximizing uptime and streamlining data protection.

With IntelliFlash, you can transform data into actionable information faster and achieve new levels of efficiency, simplicity, and cost savings.

Key technologies include:

Flexible Architecture

IntelliFlash gives you the flexibility to deploy multiple tiers of persistent storage media within a single storage system: NVMeTM flash, SAS flash, dense flash, and/or hard disk drives. The operating environment intelligently places data on different storage media to deliver optimal performance and capacity.

Metadata Acceleration

I ntelliFlash systems automatically separate metadata from data to deliver high performance. The metadata is then organized, aggregated, and placed on

high-performance, low-latency persistent storage, accelerating advanced data services such as deduplication, compression, snapshots, clones, and thin provisioning.

Inline Compression and Deduplication

Data is compressed and redundant blocks are removed before they are written to persistent storage. These techniques not only reduce the storage footprint, they also help to free cache space in DRAM and flash for faster reads and writes.

IntelliFlash Data Resiliency

IntelliFlash systems employ multi-parity protection schemes and dynamic stripe widths to eliminate performance overhead and media wear from read- modify-write operations. Supported RAID levels include dual parity RAID, two-way mirroring, and three-way mirroring.

Intelligent Caching

Intelligent caching algorithms place the most frequently accessed application data in DRAM, NVMe or flash. These caching algorithms are optimized for various I/O patterns and seamlessly adapt to differing media latencies across multiple tiers of cache.

Flash Endurance

IntelliFlash features enterprise-class SSDs — offering 10X the endurance of consumer-grade MLC while delivering consistently high performance. IntelliFlash systems further extend the life of SSDs by optimizing I/O for the geometry of flash media. Writes are aligned to sector boundaries and native page sizes to avoid I/O fragmentation and unnecessary media writes. Data is intelligently relocated to ensure uniform wear leveling.

Thin Provisioning

Increase your storage utilization rates by not over-allocating capacity while provisioning. Thin provisioning automatically allocates physical storage as data is being written. Any space that's been allocated but hasn't been consumed remains available for other applications.

Unified Storage

IntelliFlash natively supports both block (SAN) and file (NAS) protocols, enabling you to run applications and manage files on a single system. Supported protocols include iSCSI, Fibre Channel, NFS, and SMB 3.0.

Point-in-Time Snapshots and Replication

Take an instantaneous snapshot of your data for backups. Snapshots are VM-aware and application consistent. They are space-efficient and incur no performance overhead. You can replicate for DR and restore data instantaneously from the local or remote system.

No-Impact Read/Write Clones

Accelerate the development, test, and QA timeframes of mission-critical applications by creating multiple read/write clones without incurring a performance hit. As with snapshots, clones are space-efficient, consuming storage only for changed blocks.

Data Integrity

To protect against silent data corruption, IntelliFlash systems perform a checksum process to match data blocks as reads and writes occur, and automatically fix corrupt blocks. They also store the checksum and data in separate nodes of the block tree for further protection.

Non-Disruptive Operations

All IntelliFlash hardware components, including SSDs and HDDs, can be replaced online with zero downtime. Software upgrades can also be performed while maintaining system uptime and data access.

No Single Point of Failure

All media (SSDs 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.

Analytics for IntelliFlash

IntelliFlash systems include integrated cloud-based intelligent analytics, enabling you to quickly and easily monitor the health, performance, and usage of all your IntelliFlash systems. Predict future requirements and detect problems before they develop into component and system failures. By maximizing system uptime and efficiency while simplifying storage administration, you can focus instead on adding value to your business.

Encryption

Security features include 256-bit AES encryption for data at rest. IntelliFlash also delivers inline encryption of data on SSDs and HDDs with unnoticeable impact on performance. Key management for encryption is performed natively in the system without requiring any user intervention.

Application-Aware Provisioning

Automatically tune volumes for specific applications at the click of a button. Select a use case — such as database, server virtualization, and virtual desktop infrastructure — to instantly optimize the volume's configuration (block size, compression and deduplication settings, etc.)

VMware® Integration

IntelliFlash systems take advantage of VAAI to minimize I/O on the storage network and hypervisor host. The IntelliFlash Operating Environment also includes a vCenter plug-in, enabling you to provision datastores, manage snapshots and restores, and monitor I/O status, space usage, and latency from within vCenter.

Microsoft® Integration

IntelliFlash systems integrate with a broad set of Microsoft technologies, including CSV for failover, clustering for Hyper-V; VSS for application-consis- tent snapshots and clones; and SMB 3.0 protocol.

Citrix® Ready

IntelliFlash systems have been tested and verified   as part of the Citrix Ready® VDI Capacity Program Verified for Citrix XenDesktop®. This enables you to leverage best practices and ensure optimal performance and capacity for your VDI.

Validated Oracle® Designs

IntelliFlash systems have been tested and certified with Oracle VM and validated with Oracle Linux® with UEK in single instance and Oracle RAC deployments.

Experience different! For more information on how IntelliFlash can turbo-charge your business success through a simple, intelligent infrastructure, visit tintri.com/intelliflash.

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