Western Digital.

IntelliFlash™ Features

Western Digital IntelliFlash arrays are powered by the IntelliFlash Operating Environment. This intelligent platform includes several patented technologies designed to deliver consistently high performance at low latency while maximizing uptime, streamlining data protection, and curbing storage costs. Key technologies include:

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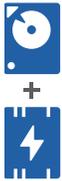
IntelliFlash gives you the flexibility to deploy multiple tiers of persistent storage media within a single storage system: NVMe™ flash, performance flash, dense flash and/or hard disk drives. The operating environment intelligently places data on different storage media to deliver optimal performance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

Metadata Acceleration

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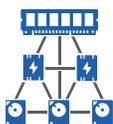
Intelligent caching algorithms place the most frequently accessed application data in DRAM, NVMe or flash. These caching algorithms are optimized for various I/O patterns and seamlessly adapt to differing media latencies across multiple tiers of cache.

Flash Endurance

IntelliFlash arrays use enterprise-class SSDs — offering 10X the endurance of consumer-grade MLC while delivering consistently high performance. IntelliFlash arrays further extends 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 arrays natively support both block (SAN) and file (NAS) protocols, enabling you to run applications and manage files on a single array. Supported protocols include iSCSI, Fibre Channel, NFS, CIFS, and SMB 3.0.

Point-in-Time Snapshots and Replication

Take an instantaneous snapshot of your data. Snapshots are VM-aware and application consistent. They are also space-efficient and incur no performance overhead. Replicate for DR, and restore data instantaneously from the local or remote array.

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, allocating storage only for changed blocks.

Data Integrity

To protect against silent data corruption, IntelliFlash arrays perform a checksum process to match data blocks as reads and writes happen 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 hardware components, including SSDs and HDDs, can be replaced online with zero downtime. Software upgrades to the array can also be performed with no downtime or loss of access to data.

No Single Point of Failure

All media (SSDs and HDDs) in IntelliFlash arrays 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.

IntelliCare™ Customer Care Program

The IntelliCare customer care program combines cloud-based analytics with a team of storage experts so you can save time on storage administration and maximize the uptime and efficiency of your storage system.

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 required for encryption is performed natively in the system without needing any user intervention.
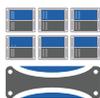
Application-Aware Provisioning

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

VMware® Integration

IntelliFlash arrays 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.

Citrix® Ready

IntelliFlash arrays 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.

Microsoft Integration

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

Validated Oracle® Designs

Western Digital has worked closely with Oracle to build pre-tested, validated architectures— including software, hardware, storage, and network components—along with documented deployment guides. IntelliFlash arrays have also been tested and certified with Oracle VM and validated with Oracle Linux® with UEK in single instance and Oracle RAC deployments. IntelliFlash delivers inline encryption of data on SSDs and HDDs with minimal impact on performance. Key management required for encryption is performed natively in the system without needing any user intervention.

IntelliFlash arrays deliver incredibly high performance while maximizing efficiency not only for IT, but for your business, by keeping your storage costs in check and making your data come alive. For more information on how IntelliFlash arrays can help make your data come alive, visit westerndigital.com/intelliflash

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