Today's multicore, multi-CPU servers are being held back from reaching their full performance potential by storage and network I/O bottlenecks and cannot keep up with today's ever increasing demands. Traditional solutions, such as increasing storage (local or SAN/NAS), servers, or memory can add huge expense, as well as management complexity.

When combined with a high performance Intel® Solid State Drive (SSD), Intel® Cache Acceleration Software (Intel® CAS) for Windows* Enterprise can increase overall system-level performance through intelligent caching rather than extreme spending.

Intel CAS's unique selective optimized caching allows administrators to focus performance directly to the workloads and data that really need it—precisely the workloads and applications that add the most value to the business.

Providing write-back caching and utilizing a raw disk unformatted portion of an Intel SSD as the caching drive, Intel CAS bypasses the Windows file system, and unleashes new levels of system performance. Intel CAS installs quickly into the operating system and works seamlessly with applications (running in the background), without requiring any migration of data or system imaging.

Intel SSDs with CAS Windows Enterprise Performance: 4X Performance Gains over HDDs

Requiring no modification to the existing applications or back-end storage media, Intel CAS is a drop-in solution to accelerate applications. An Intel® SSD with Intel CAS enables the software to utilize the SSD to cache the hottest data, from existing database back-end storage media (HDD, SAN, NAS), on the compute server node.

Additionally, by bypassing the network and storage controller to access the hottest data, performance bottlenecks caused by network traffic is greatly reduced. This makes it a cost effective solution that quickly and easily provides a boost to read and write performance of applications.

Using an online transaction processing workload to measure performance of a Microsoft SQL Server database, our results showed that adding Intel CAS and using Intel® SSD DC P3700 as the caching medium yields performance improvement of four-fold over HDD.²

Intelligent Caching

On initial access, data is retrieved from back-end storage and copied to the Intel CAS cache device. Subsequent reads are returned at high performance SSD speeds. All data is written concurrently (write-through) or sequentially (write-back) to back-end storage and the cache.
Product Brief: Intel Cache Acceleration Software for Windows Enterprise

When the cache is full, newly identified active data evicts stale data from the cache, utilizing the Intel CAS proprietary heuristics-based eviction algorithm. Intel CAS provides both a self-learning mode as well as a highly configurable caching user interface to enable tuning for specific workloads – such as pinning a file from a remote SAN to address network I/O bottlenecks. The Intel CAS solution runs in the Windows OS as a filter driver and does not require application or storage modifications.

INTEL CAS WINDOWS ENTERPRISE FEATURES

| Application & Server Acceleration | Intel® CAS operates at the OS level as a filter-driver caching engine, utilizing a raw disk unformatted drive as a caching drive, transparently accelerating applications increasing server performance. |
| Platform & Storage Agnostic | Works with any backend storage, including disk array, SAN, NAS1, or direct attached storage. Supports any PCIe*, NVMe*, SAS, or SATA SSD supported by the OS platform. Validated on the Intel® SSD Data Center Family, optimized for Intel® SSD Data Center Family for NVMe. |
| Intelligent & Configurable Caching | Auto tune self-learning mode by default to provide optimal performance for evolving workloads. Highly configurable solution with several caching modes (write-back, write-through, pinning) for specific workload optimization. |
| Simple & Flexible Business Model | Multiple licensing and support options available to simplify purchasing, deployment, and management to address the specific business needs. |
| • A la carte SKUs available for non-Intel SSDs on a per-caches size • A la carte SKUs available Intel SSDs on a per-SSD basis for virtualized environments • Select Intel® NVMe SSDs with Intel® CAS bundles available • Various options for support |

INTEL CAS WINDOWS ENTERPRISE SPECIFICATIONS

| Operating Systems | 64-bit Microsoft Windows Server* 2003, 2008 R2, 2012 R2, VMWare* ESXi (operating in a guest OS). Refer to the Intel® CAS for Linux Admin Guide for the latest information on OS support. |
| Virtual Platforms | Host virtualization support at the hypervisor for Microsoft Hyper-V*. Guest virtualization support for VMWare*. |
| Storage Requirements | Any backend storage device, including local disk, SAN, NAS1, NVMe, RAID, iSCSI, or Fibre Channel. Supports any PCIe, NVMe, SAS, or SATA SSD supported by the OS platform. Validated on the Intel® SSD Data Center Family, optimized for Intel® SSD Data Center Family for NVMe. |
| Management | Graphical user interface to manage cache policies, acceleration modes, and overall cache operation with a robust set of statistics for workload tuning and optimization. |

Intel® CAS offers an innovative, cost-effective solution to the data performance challenge.

Learn more about Intel® Cache Acceleration Software: intel.com/cas
Find the Intel® Solid State Drive that’s right for you: intel.com/ssd
Start a Free 120 day trial: https://www-ssl.intel.com/content/www/us/en/forms/cache-acceleration-contact-us.html

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1 NAS support dependent on specific usage model considerations, refer to the Intel® CAS Windows Enterprise Admin Guide for additional information.
Client Host Simulator System Configuration: Intel® Xeon® CPU ES-2690 v2 (2 processors), 128GB RAM, Windows* Server 2012 R2 Standard 64-bit, Broadcom* NetXtreme Gigabit NIC, 30 users, 8 Customer Emulator Instances, 8 Market Emulator Instances
OLTP Workload Database Configuration: Microsoft SQL Server 2014 Enterprise Edition, Database Size 1.4TB setup with 1.2 Million Customers, OLTP Transactions Breakdown 4.9% Broker-Volume, 13% Customer-Position, 1% Market-Fee, 18% Market-Watch, 14% Security-Detail, 8% Trade-Lookup, 19% Trade-Status, 2% Trade-Update
Intel CAS with an Intel® P3700 configured as a 370GB caching partition increased the number of Microsoft SQL database transactions per second by 4 and reduced average transaction response time to 1/4 of original when compared to the HDD-only baseline configuration.
Intel technologies’ features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/cas.

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