The growing volume and diversity of today’s enterprise data challenges IT organi-
zations to maintain storage infrastructure that can shift and scale rapidly to meet
unpredictable requirements. To help meet the business and IT challenges of big
data storage and analytics, the Inspur AS18000 delivers the reliability, performance,
and availability for workloads with the highest demands, including financial, telecom,
government, energy, manufacturing, transportation, and education.

The AS18000 is a new release of the multi-controller, high-end storage platform
powered by Intel® Xeon® processor E5-2600 family and Intel® Ethernet Controllers.
The system offers a large 24 TB memory capacity, up to 60 PB of storage, and
supports all major networking interfaces, plus NFS, CIFS, and other mainstream
communications protocols for use in complex, heterogeneous environments.
The AS18000 platform includes support for data protection, disaster recovery,
and high system availability.

Overview

The AS18000 uses a multi-controller, tightly coupled architecture powered by
Intel® Xeon® processors. This processing engine integrates a range of I/O and
memory features and other capabilities that contribute to creating a robust
storage infrastructure. Incorporating dynamic load balancing and global cache
mirroring, the system avoids compromised performance and the risks from
bottlenecks caused by a single controller failure, ensuring service continuity.
The AS18000 supports a range of networking technologies and protocols, including:

- 8/16 Gbps Fibre Channel (FC)
- 1 and 10 Gbps Ethernet
- iSCSI
- FC over Ethernet (FCoE)
- InfiniBand Architecture* 40/56 FDR
**Intel Ethernet Optimizations for Multi-Core Processors**

The large data sets employed by the AS18000 create the need for efficient processing of network data. Intel® Ethernet Controllers provide a number of features designed to take advantage of multi-core processors. Rather than handling data requests serially, as in early computing systems, the Intel® 82599 10 Gigabit Ethernet Controller with two 10 Gbps ports processes data flows in parallel, taking better advantage of processing resources. The system can be expanded from two built-in controllers to 16 controllers using Intel® 1350 Server Adapter with two and four ports.

**Designed to Support an Efficient, Secure, Hierarchical Storage System**

Support for up to 7,680 drives, using multiple storage interfaces (SAS, NL-SAS, and NVMe) and self-encrypting drives, allows companies to create an efficient and secure hierarchical storage environment with spinning and solid-state drives.

Intel® Solid State Drive Data Center Family and PCIe® storage devices offer full end-to-end data protection, consistent performance with low latencies, high write endurance, and scalability for growing storage needs. Intel® Optane™ SSDs based on 3D XPoint™ technology.

**Flexible Architecture for Heterogeneous Environments**

The architecture also supports multiple file systems, including Network File System (NFS) and Common Internet File System (CIFS), plus other data communications protocols that are compatible with a variety of mainstream operating systems. The AS18000 enables easy data storage in a heterogeneous operating environment and simplifies system manageability in a large data center infrastructure.

The system offers simple scalability with uninterrupted upgrades to 7,680 drives (60 PB total capacity) and up to 16 controllers, ensuring performance and capacity for the most demanding environments and workloads.

**Modular Design Simplifies Management**

With a modular architecture and enhanced software, the AS18000 eases the burden on IT to upgrade capacities, maintain components, and manage overall operations.

A flexible management interface allows IT to monitor, control, and configure resources for performance and issues that might arise. For example, when the system experiences performance problems, notifications can be sent to administrators through visual indicators, emails, and more.

Because operators have various experiences with how they manage systems, the AS18000 supports a variety of methods, including command line interface (CLI), web (HTTP), and others, providing user friendly IT operations.

**High Availability Design Keeps the Business Running**

The AS18000 is designed for demanding environments that require continuous availability of data to support 24/7 operations. For example, the AS18000 uses Active-Active load-balancing to help maintain high performance across the system. Additionally, using data access frequency monitoring technology, data is automatically tiered according to different application priorities and throughput demands, thus improving the performance and response of mission-critical information.

The AS18000 supports QoS to ensure effective use of storage resources for the business and appropriate workload performance. The system can selectively limit I/O resource requests from the application server according to configurable parameters.

An easily and fully scalable solution, IT can start with a thinly provisioned configuration and expand capacity when needed in order to reduce IT overhead, control costs, better manage storage requirements, and improve overall energy usage.

The AS18000 can provide organizations with a high level of data protection and disaster recovery for the most demanding operations, whether in a single location or around the globe. The system supports multi-level disaster recovery, multi-location Active-Active file system availability, and scalable deployments to accommodate a company’s growing needs for data protection and business continuity.
High Energy Efficiency and Low TCO

The overall design of the solution helps optimize energy efficiency and system utilization. The AS18000 is powered by the Intel Xeon processor E5-2600 family, enabling high performance with low power demand for industry-leading power/performance. Advanced drive management technology reduces the disc rotation speed or powers it down completely when the device is inactive, providing low total cost of ownership (TCO).

Storage Performance Development Kit (SPDK)

The AS18000 takes advantage of the open source (available from 01.org) Storage Performance Development Kit (SPDK), a library of algorithms that is optimized for Intel® architecture to provide enhancements in storage efficiency, data integrity, and data availability. By using the SPDK functions, the AS18000 enables efficient utilization of multiple execution cores in Intel processors, supporting high performance for the storage system.

Build On a Reliable Foundation for Data Growth

Built on the Intel Xeon processor E5-2600 family and other Intel® technologies, and designed to support the high performance of enterprise-class workloads and IT’s needs for scalability, availability, and reliability, the AS18000 offers an ideal foundation for data growth in any enterprise.