



# Big Data No Longer a Big Problem

**infinite io's Network-Based Storage Controller, Powered by Intel® Server System, Slashes Enterprise Data Storage Costs**

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Today's enterprise-level organizations produce ever-increasing volumes of data each day. As employees create new documents, presentations, spreadsheets and more, the amount of stored content grows dramatically over time. This rapid data growth creates a challenging new problem for IT professionals: how to store all the data in the most cost-effective way, while ensuring end-users have immediate access to the information they need.

Many organizations depend on expensive, onsite Network Attached Storage (NAS) systems to house their data. While legacy NAS systems generally meet end-user demand for fast and easy access to regularly used "active" data, approximately 80% of the data stored in expensive NAS solutions is inactive and rarely accessed by end users – if at all. Storing all that "cold" data in "hot" access mediums is both inefficient and extremely expensive. Adding up the cost of necessary data protection, hardware, software, floor space, electrical power, and staff to manage the storage process, each gigabyte of NAS storage costs an organization an estimated \$0.75 per month. Over the course of a year, snowballing storage costs result in a very expensive line item at \$9,000 per terabyte.

Ideally, an enterprise IT professional could identify and move those cold files easily, placing them in much cheaper internal or external cloud storage costing as little as \$0.01 per gigabyte. However, the task of moving the older files from one storage location to another – manually – is a daunting task. An IT professional must face a lot of questions: What is the best way to identify the files to be moved? How often are the files used? What if older files moved out of primary storage are needed? How can all that data be maintained securely regardless of its storage location? How can the process be automated? The Big Data challenge is a big one indeed.

As a solution provider, Equus regularly encounters enterprise customers facing this type of challenge. To deliver a proof-of-concept solution, infinite io turned to Equus for access to cutting edge Intel technology which aided in new product development. In turn, infinite io was able to deliver advanced solutions with a lengthy five-year product life cycle.

The infinite io team, based in Austin, Texas, have solved these problems by tapping the latest Intel technologies incorporated in the Intel® Server System S2600WT for their new Network-Based Storage Controllers. infinite io's controller scans metadata to identify the most-used data and documents. Active data is flagged for "hot" onsite storage, providing the fastest access for end-users. The controllers also ease the process of identifying cold data which can be moved to much more cost effective storage, while continuing to make the data readily accessible. The NSC controllers maintain added data security through deep packet inspection, bump-on-a-wire capability, advanced encryption, and access control list (ACL) support.

infinite io chose the Intel® Server System S2600WT after an extensive search for a server product that meets the extreme performance and reliability specifications of their controllers. Each Intel product undergoes a rigorous design and testing process to ensure each element is capable of meeting the high demands of enterprise organizations. On top of this, Intel backs its products with a three-year warranty that includes option to extend coverage to five years. Customers can also count on Intel's 24/7 support and have confidence in their purchases knowing Intel will replace or refund any product that fails. Similarly, infinite io relies on Equus Onsite Warranty and Support programs in order to tap the benefits of the technical service provider network Equus has established, and expedite parts replacement if necessary.

### What's Inside Counts

The NSC-055s Network Based Metadata Accelerator represents the entry point into infinite io's product line, working in tandem with an enterprise's storage filers the NSC-055s creates a memory-based "metadata map" for file systems and mounts being supported. After the initial file systems scan, deep packet inspection monitors and responds to metadata operations off-loading attached storage systems from the operation. With "always hot" status, and the ability to deliver 1,500,000 metadata operations per second thanks to the performance and technology contained in the Intel server system, the NSC-055s is able to enhance the performance of NAS systems – even those which are flash memory-based. The reduced workload on the NAS can also extend the life of primary storage.

For those seeking an integrated network controller, the NSC-110 controller offers the NSC-055s's capabilities, and builds upon them. The built-in network storage controller handles the directing and re-directing of data to the appropriate NAS or Cloud storage location. Up to 80% of all storage request are for metadata The NSC maps all storage metadata in RAM, which accelerates the response and offloads the filers from these requests. For an end-user, the experience is seamless and transparent. Data is served very quickly regardless of the file's actual storage location.

By utilizing different Intel processor and memory configurations, the NSC platform addresses different customer performance and functional requirements. According to David Sommers, VP Operations, infinite io, the NSC-110s flagship – their highest performance controller, also powered by performance-packed Intel servers -- accounts for 90% of their sales. It offers the best combination of performance and versatility in demanding enterprise scenarios.



Specifications	NSC-110s-1610B	NSC-110s-1610	NSC-110-0810	NSC-055S-1610B	NSC-055s-1610
CPU Cores	40	40	28	40	40
DRAM	768GB	768GB	768GB	768GB	768GB
Flash SSD	5TB	5TB	5TB	5TB	5TB
10 Gbit Ethernet	22	22	14	22	16
Bypass Ports	16	0	16	16	0
Form Factor	2U	2U	2U	2U	2U

### Set it and forget it

Regardless of the version implemented, each controller is managed through a simple web interface, allowing an IT administrator to monitor status anytime and anywhere. The NSC's learning curve is minor. Sommers highlights the simplicity of the controller management and reporting interface, "It's created to be very intuitive. Most IT administrators are quickly up and running with infiniview\*." Speaking in more detail about hardware installation, he continues, "each controller is designed as a plug-and-play transparent solution, requiring no new file systems or storage mount points."

Once installed, the controller empowers an administrator to analyze, migrate, and manage enterprise-scale data. By scanning all attached data volumes, the NSC's software provides an IT professional detailed information about the data itself by evaluating metadata like file size, user type, and date last used. With these insights, IT professionals can create policies to define what data characteristics flag a file for movement from the NAS to an internal or external cloud location.

infinite io's solutions can be utilized in any of three modes. "Out-of-Band" mode helps an IT professional identify which files should be moved. "Passive" mode adds the capability to assess the impact to performance, by exposing the device to the inline data-flow. Finally, "Active" mode enables the automatic movement of files based on the IT professional's defined policies.

Continuing to evaluate cold data residing in less expensive cloud solutions, the controller's analysis engine monitors file status and cost savings reaped through the data migration. Sommers notes, "It has been extremely rewarding to develop a product that literally makes the IT professional a hero. Instant reports created through the controller's web interface show just how much an enterprise is saving every day."

### Inside the Controllers

The NSC's capability requires some innovative and very specialized technology under the hood. Intel's® Trusted Platform Module System running with Intel® Xeon® processor E5 family - alongside Intel® Network Adapters, Intel® RAID Modules and maintenance-free backup, Intel® 10GbE LAN, and more – offers the speed and throughput necessary to make the infinite io solution seamless for an enterprise customer.

As a systems provider, Equus augments the value of infinite io controller solutions through enterprise-level customer consulting, on-site support, and warranty management. Regarding infinite io's controllers, Sommers reflects, "This achievement would not have been possible without many advanced technologies contained in Intel Server Products, and the great customer engagement from Equus."

## Conclusions

IT professionals find themselves pressured like never before to reduce corporate costs, while simultaneously ensuring end-users have fast and easy access to the data they need. infinite io's controller utilizes policy-based rules to identify hot (active) and cold (inactive) data and then migrates the cold data to the cloud, while making it appear to still be on the local filer. Up to 80% of data currently stored on filers is stored in cold. With the help of Intel server compute-intensive capabilities, infinite io's Network-Based Storage Controller and Metadata Accelerator implementations can offer the performance, value, and reliability needed for business-critical storage management. Combining Intel's technology with solutions implementation expertise and support from Equus, infinite io's plug-and-play solutions help enterprises solve some of the biggest data challenges today.

Enterprises interested in getting the benefits of infinite io solutions can contact:

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