

Microsemi Adaptec® HBA 1000 Series Host Bus Adapters

Peak Performance for All-Flash, Software-Defined Storage Solutions

Headquartered in St. Petersburg, Selectel is Russia's leading IaaS provider with over 10,000 clients worldwide. They offer a wide range of managed hosting and cloud services, including the virtual private cloud, cloud storage, bare metal servers, colocation, CDN, and more. All of their services are built on high-quality hardware and operate from reliable Tier III data centers in Moscow and St. Petersburg. Selectel's flexible solutions deliver the raw performance and availability needed to keep a company's mission-critical assets up and running.

Today, Selectel's Tier III data centers, with 1,500 server racks in a 4,750 m² total server area with a total capacity of 12.8 MW, are interconnected by the company's own redundant fiber-optic network.

Software-Defined Storage: Large Storage Pools that Appear as One

The Storage Network Industry Association (SNIA) defines software-defined storage (SDS) as virtualized storage with a service management interface. SDS includes pools of storage with data service characteristics that may be applied to meet the requirements specified through the service management interface. SNIA has also listed the following important characteristics of software-defined storage:

- Automation—Simplified management that reduces the cost of maintaining storage infrastructure
- Standard interfaces—APIs for the management, provisioning, and maintenance of storage devices and services
- Virtualized data path—Block, File, and/or Object interfaces that support applications written to these interfaces
- Scalability—Seamless ability to scale storage infrastructure without disrupting the specified availability or performance
- Transparency—The ability of storage consumers to monitor and manage their own storage consumption against available resources and costs

(Source: SNIA—www.snia.org)

All-Flash, Software-Defined Storage Solutions Demand Connectivity

Selectel diligently monitors peak load performance for its data center customers. To do this, they require fast and stable connectivity in a small form factor. Because this application requires maximum performance and scalability in a cost-effective and reliable storage system, they configured an all-flash, software-defined storage solution with Intel's Xeon E5v3 CPU and Supermicro MBD-X9DRi motherboards in a 1U enclosure. After considering different host bus adapters for connectivity, they selected the Microsemi Adaptec HBA 1000 because, unlike competitive solutions, the HBA 1000 could deliver the required performance.

The performance of the HBA 1000, especially in peak load environments, was the critical factor in selecting this component for the Selectel SDS solution. Other deciding factors were the HBA 1000's lower power consumption resulting in overall lower cost of ownership; enclosure management capabilities; ARCCONF CLI and event monitoring tool for scripting; automated installation and proactive failure notification; and inbox drivers in all major operating system flavors that give Selectel's customers an easy path for installation of their operating system remotely.

Executive Summary

Challenge

Selectel diligently monitors peak load performance for its data center customers. To do this, they require fast and stable connectivity in a small form factor, for its all-flash, software-defined storage solution. Competitive solutions did not deliver the required performance at peak loads.

Solution

The overall performance of their 1U storage server (CPU, motherboard, flash, host bus adapter) was optimized with HBA 1000 12 Gbps PCIe Gen3 host bus adapters. Available in five different configurations with up to 16 internal or 16 external SAS/SATA ports, the HBA 1000 Series offers maximum performance and 60% less power consumption than competing HBAs.

Result

Selectel software-defined storage solution with HBA 1000 host bus adapters delivers the resiliency and maximum performance required for its all-flash, software-defined storage solution.

Selectel

"Our data center customers count on us to deliver the best possible solution. Monitoring performance at peak loads is key to providing a positive customer experience. Our all-flash, software-defined storage solution with the Adaptec HBA 1000 ensures that all hardware (CPU, motherboard, flash, host bus adapter) can process the maximum load in a small footprint."

—Alexander Tugov
Product Director

Microsemi Adaptec® HBA 1000 Series Host Bus Adapters

Peak Performance for All-Flash, Software-Defined Storage Solutions

Performance, Optimized Power Consumption, and Resiliency

The HBA 1000 Series, available in five different 12 Gbps configurations with up to 16 internal or 16 external SAS/SATA ports, offers the highest port count in a low-profile, MD2 form factor and 60% less power consumption than competing HBAs.

The HBA 1000 Series provides the highest levels of storage performance and scalability by connecting numerous state-of-the-art 12 Gbps storage devices that can aggregate their performance to the limits of the PCIe Gen 3 host bus at 6,600 MB/s and achieve over 1.3 million IOPS with minimal overhead or additional latency

The HBA 1000, with its broad operating system support and ecosystem compatibility, is easy to implement and scale when directly connecting up to 16 storage devices or scaling out with full compatibility using expanders. Unified management tools and drivers across Microsemi's HBA, RAID, and expander solutions gives customers easy managability across the entire product line.

The new unified Smart Storage stack delivers resiliency by combining the best of eighth-generation ARC software and drivers with the acquired Smart IP of the most broadly deployed server storage stack. Combined with Microsemi's SSCi (16x12G/8x12G) SmartIO SAS/SATA protocol controller, the HBA 1000 Series provides a robust and stable solution that can handle the toughest system workloads and configurations. It is fully compatible with all existing and future Microsemi HBA, RAID, and expander solutions.

Resources

- HBA 1000 product page: <https://www.microsemi.com/products/storage/host-bus-adapters/hba1000>
- HBA 1000 product brief: <https://www.microsemi.com/products/storage/host-bus-adapters/hba1000#resources>
- HBA 1000 compatibility report: http://download.adaptec.com/pdfs/compatibility_report/microsemi_sas_hba_cr_3-29-17_hba1000.pdf

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