



Mellanox Accelerates RoCE-based BAUM Universal Storage Systems

With the exponential growth of data comes an urgent need for its consolidation, management, and storage. At the same time, companies are increasing their demands for performance and data accessibility. BAUM addresses these complex tasks with universal storage systems that provide an easy and flexible way for businesses, large and small, to manage their data storage infrastructure.

Universal data storage systems based on modern flash technologies, provide a qualitative management service for file and block level access. They also enable a quick response time for demanding applications such as databases, virtual/cloud environments, analytic systems and backup facilities.

With all that said, the distribution of data across the system on a virtual level, allows for better flexibility and reliability. Dynamic space management enables increasing the capacities of virtual devices without being forced to stop systems from using them. Additionally, technical maintenance will not cause a delay in the operation of services.

BAUM storage systems integrate with applications with automatic backups, in terms of storage-specific applications, by creating consistent immediate snapshots and their further replication.

The primary advantages of the BAUM universal storage systems are high performance, reliability, and a built-in system of informational security, complying with the Russian legal requirements.

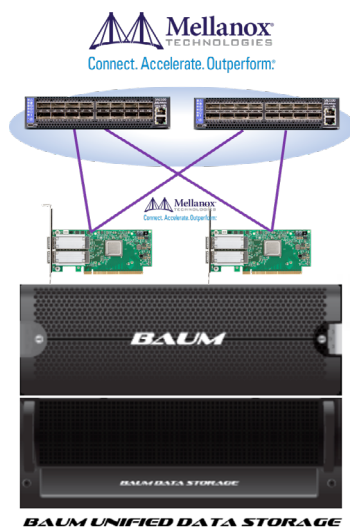


Figure 1. Mellanox and BAUM Joint Solution

KEY BENEFITS

High Performance

- Storage controllers built with the latest generation of processors.
- Application of SSD and NVMe devices.
- Increasing cache memory capacity to up to 60Tb.
- 10/25/40/50/100G Ethernet high-speed I/O interfaces with modern solutions from Mellanox.

Scalability

- BAUM storage systems can be supplied with storage modules of high density, 4U form-factor, increasing disk capacity to more than 600TB per storage module.
- Supports HDDs with capacity up to 10TB and SSDs with capacity up to 15TB.

Reliability & Accessibility

- All system components are duplicated to exclude a single point of failure, as well as to guarantee fault tolerance.
- Hot-plug support eliminates service delays and equipment down-time. Also provides end-to-end data integrity control on the block level.

Ergonomics

- Intuitive management interface (MI) in Russian, with built-in diagnostics modules.

Adaptability & Time-savings

- Integration with applications allows for storage-level and on-the-fly backups, saving valuable time. BAUM backup technologies allow easy operation with petabytes of data.
- Immediate snapshot creation files to be copied and stored in network catalogs, even if the files are opened and locked by an application. Applications can keep writing data to the logical partition while snapshots are being created, thus eliminating the need to make backup outside of working hours.

Unification

- Unified architecture allows the use of virtual disks through both file- and block-access protocols (iSCSI/iSER/FC/NFS/SMB/HTTP/WebDAV).
- Mellanox end-to-end 10/25/40/50/100G Ethernet solution with iSER on RoCE allows BAUM systems to achieve very low latency and high performance for its storage arrays, as compared to other solutions.

IMPROVED PERFORMANCE

BAUM storage system performance was tested in a Mellanox Ethernet environment. BAUM storage systems were connected to two Mellanox Spectrum™ switches in a HA configuration. For performance comparison, the test was implemented with iSCSI Extensions for RDMA (iSER) technology enabled on the Mellanox ConnectX®-4 Lx EN adapters, and with the iSCSI protocol on non-Mellanox adapters.

BAUM storage system provides a logical partition with the following parameters:

Parameter	Setting
Reliability RAID	1
Cache size (1st level)	128 GB
Block size	4k, 8k, 32k
Logical disk size	700 GB

A virtualized system on Windows® Server 2012 R2, with a block device from VMware ESXi, was used as a client.

Workload on the logical partition was simulated with “IOmeter” with the following configuration:

Parameter	Setting
Load type	Randomized read/write
Read/write operations ratio	70/30
Block size	4k, 8k, 32k
Number of sectors	536870912
Measurement duration	1 hour

About Mellanox

Mellanox Technologies is a leading supplier of end-to-end Ethernet interconnect solutions and services for enterprise data centers, Web 2.0, cloud, storage and financial services. More information is available at www.mellanox.com



350 Oakmead Parkway, Suite 100, Sunnyvale, CA 94085
 Tel: 408-970-3400 • Fax: 408-970-3403
www.mellanox.com

The test results showed a noticeable performance increase in all metrics, and latency reduction by 2 times, when using Mellanox Ethernet adapters to connect the BAUM universal storage system to clients.

Actual test results appear in Figure 2, below.

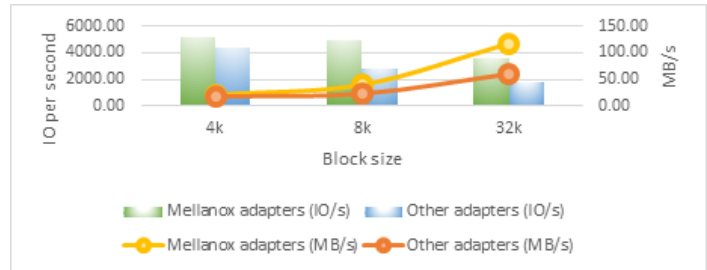


Figure 2. Performance Test Results

About BAUM

BAUM is a Russian software development company focused on classic midrange and software defined storage. It collaborates in research & development with leading scientific centers and universities. <http://npobaum.ru/>