



TATLIN.UNIFIED

Next-generation midrange enterprise storage system

By rethinking existing approaches and using the latest technologies in conjunction with unique in-house developments, we were able to create an enterprise data storage system for a wide range of tasks with exceptional storage density and total cost of ownership.

TATLIN.UNIFIED currently supports conventional block workloads. In the further releases, the system will also offer file workload support and object access. TATLIN.UNIFIED can work simultaneously with NVMe/SSD solid state drives and SAS/NL-SAS mechanical drives.

The storage system is built on a modular hardware platform. It consists of the following key components:

- special controller chassis that accommodates two controllers (working in Symmetric Active-Active mode), which is used for switching components,
- several types of drive chassis.

TATLIN.UNIFIED storage system runs on a modular hardware platform flexible for a variety of workloads. Storage controllers and drive enclosures are integrated within a high-performance PCI Express switches. All components are made redundant and have no single point of failure — your data is safe with TATLIN.

A high-performance, fault-tolerant controller chassis integrates all system modules while giving storage controllers full access to the entire data storage infrastructure. This system component enhances interaction with NVMe drives and reduces the load on hosts by optimizing I/O via Zero-Copy operations.

Flexible data integrity policies with minimal redundancy based on Reed-Solomon codes guarantee data storage reliability with TATLIN.UNIFIED that enables an outstanding fault tolerance with a possible failure of up to 8 drives in a single pool.

Drive chassis are designed to accommodate a variety of drives, from traditional SAS to modern NVMe ones. TATLIN.UNIFIED offers flexible architecture that enables various system configurations, from small All-Flash systems based on NVMe drives to hybrid SAS petabyte-scale systems that makes it possible to store the data for a wide range of tasks in a single platform without any need to buy several storage systems.

Drive chassis, depending on the model, hold up to 96 SAS drives and up to 34 NVMe drives, which accounts for 1.5 PB of capacity per drive chassis. The system can be scaled up to 200 drives and has a potential to increase this figure to 584 in the further releases.

TATLIN.UNIFIED software stack combines the best open storage technologies and unique services developed by YADRO engineers. YADRO software ensures distributed data protection, as well as data management and scaling.

Features

- 4 high-performance Open Power 9 processors
- More than 60 cores per system
- Hybrid storage with solid-state drives (NVMe, SSD) and mechanical drives (SAS, NL-SAS)
- Up to 1,5 PB memory drive enclosure
- Up to 1 TB non-volatile cache
- Performance: up to 1,350,000 IOPs*
- Data integrity protection algorithm Erasure coding
- Fault tolerance: failure of up to 8 drives in a single pool
- Symmetric Active-Active regime of controllers
- Modern user-friendly HTML5 management interface
- Advanced system monitoring

*Workload profile 100/0 read/write, 100% random, block 4K
Please note: The specifications described herein are not final and may be subject to change.

System specifications

SYSTEM COMPONENTS	
Storage controllers	2
Controller chassis	1
Drive chassis	Up to 2
GENERAL DESCRIPTION OF THE ARRAY	
Minimum/maximum number of drives	3 / 200
Processors	4
Cache memory	1 TB
Maximum raw capacity	3166 TB
Drive interface	SAS 3.0, PCIe 3.0
Supported OSs	CentOS 7.6 / 8 Suse 12 SP5 / 15 / 15SP1 RHEL 7.6 / 7.7 / 8.0 Windows Server 2016 / 2019 VMware vSphere 6.5 / 6.7 / 7
Maximum number of SAN hosts	200
Maximum number of pools	100
Maximum number of LUNs	150
Maximum LUN size	1 PB
Maximum number of FC ports	32
Maximum number of Ethernet ports	16
Supported drives	NVMe SSD 1 DWPD 1.92 TB - 15.36 TB U.2 NVMe SSD 3 DWPD 1.6 TB - 6.4 TB U.2 SAS SSD 1 DWPD 1.92 TB - 15.36 TB 2,5" SAS SSD 3 DWPD 1.6 TB - 6.4 TB 2,5" SAS 10K 1.8 TB - 2.4 TB 2,5" NL-SAS 7.2K 10 TB - 16 TB 3,5"

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System specifications

SOFTWARE FEATURES	
Array features	Thin provisioning Parallel writing to all drives to maximize throughput Uniting drives into a single fault-tolerant storage pool Hot pool expansion starting from 1 disk Distributed spare space in the storage pool instead of dedicated spare disks No linking of logical partitions to specific drives MultiPath Symmetric Active-Active controller mode
Access	Block
Interface protocols	iSCSI, FC
Management	WEB HTML5 CLI
Monitoring	Real-time system performance and state analysis by load, response time, IOPS, Bandwidth Advanced reports by more than 20 parameters in a given time-period (up to 1 year) without any additional software installation Interface revealing key system components' states Emergency alerting
Auditing	Logging user actions
Alerting	SNMP SMTP Call Home
Local data integrity protection	Integrity protection using Reed-Solomon codes (Erasure coding) Flexible redundancy policies from 1D+1P to 8D+8P Failure of up to 8 drives in a single pool Background data integrity check
Access control	LDAP/AD integration RBAC support Possibility to create local users
External services support	NTP, DNS
Firmware update	Online
STORAGE CONTROLLER FEATURES	
Form factor	For installation in a controller chassis
Processors	2
Number of cores per processor	32
Memory	DDR4 256/512 Гб ECC RAM
Network for interoperability between storage controllers	100 Gb/s RDMA, 2 ports
Management network	1 Gb/s Ethernet, 2 ports

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System specifications

CONTROLLER CHASSIS FEATURES	
Form factor	3U
Number of expansion slots	Up to 10
Card types for expansion slots	10/25 Gb/s Ethernet, 2 ports 16 Gb/s FC, 4 ports 32 Gb/s FC, 2 ports x16 PCIe 3.0, 4 ports
Maximum number of FC ports per system	Up to 32
Maximum number of Ethernet ports per system	Up to 16
Power supply	1,600 W (2 power supplies with 1+1 redundancy and hot swap support)
Energy consumption	From 450 to 800 W (depending on configuration)
Weight	From 25 to 35 kg (depending on configuration)
Dimensions	448 x 132 x 872 mm

DISK BAY NVME (DBN) DRIVE CHASSIS FEATURES	
Form factor	4U
Raw space	Up to 1,630 TB (34 x NVMe 15 TB and 70 x NL-SAS x 16 TB)
Network interfaces	8 x PCIe Gen3 x4 and 4 x SAS 3.0
Power supply	From 200 to 1,700 W (depending on configuration)
Weight	From 40 to 90 kg (depending on configuration)
Dimensions	448 x 178 x 860 mm

DISK BAY SAS (DBS) DRIVE CHASSIS FEATURES	
Form factor	4U
Unallocated space	Up to 1,536 TB (96 NL-SAS 3.5" x 16 TB)
Network interfaces	4 x SAS 3.0
Power supply	2,000 W (2 power supplies with 1+1 redundancy and hot swap technology)
Energy consumption	From 200 to 1,200 W (depending on configuration)
Weight	From 40 to 100 kg (depending on configuration)
Dimensions	448 x 178 x 860 mm

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