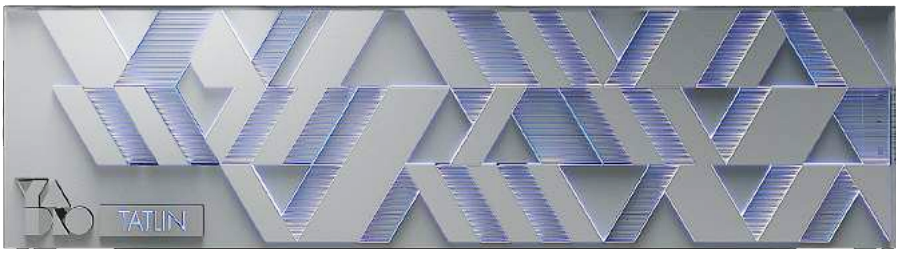
YADRO TATLIN

## TATLIN.UNIFIED

# HYBRID ARRAY FOR UNIFIED WORKLOADS




## HIGHLIGHTS

- High performance failure resilient PCI Express fabric with Zero-Copy capabilities.
- Flexible data protection policies with minimal redundancy based on Reed-Solomon codes.
- 256 GB smart cache in nonvolatile memory.
- Hardware accelerated data reduction.
- Hybrid storage with NVMe/SAS SSDs and SAS/NL-SAS/SATA HDDs.
- Best in class performance with deep parallelization in IO processing.
- Software stack free of legacy code.
- Container-based microservice software architecture for maximum flexibility and scalability.

**TATLIN.UNIFIED** — is a hybrid storage array from **YADRO TATLIN** family designed to address mid-range needs of enterprise. It supports variety of workloads like traditional block and file as well as object. Brand new product designed and developed by the team of storage professionals. YADRO owns end to end production cycle of the storage platform, starting from hardware design, software development up to product manufacturing and support.

YADRO team thoughtfully revised traditional storage approaches and came up with unique product design to deliver game changing but affordable storage system with unmatched performance, density and TCO capabilities which suits for wide range of enterprise workloads.

Flexibility of **YADRO TATLIN** architecture enables smooth but variable adjustments of the system configuration to deliver the exact solution for every individual customer making storage investments smart and fair. **TATLIN.UNIFIED** scales up without any need in replacement of storage components making adjustments completely transparent for applications and business.

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Smart and simultaneous processing of IO operations allows **TATLIN.UNIFIED** to deliver unmatched performance capabilities. 256 GB-sized NVRAM based smart cache accelerates the performance even further by reducing CPU load taking over substantial part of CPU intensive data reduction operations.

**TATLIN.UNIFIED** storage reliability is ensured by flexible data protection policies with minimal redundancy based on Reed-Solomon codes.

**TATLIN.UNIFIED** supports block and file interfaces as well as object access. The hybrid storage system simultaneously operates NVMe/SAS SSDs and SAS/NL-SAS/SATA drives.

**TATLIN.UNIFIED** storage system runs on a modular hardware platform flexible for variety of workloads. The platform itself consists of three major building blocks: PCIe fabric controllers, drive enclosures and storage controllers.

Drive enclosures hold plenty of capacious SAS/SATA drives.. Flexible **TATLIN.UNIFIED** architecture builds the basement for various system configurations starting from small and ultrafast all-flash systems up to hybrid petabyte scale SAS deployments.

High performance and failure resilient PCIe fabric integrates all system components together to provide storage controllers with seamless but shared access to entire storage space. The fabric serves well with various storage media, but optimized for NVMe drives to leverage as much zero-copy opportunities as possible to save IO time spent with storage controllers. Fabric supports up to 96 local drives and offers best possible performance with NVMe media.

Storage controllers are based on **YADRO VESNIN** hardware platform.

**TATLIN.UNIFIED** software stack combines the best open source storage technologies with unique services designed in-house by YADRO team. YADRO software provides distributed storage, storage management and scale up object storage. **TATLIN.UNIFIED** software utilizes container-based microservice architecture, where each tiny microservice serving dedicated role opening a door for unmatched flexibility and scalability of the storage system. **TATLIN.UNIFIED** software stack is designed from scratch with years of storage experience in mind, based on modern technologies, keeping no legacy at background.

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## SPECIFICATIONS

| | |
|---|---|
| | **ARRAY COMPONENTS** |
| Storage Controllers | Up to 4 |
| PCIe Fabric Controllers | 1 |
| Drive Enclosure | Up to 16 |
| | **ARRAY SPECIFICATIONS** |
| Cache | Up to 2tb NVRAM cache in Fabric controller, shared among storage controllers |
| Min/max drives | 12 / 1632 |
| CPU per array | Up to 16 |
| Memory per array | Up to 1TB |
| Max raw capacity | 19 584 TB |
| Drive interfaces | SAS 3.0, NVMe |
| IOPS | 8 mln or above.1 |
| OS support | Linux, Windows, Solaris, AIX, FreeBSD |
| Max file systems per array | 4000 |
| Max file system size | 8PB |
| Max attached snapshots per array (Block) | 6000 |
| Max SAN hosts | 2048 |
| Max number of pools | 100 |
| Max number of LUNs per array | 6000 |
| Max LUN size | 8PB |
| Max FC initiators per array | 4096 |
| Max FC ports per array | 32 |

## SOFTWARE FEATURES

| | |
|---|---|
| Array capabilities | 25% redundancy supporting simultaneous failure of 2 drives.<br>Thin provisioning.<br>Parallel IO to all drives for maximum bandwidth.<br>No drive groups or spare drives.<br>Logical volumes not assigned to specific drives.<br>MultiPath.<br>Active-Active controller mode.<br>ALUA.<br>Realtime deduplication and compression.<br>QoS support.<br>Automatic data tiering. |
| Unified access | File<br>Block<br>Object |
| Interface protocols | iSCSI, FC, FCoE, CIFS, NFS, S3, SWIFT,<br>Object, Archive |

[1] Estimated total performance for 96 NVMe + 96 SAS drives configuration over random read, 4K block size.

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|---|---|
| Management | WEB interface, CLI and Swordfish<br>Separate management and data transfer networks<br>Realtime performance and status information<br>Log of array performance and status |
| Monitoring | SNMP<br>Syslog<br>Email Alerting<br>Call Home |
| Replication | Synchronous |
| Virtualization | VAAI support |
| Tiering | NVMe/SAS/SATA volumes |
| Local protection | Flexible data protection based on Reed-Solomon codes,<br>8d+2p default configuration.<br>Background data integrity verification. |
| Remote protection | Synchronous and asynchronous replication over SAN/Ethernet. |
| Access control | LDAP/AD OAuth integration, Multi tenancy, Network separation |
| Software update | Online |

## STORAGE CONTROLLER SPECIFICATIONS

| | |
|---|---|
| Form factor | 2U |
| CPU | 4 × POWER8 Turismo SCM<br>Up to 48 cores, up to 384 threads |
| Memory | 256 GB ECC RAM with optional extension<br>Bandwidth up to 460 GB/s |
| Internal drive | 256 GB NVMe for OS |
| Networks | 1 PCIe fabric connection adapter (4 × PCIe Gen3 x4)<br>2 × GbE<br>Up to 8 FC |
| Power supply | 1+1 redundant hot swap 80 PLUS Titanium PSUs up to 3000 W each |

## FABRIC CONTROLLER SPECIFICATIONS

| | |
|---|---|
| Form factor | 3U |
| Raw capacity | Up to 192 TB (96 SSD NVMe 2.5″ × 2 TB) |
| Networks | Up to 4 PCIe fabric adapters (4 × PCIe Gen3 x4)<br>Drive Enclosure connection module<br>Embedded 1GbE switches for internal network of the cluster |
| Power supply | 2+ 1 redundant hot swap 80 PLUS Titanium PSUs up to 2000 W each |

## DRIVE ENCLOSURE SPECIFICATIONS

| | |
|---|---|
| Form factor | 4U |
| Raw capacity | Up to 1152 TB (96 SAS 3.5″ × 12 TB) |
| Networks | 4 × PCIe Gen3 x4 |
| Power supply | 1+1 redundant hot swap 80 PLUS Titanium PSUs up to 1200 W each |