**For enterprise and SMB businesses, Tyrone Opslag Unified Block Series is the perfect choice for a highly reliable, scalable and affordable SAN storage system.**

# OPSLAG UNIFIED BLOCK SERIES
## Dual Active Controller & High Availability Design

Tyrone Opslag Unified Block series of products are high performance, simple, secure, scalable and affordable SAN storage system for enterprise and SMB. It is an ideal solution to the applications of mission critical data center, virtualization integration, media and entertainment, or large-scale surveillance; and also, backup and disaster recovery in enterprise, SMB or ROBO (Remote Office/Branch Office) deployments.

The series features a wide range of form factors including a 24-bay, 4U 3.5" LFF chassis, 3U 16-bay, 2U 12-bay, and a 26-bay, 2U 2.5" SFF chassis. This allows more deployment flexibility to meet users' budgets and rack density limitations. The advanced series is a proven high availability SAN storage system. All of the critical components are hot pluggable and designed with full redundancy. This design allows this series to withstand multiple component failures and achieve 99.999% availability.

## PRODUCT HIGHLIGHTS

- High Performance SAN storage system with Dual (Active/Active) controller

- High availability design with no single point of failure

- Intel® Xeon® D-1500, Quad core processor, up to 128GB RAM per controller

- Latest 12Gb SAS 3.0 technology

- Built-in 10GbE iSCSI

- Up to 12,000MB/s sequential read and 8,000MB/s sequential write throughput, up to 1.5 million sequential IOPS

  * Optional feature

- Scale up solution supports over 2.6PB of raw storage capacity

- Advanced Storage Management
  - Thin Provisioning
  - SSD Cache (read and write cache)*
  - Auto Tiering*
  - Snapshot

- Flexible I/O host cards for iSCSI SAN or Fibre Channel SAN

- Local clone and remote replication for disaster recovery

- Virtualization support for VMware VAAI, Microsoft Hyper-V ODX, and Citrix

- Cache-to-Flash memory protection technology

## JBOD

The JBOD Series is a cost-effective DAS (Direct Attached Storage) or JBOD (Just a Bunch Of Disks) for server expansion. The series features a range of form factors which allows more deployment flexibility to meet users' budget and rack density limitations.

| D2-QJC-226D | |
|---|---|
| Form Factor | 2U 26-bay, SFF |
| RAID Controller | Dual-active controller |
| Host Connectivity | 5 x 12Gb/s SAS wide ports (SFF-8644) |
| Drive Type | 2.5" SAS, NL-SAS HDD<br>2.5" SAS, SATA SSD |
| HBAs & RAID Cards | Broadcom (LSI) 12Gb/s & 6Gb/s SAS HBA & RAID Controller Cards<br>ATTO 12Gb/s & 6Gb/s SAS HBA SAS RAID Controller Cards |
| OS Support | Windows 2008, 2008 R2, 2012, 2012 R2, 2016 Storage Spaces<br>SLES 10, 11, 12\| RHEL 5, 6, 7 \| CentOS 6, 7 \| Solaris 10, 11<br>FreeBSD 9, 10 \| Mac OS X 10.11 or later \| VMware, Hyper-V, & Citrix |
| Dimension (HxWxD) | 19" Rackmount<br>88 x 438 x 491 mm |
| Power Supply | 80 PLUS Platinum, two redundant 770W (1+1)<br>AC Input<br>100 ~127V      10A, 50-60Hz<br>200 ~ 240V      5A, 50-60Hz |

# Tyrone® opslag™

## Operating System
- 64bit embedded Linux

## Storage Management
- RAID level 0 ,1 ,0+1 ,3 ,5 ,6 ,10 ,30 ,50, 60, and N-way mirror
- Flexible storage pool ownership
- SSD Cache
- Auto Tiering
- Global, local, and dedicated hot spares
- Write-through and write-back cache policy
- Online disk roaming
- Spreading RAID disk drives across enclosures
- Background I/O priority setting
- Instant RAID volume availability
- Fast RAID rebuild
- Online storage pool expansion
- Online volume extension
- Online volume migration
- Auto volume rebuilding
- Instant volume restoration
- Online RAID level migration
- SED drive support
- Video editing mode for enhanced performance
- Disk drive health check and S.M.A.R.T attributes
- Storage pool parity check and media scan for disk scrubbing
- SSD wear lifetime indicator
- Disk drive firmware batch update

## iSCSI Host Connectivity
- Proven QSOE 2.0 optimization engine
- CHAP authentication
- SCSI-3 PR (Persistent Reservation for I/O fencing) support
- iSNS support
- VLAN (Virtual LAN) support
- Jumbo frame (9,000 bytes) support
- Up to 256 iSCSI targets
- Up to 512 hosts per controller
- Up to 1,024 sessions per controller

## Fibre Channel Host Connectivity
- Proven QSOE 2.0 optimization engine
- FCP-2 & FCP-3 support
- Auto detect link speed and topology
- Topology supports point-to-point[12] and loop
- Up to 256 hosts per controller

## High Availability
- Dual-Active (Active/Active) SAN controllers
- Cache mirroring through NTB bus
- ALUA support
- Management port seamless failover
- Fault-tolerant and redundant modular components for SAN controller, PSU,
- FAN module, and dual port disk drive interface
- Dual-ported HDD tray connector
- Multipath I/O and load balancing support (MPIO, MC/S, Trunking, and LACP)
- Firmware update with zero system downtime

Security
- Secured Web (HTTPS), SSH (Secure Shell)
- iSCSI Force Field to protect from mutant network attack
- iSCSI CHAP authentication
- SED drive support

## Storage Efficiency
- Thin Provisioning with space reclamation
- Auto Tiering with 3 levels of storage tiers

## Networking
- DHCP, Static IP, NTP, Trunking, LACP, VLAN, Jumbo frame (up to 9,000 bytes)

## Advanced Data Protection
- Snapshot, block-level, differential backup
- Writeable snapshot support
- Manual or schedule tasks
- Up to 64 snapshots per volume
- Up to 64 volumes for snapshot
- Up to 4,096 snapshots per system
- Remote Replication
- Asynchronous, block-level, differential backup based on snapshot technology
- Traffic shaping for dynamic bandwidth controller

- Manual or schedule tasks
- Auto rollback to previous version if current replication fails
- Up to 32 schedule tasks per controller
- Volume clone for local replication
- Configurable N-way mirroring
- Integration with Windows VSS (Volume Shadow Copy Service)
- Instant volume restoration
- Cache-to-Flash memory protection[10]
- M.2 flash module
- Power module: BBM or SCM (Super Capacitor Module)
- USB and network UPS support with SNMP management

## Virtualization Certification
- Server Virtualization & Clustering
- VMware VAAI for iSCSI & FC
- Microsoft ODX

## Easy Management
- USB LCM, serial console support, online firmware update
- Intuitive Web management UI, secured web (HTTPS), SSH (Secured Shell), LED indicators
- S.E.S. support, S.M.A.R.T. support, Wake-on-LAN, and Wake-on-SAS Green & Energy Efficiency
- 80 PLUS Platinum power supply
- Wake-on-LAN to turn on or wake up the system only when necessary
- Auto disk spin-down

## Host Operating Systems Support
- Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016
- SLES 10, 11, 12
- RHEL 5, 6, 7
- CentOS 6, 7
- Solaris 10, 11
- FreeBSD 9, 10
- Mac OS X 10.11 or later

10 The function is optional and is not included in the default package.
12 16Gb Fibre Channel only supports Point-to-Point topology.