EonStor DS 4000 series

High-powered performance featuring 12Gb/s SAS for midrange storage market

Latest SAS 3.0 technology for expandability and performance

- 12Gb/s SAS interface on client and drive sides
- 12 Gb/s SAS doubling the previous 6Gb/s transfer speed

Leading performance

- 11,000MB/s seq. read
- 4,200MB/s seq. write
- Up to 1.5M IOPS
- Massive throughput gets you ready for 4K media and beyond

Flexible interface options

- Dual host boards per controller, for extra connectivity
- Mixed FC, SAS, iSCSI and FCoE
- Massive performance gain

Wide scalable

- Connection with SAS 12Gb/s JBOD
- Dual SAS 12Gb/s expansion ports to maximize throughput
- Up to 444 drives per system
- Compatible JBODs in different form factors

SSD optimized

- SSD Cache and automated storage tiering
- SSD drive wear indication

Emergency backup power

- Super capacitors with flash module
- Cache data backup to flash module during power outage
- Long lasting and maintenance-free

EonStor DS 4000 systems deliver top-notch performance in their segment, bringing unmatched power to businesses and enterprises. With their unique dual host board design and 12Gb/s SAS interfaces to internal SAS or SATA disk drives, EonStor DS 4000 systems reach a massive throughput accommodating even highly demanding storage network workloads such as media editing. At the same time, EonStor DS 4000 systems maintain strict backwards compatibility with legacy interconnects for easy deployment in diverse environments. They are extremely scalable and provide access to advanced data services such as SSD Cache, automated storage tiering, and self-encrypting drives.

Native support for 12Gb/s SAS: host and drive side

The 12Gb/s SAS interface offers a low latency pathway without compromising performance due to delays or bandwidth limits. On EonStor DS 4000 systems, 12Gb/s SAS has been implemented for client interfacing and importantly for drives. It features built-in connection scaling, adapting to different capacities and adjusting actual connection bandwidth based on real time loads. Users benefit from a better cost-performance ratio with 12Gb/s SAS, gaining improved return on investment.

Massive performance makes EonStor DS 4000 system perfect for media industry

Thanks to optimized design and advanced processing power, EonStor DS 4000 systems can easily handle even very intense networked storage demands. They are capable of up to 1.3M IOPS, with a sequential read throughput of up to 11,000MB/s and a sequential write throughput of as much as 4,200MB/s. These are unprecedented performance figures for mid-range storage, and ensure users are prepared to take on IT challenges for years to come without frequent hardware replacement.

Leading performance turns EonStor DS 4000 systems into productivity-boosting hubs for multiple 2K resolutions and 4K resolutions streams in media industry, with no slowdown or lag experienced thanks to their ample processing power and storage bandwidth. Strong performance means smooth service to large workforces.

EonStor DS 4000 system features dual host boards per controller

Innovative design places two host boards side by side on EonStor DS 4000 systems, unlocking higher levels of flexibility and performance. Whereas most storage systems feature a single host board, the EonStor DS 4000 series multiplies connectivity, versatility, and performance with two host boards. It enables different combinations of Fibre Channel (up to 16Gb/s), SAS (up to 12Gb/s), and iSCSI (up to 10Gb/s). Each host board can also support hybrid interfaces, effectively quadrupling connectivity. This groundbreaking feature is very unique for mid-range enterprise storage and offered at extremely competitive pricing.

Data and security services

- Compatible with self-encrypting drives (SEDs)
- Secure remote replication
- Intelligent Drive Recovery (IDR) media scan and error correction
- Snapshot, thin Provisioning, and more

User friendly

- Intuitive SANWatch and RAIDWatch interfaces
- Command line interface customization
- User friendly yet sophisticated UI with full access to features

Green design

- Redundant 80 PLUS power supplies
- Accommodate 2.5" and 3.5" drives (hybrid tray)
- Intelligent drive and fan spin-down

Wide scalability with support for 12Gb/s JBOD connections

EonStor DS 4000 products feature two 12Gb/s SAS ports for connecting to compatible Infortrend JBOD expansion enclosures. The 12Gb/s SAS interface doubles connection speeds to JBODs compared to previous generation EonStor DS systems, and having two ports makes connecting multiple enclosures easier and less messy in terms of cabling. Due to the doubled connectivity and high performance of the EonStor DS 4000 series, users can have up to 436 drives per system.

Fully optimized for SSD

The storage industry is moving to high speed, reliable, and efficient solid state drives, and the EonStor DS 4000 series is future-ready. In addition to hybrid drive trays (2.5"/3.5"), systems support a range of SSD-focused software solutions. Self-managing SSD Cache autonomously allocates the hottest data to a high speed cache pool with up to 16X more read IOPS and 88% lower latency. SSD Cache has no performance penalty. It is complemented by automated storage tiering (up to 4-level), which also sorts data and places it in different tiers based on tenure and access frequency. Tiering leverages the advantages of each drive type: SSD and SAS speed for essential data, NL-SAS and SATA capacity for archived media.
To protect investment in SSDs, systems feature intelligent SSD wear level indication with real time health monitoring. Users can keep an eye on drives and pre-empt possible failure, thus avoiding data loss.

Emergency backup power safeguards data

Protecting against data loss due to prolonged power outages, EonStor DS 4000 systems include super capacitors paired with a flash module. If power fails, data is written to the flash cache and kept powered by the super capacitors for extended periods of time. Super capacitors require no maintenance and last for the life of the storage system, making them a very convenient and cost effective emergency backup measure.

Comprehensive data and security services

All EonStor DS 4000 products support self-encrypting drives, or SEDs, which arrive factory-secured against even the most direct physical intrusion. SEDs defend against data theft and misplacement and make deletion much faster than traditional methods, as invalidating the key renders all data on the drive permanently unreadable.

For disaster recovery, the EonStor DS 4000 series supports secure remote replication. Local replication is offered via snapshot and volume copy/mirror. Thin provisioning is standard, and all data is covered by smart media scan and IDR (Intelligent Drive Recovery) technology, which detects faulty sectors and quickly clones affected data to prevent loss, even due to silent errors that would go unnoticed by other storage systems. Every feature is easily accessible from the user friendly SANWatch browser-based interface.

Technical Specifications

Model name	DS 4016R	DS 4016S
Form factor	3U 16-bay LFF	
Storage controller	Dual-redundant	Single upgradable to redundant
Max. host ports (per system)	20 ports	10 ports

Host connectivity (per controller)	**Host board 1:**	2 x 16Gb FC ports 2 x 12Gb SAS ports 2/4 x 10Gb iSCSI ports (SFP+)[1] 4 x 8Gb FC ports [1] 4 x 10Gb FCoE ports [1]
	Host board 1 + Host board 2:	2 x 16Gb FC ports + 2 x 16Gb FC ports 2 x 12Gb SAS ports + 2 x 12Gb SAS ports 2/4 x 10Gb iSCSI ports (SFP+)[1] + 2 x 16Gb FC ports 4 x 8Gb FC ports [1] + 4 x 8Gb FC ports [1] 2/4 x 10Gb iSCSI ports (SFP+)[1] + 2/4 x 10Gb iSCSI ports(SFP+)[1] 4 x 10Gb FCoE ports [1] + 4 x 10Gb FCoE ports [1] 2/4 x 10Gb iSCSI ports (SFP+)[1] + 4 x 8Gb FC ports [1]

Onboard iSCSI ports (per controller)	2 x 1Gb/ iSCSI port
Cache memory (per controller)	2GB, 4GB, 8GB, 16GB
Max. drives (per system)	16
Max. drives (via expansion enclosures)	436
Expansion enclosure (JBOD)	JB 3016 JB 3060 [5]
SAS expansion ports (per controller)	2 x 12Gb/ SAS port
Cache backup techniques	Super capacitor + Flash module
Supported drives [2]	• 2.5" SATA/SAS SSD • 2.5" 10K/15K RPM SAS HDD • 3.5" 7200 RPM NL SAS HDD

Power & Cooling	Power supply: Two redundant 530W; Voltage and Frequency: 100-240 Vac, 50-60Hz	
	Power consumption: 338 Heat dissipation(BTU/hour): 1259	Power consumption: 250 Heat dissipation(BTU/hour): 1259

Green design	• 80 PLUS power supplies delivering more than 80% energy efficiency • Intelligent multi-level drive spin-down
RAID configurations	• RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 • Up to 32 logical drives and 64 par titions per logical volume • Up to 2048 LUNs
Regulatory [3]	• Safety : UL, BSMI, CB, EAC • Electromagnetic Compatibility : CE, BSMI, FCC, KC

Data Service

Local Replication (Standard license is defult included and advanced is an optional license)	Snapshot	Snapshot images per source volume Snapshot images per system	Standard License: 64 / Advanced License: 256 Standard License: 128 / Advanced License: 4096
	Volume Copy/Mirror	Source volumes per system Replication pairs per source volume Replication pairs per system	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256

Thin Provisioning (default included)	" Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space
Self-encrypting drives	Unique factory encryption secures data plus makes deletion simple and complete
Remote Replication (optional licesne)	Replication per source volume: 16 Replication pairs per source volume: 4 Replication pairs per system: 64
Automated Storage Tiering (optional license)	Two(2) or four(4)storage tiers based on drive types SSD supports

SSD Cache (optional license)	• Accelerating data access for random read-intensive environments, such as OLTP
	• Supports up to four SSDs per controller
	• Recommended DIMM capacity per controller for SSD Cache pool:
	  DRAM:2GB Max SSD Cache Pool Size:150GB DRAM:4GB Max SSD Cache Pool Size: 400GB
	  DRAM:8GB Max SSD Cache Pool Size: 800GB DRAM:16GB Max SSD Cache Pool Size: 1,600GB

Availability and Reliability	Redundant, hot-swappable hardware modules Multi-pathing support (EonPath); Device mapper support Cache backup technology: protects cached data during power outage by flushing data into flash memory Port trunking / link aggregation (IEEE 802.3ad), fail-over, jumbo frame
Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS
OS support	Microsoft Windows Server 2008 / 2008 R2 / 2012 / 2012 R2 , Microsoft Windows Hyper-V, Red Hat Enterprise, Linux, SUSE Linux Enterprise, Sun Solaris, Mac OS X, HP-UX, IBM AIX, VMware, Citrix XenServer, OpenStack Cinder

Service and support [4]	Standard service	3-year limited hardware warranty and 8x5 phone, web, and email support (Batteries are covered under warranty for 2 years)
	Upgrade/extension options	Replacement part dispatch on the next business day (up to 5 years) Advanced service: 24x7 phone, web, and email support + onsite diagnostics on the next business day (up to 5 years) Premium service: 24x7 phone, web, and email support + onsite diagnostics in 4 hours (up to 5 years) Extended standard service up to 5 years

1. 4-port 10Gb iSCSI, 4-port 8Gb FC, 2-port 16Gb FC and 4-port four-in-one host board. (FCoE will be released in Q4 2015)
2. For the latest compatibility details, refer to our official website for the latest EonStor DS Compatibility Matrix.
3. Check with your local sales representative for complete details.
4. All EonStor DS systems ship with standard service. Extended service terms may vary by region.
5. Available in Q3 2015.

High IOPS Solutions

Model name	DS 4016RT	DS 4016ST
Form factor	3U 16-bay LFF	
Storage controller	Dual-redundant	Single upgradable to redundant
Max. host ports (per system)	20 ports	10 ports

Host connectivity (per controller)	**Host board 1**	2 x 16Gb FC ports 2 x 12Gb SAS ports 2/4 x 10Gb iSCSI ports (SFP+)[1] 4 x 8Gb FC ports [1] 4 x 10Gb FCoE ports [1]
	Host board 1 **+** **Host board 2**	2 x 16Gb FC ports + 2 x 16Gb FC ports 2 x 12Gb SAS ports + 2 x 12Gb SAS ports 2/4 x 10Gb iSCSI ports (SFP+)[1] + 2 x 16Gb FC ports 4 x 8Gb FC ports [1] + 4 x 8Gb FC ports 2/4 x 10Gb iSCSI ports (SFP+)[1] + 2/4 x 10Gb iSCSI ports(SFP+)[1] 4 x 10Gb FCoE ports [1] +4 x 10Gb FCoE ports [1] 2/4 x 10Gb iSCSI ports (SFP+)[1] + 4 x 8Gb FC ports [1]

Onboard iSCSI ports (per controller)	2 x 1Gb/ iSCSI port
Cache memory (per controller)	2GB, 4GB, 8GB, 16GB
Max. drives (per system)	16
Max. drives (via expansion enclosures)	436
Expansion enclosure (JBOD)	JB 3016 JB 3060 [5]
SAS expansion ports (per controller)	2 x 12Gb/ SAS port
Cache backup techniques	Super capacitor + Flash module
Supported drives [2]	• 2.5" SATA/SAS SSD • 2.5" 10K/15K RPM SAS HDD • 3.5" 7200 RPM NL SAS HDD

Power & Cooling	Power supply: Two redundant 530W; Voltage and Frequency: 100-240 Vac, 50-60Hz	
	Power consumption: 338 Heat dissipation(BTU/hour): 1259	Power consumption: 250 Heat dissipation(BTU/hour): 1259

Green design	• 80 PLUS power supplies delivering more than 80% energy efficiency • Intelligent multi-level drive spin-down
RAID configurations	• RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 • Up to 32 logical drives and 64 par titions per logical volume • Up to 2048 LUNs
Regulatory [3]	• Safety : UL, BSMI, CB, EAC • Electromagnetic Compatibility : CE, BSMI, FCC, KC

Data Service

Local Replication (Standard license is defult included and advanced is an optional license)	Snapshot	Snapshot images per source volume Snapshot images per system	Standard License: 64 / Advanced License: 256 Standard License: 128 / Advanced License: 4096
	Volume Copy/Mirror	Source volumes per system Replication pairs per source volume Replication pairs per system	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256

Thin Provisioning (default included)	" Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space
Self-encrypting drives	Unique factory encryption secures data plus makes deletion simple and complete
Remote Replication (optional licesne)	Replication per source volume: 16 Replication pairs per source volume: 4 Replication pairs per system: 64
Automated Storage Tiering (optional license)	Two(2) or four(4)storage tiers based on drive types SSD supports
SSD Cache (optional license)	• Accelerating data access for random read-intensive environments, such as OLTP • Supports up to four SSDs per controller • Recommended DIMM capacity per controller for SSD Cache pool: DRAM:2GB Max SSD Cache Pool Size:150GB DRAM:4GB Max SSD Cache Pool Size: 400GB DRAM:8GB Max SSD Cache Pool Size: 800GB DRAM:16GB Max SSD Cache Pool Size: 1,600GB

Availability and Reliability	Redundant, hot-swappable hardware modules Multi-pathing support (EonPath); Device mapper support Cache backup technology: protects cached data during power outage by flushing data into flash memory Port trunking / link aggregation (IEEE 802.3ad), fail-over, jumbo frame
Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS
OS support	Microsoft Windows Server 2008 / 2008 R2 / 2012 / 2012 R2 , Microsoft Windows Hyper-V, Red Hat Enterprise, Linux, SUSE Linux Enterprise, Sun Solaris, Mac OS X, HP-UX, IBM AIX, VMware, Citrix XenServer, OpenStack Cinder

Service and support [4]	Standard service	3-year limited hardware warranty and 8x5 phone, web, and email support (Batteries are covered under warranty for 2 years)
	Upgrade/extension options	Replacement part dispatch on the next business day (up to 5 years) Advanced service: 24x7 phone, web, and email support + onsite diagnostics on the next business day (up to 5 years) Premium service: 24x7 phone, web, and email support + onsite diagnostics in 4 hours (up to 5 years) Extended standard service up to 5 years

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5. Available in Q3 2015.

High IOPS Solutions

Model name	DS 4024RTB	DS 4024STB
Form factor	2U 24-bay SFF	
Storage controller	Dual-redundant	Single upgradable to redundant
Max. host ports (per system)	20 ports	10 ports

Host connectivity (per controller)[5]	Host board 1	2 x 16Gb FC ports 2 x 12Gb SAS ports 2/4 x 10Gb iSCSI ports (SFP+) [1] 4 x 8Gb FC ports [1] 4 x 10Gb FCoE ports [1]
	Host board 1 + Host board 2	2 x 16Gb FC ports + 2 x 16Gb FC ports 2 x 12Gb SAS ports + 2 x 12Gb SAS ports 2/4 x 10Gb iSCSI ports (SFP+)[1] + 2 x 16Gb FC ports 4 x 8Gb FC ports [1] + 4 x 8Gb FC ports 2/4 x 10Gb iSCSI ports (SFP+)[1] + 2/4 x 10Gb iSCSI ports(SFP+)[1] 4 x 10Gb FCoE ports [1] +4 x 10Gb FCoE ports [1] 2/4 x 10Gb iSCSI ports (SFP+)[1] + 4 x 8Gb FC ports [1]

Onboard iSCSI ports (per controller)	2 x 1Gb/ iSCSI port
Cache memory (per controller)	2GB, 4GB, 8GB, 16GB
Max. drives (per system)	24
Max. drives (via expansion enclosures)	444
Expansion enclosure (JBOD)	JB 3016 JB 3024B JB 3060 [5]
SAS expansion ports (per controller)	2 x 12Gb/ SAS port
Cache backup techniques	Super capacitor + Flash module
Supported drives [2]	• 2.5" SATA/SAS SSD • 2.5" 10K/15K RPM SAS HDD

Power & Cooling	Power supply: Two redundant 530W; Voltage and Frequency: 100-240 Vac, 50-60Hz	
	Power consumption: 313 Heat dissipation(BTU/hour): 761	Power consumption: 238 Heat dissipation(BTU/hour): 761

Green design	• 80 PLUS power supplies delivering more than 80% energy efficiency • Intelligent multi-level drive spin-down
RAID configurations	• RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 • Up to 32 logical drives and 64 par titions per logical volume • Up to 2048 LUNs
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3. Check with your local sales representative for complete details.
4. All EonStor DS systems ship with standard service. Extended service terms may vary by region.
5. 10Gb iSCSI host board is available in Q3 2015.

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