



DATA SHEET

## Intelligent Storage System Exos X 2U12



Seagate® Exos® X advanced storage array is a petabyte-scale, rack-mounted block storage enclosure with self-healing technology, advanced data protection, and software value delivering superefficient mass-capacity storage for conventional data centers and cloud infrastructure.



### Product Highlights

- Self-healing storage technology, ADAPT, and ADR
- Deliver unfettered data access with dual redundant controllers capable of achieving superior sequential read and write performance
- Expand a data center seamlessly with flexible SSD, HDD, and hybrid configuration options
- Efficiently manage hot and cold data with real-time data tiering
- Save space and maximize capacity by stacking 10 Enclosures for 120 drives of data storage

## Key Advantages

**Reliable and Self-healing.** Exos X features self-healing storage technology, Advanced Distributed Autonomic Protection Technology (ADAPT) and Autonomous Drive Regeneration (ADR). Field-proven design with five nines (99.999%) availability. Seagate ADAPT erasure code data protection software dramatically reduces array rebuild overhead. Unique Seagate ADR reduces human intervention and e-waste by automatically renewing hard drives "in situ" and on the fly.

**Built for speed and resilience.** Up to 2 times the performance of the previous generation with redundant active-active controllers powered by the ASIC-based VelosCT controller architecture. Streamline your overhead, with improved throughput, management, and recovery.

**Easy to Set Up, Maintain, and Expand.** All system components—the enclosure, the controller, the firmware, and the drives—are developed and optimized by our engineers to work together seamlessly. The modular architecture makes components interchangeable between systems, and upgrades are simple due to common FRUs, PCMs, controllers, and software.

**Gain and Scale Capacity with Consistent High Performance.** The Exos X 2U12 enables even the smallest business with maximum speed and throughput. Additionally, businesses can expand the system as data requirements grow, with 12 drive slots of storage capacity in a 2U rackmount enclosure. Connect up to ten 2U12 enclosures together for a total of 120 drive slots.

**Build In Security at the Foundation of the Data Life Cycle.** Protect the most valuable business assets with Seagate Secure™ cybersecurity features and intelligent firmware—such as SFTP, SED support, and administrator access controls—that provide built-in measures for reliable and safe file access, transfer, and management.

**Reduce power consumption.** 80 PLUS Gold and 80 PLUS Platinum power supply options with certified adaptive cooling technology..



| Specifications                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------|------------------------|-------------------|------------------------|---------------------|------------------------|---------------------|-------------------------|----------------------|
| Controller Model                           | Seagate 4006 VELOSCT (2 per enclosure)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Controller Performance                     | Up to 12GB/s read throughput, 10GB/s write throughput, 725K IOPS (Random Read)                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Advanced Software Features                 | Auto-Tiering, Snapshots, Asynchronous Replication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Base Array Software Features               | Virtual pools, Thin provisioning, ADAPT, SSD read cache, Encryption                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| High-Availability Features                 | Redundant hot-swap controllers, Redundant hot-swap drives, fans, power, Dual power cords, Hot standby spare, Automatic failover, Multi-path support                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Device (Drive) Support                     | SAS HDD, NL-SAS HDD, SAS SSD (2.5 or 3.5 Form Factors)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Data Protection                            | Seagate ADAPT and RAID levels supported: 0, 1, 5, 6, 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Self Healing Technology                    | Autonomous Drive Regeneration (ADR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| System Maximum Expansion                   | 2U12 Arrays, Up to 12 drives per enclosure, 10 enclosures maximum including the master, totaling 120 Drives<br>2U24 Arrays, Up to 24 drives per enclosure, 10 enclosures maximum including the master, totaling 240 Drives<br>5U84 Arrays, Up to 84 drives per enclosure, 4 enclosures maximum including the master, totaling 336 Drives                                                                                                                                                                                                      |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Physical                                   | 2U: Height: 87.9mm / 3.46 in, Width: 443mm / 17.44 in, Depth: 630mm / 24.8 in, Width w/ear mounts: 483mm / 19.01 in, Weight: 17kg / 38 lb, Weight (with drives): 30kg / 66 lb                                                                                                                                                                                                                                                                                                                                                                 |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Hosts                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| External Ports                             | 4 per Controller, 8 per System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Fibre Channel Models                       | Host speed: 32/16 Gb/s Fibre Channel, Interface type: SFP+/SFP28                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| iSCSI Models                               | Host speed: 10Gb/s, 25Gb/s iSCSI, Interface type: SFP+/SFP28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Ethernet                                   | 10GBASE-T (auto-negotiation to 1Gb)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| SAS Models                                 | Host speed: 12Gb/s, 6Gb/s SAS, Interface type: HD Mini-SAS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| System Configuration                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| System Memory                              | 48GB per system                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Volumes per System                         | 1024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Cache                                      | Mirrored cache, Supercapacitor cache backup, Cache backup to flash – nonvolatile                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Management                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Interface Types                            | 10/100/1000 Ethernet, Micro USB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Protocols Supported                        | SNMP, SSL, SSH, SMTP, HTTP(S), Redfish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Management Consoles                        | Web GUI, CLI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Management Software                        | Seagate Systems storage management console, Remote diagnostics, Nondisruptive updates, Volume expansion                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Power Requirements—AC Input                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Input Power Requirements                   | 100VAC-240VAC, 50Hz/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Max Power Output per PSU                   | 580W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Environmental/Temperature Ranges           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Operating/Nonoperating Temperature         | ASHRAE A2, 5°C to 35°C (41°F to 95°F), derate 1°C/300m above 900m, 20°C/hr max rate of change / -40°C to 70°C (-40°F to 158°F)                                                                                                                                                                                                                                                                                                                                                                                                                |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Operating/Nonoperating Humidity            | -12°C DP and 8% RH to 21°C DP and 80% RH, max DP 21°C / 5% to 100% noncondensing                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Operating/Nonoperating Shock               | 5 Gs, 11ms, half sine pulses / 15 Gs, 7ms, half sine pulses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Operating/Nonoperating Vibration           | 0.18 Gs rms 6Hz to 500Hz random / 0.5 (Z-axis) and 0.25 (X&Y-axis) Gs rms 6Hz to 200Hz random                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Power Supply Units                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Power Supply                               | <p>Ecodesign (Part SP-PCM01-HE580-AC/Model FS580FS104G-XX) – Gold</p> <table border="0"> <tr> <td>Power Efficiency 115VAC/60Hz   230VAC50/Hz</td> <td>Power Factor Condition</td> </tr> <tr> <td>10% Load = &gt;80%   &gt;80%</td> <td>10% Loading = N/A</td> </tr> <tr> <td>20% Load = &gt;87%   &gt;88%</td> <td>20% Loading = &gt;0.90</td> </tr> <tr> <td>50% Load = &gt;90%   &gt;92%</td> <td>50% Loading = &gt;0.90</td> </tr> <tr> <td>100% Load = &gt;87%   &gt;88%</td> <td>100% Loading = &gt;0.95</td> </tr> </table>             | Power Efficiency 115VAC/60Hz   230VAC50/Hz | Power Factor Condition        | 10% Load = >80%   >80% | 10% Loading = N/A | 20% Load = >87%   >88% | 20% Loading = >0.90 | 50% Load = >90%   >92% | 50% Loading = >0.90 | 100% Load = >87%   >88% | 100% Loading = >0.95 |
| Power Efficiency 115VAC/60Hz   230VAC50/Hz | Power Factor Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 10% Load = >80%   >80%                     | 10% Loading = N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 20% Load = >87%   >88%                     | 20% Loading = >0.90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 50% Load = >90%   >92%                     | 50% Loading = >0.90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 100% Load = >87%   >88%                    | 100% Loading = >0.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| Power Supply                               | <p>Ecodesign (Part SP-PCM4-PT580-AC/Model SGT-S-0580ADU003) – Platinum</p> <table border="0"> <tr> <td>Power Efficiency 115VAC/60Hz   230VAC50/Hz</td> <td>Power Factor Conditions (PFC)</td> </tr> <tr> <td>10% Load = &gt;80%   &gt;80%</td> <td>10% Loading = N/A</td> </tr> <tr> <td>20% Load = &gt;90%   &gt;90%</td> <td>20% Loading = &gt;0.90</td> </tr> <tr> <td>50% Load = &gt;92%   &gt;94%</td> <td>50% Loading = &gt;0.95</td> </tr> <tr> <td>100% Load = &gt;89%   &gt;91%</td> <td>100% Loading = &gt;0.95</td> </tr> </table> | Power Efficiency 115VAC/60Hz   230VAC50/Hz | Power Factor Conditions (PFC) | 10% Load = >80%   >80% | 10% Loading = N/A | 20% Load = >90%   >90% | 20% Loading = >0.90 | 50% Load = >92%   >94% | 50% Loading = >0.95 | 100% Load = >89%   >91% | 100% Loading = >0.95 |
| Power Efficiency 115VAC/60Hz   230VAC50/Hz | Power Factor Conditions (PFC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 10% Load = >80%   >80%                     | 10% Loading = N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 20% Load = >90%   >90%                     | 20% Loading = >0.90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 50% Load = >92%   >94%                     | 50% Loading = >0.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |
| 100% Load = >89%   >91%                    | 100% Loading = >0.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                            |                               |                        |                   |                        |                     |                        |                     |                         |                      |

seagate.com



© 2022 Seagate Technology LLC. All rights reserved. Seagate, Seagate Technology, and the Spiral logo are registered trademarks of Seagate Technology LLC in the United States and/or other countries. Exos, the Exos logo, and Seagate Secure are either trademarks or registered trademarks of Seagate Technology LLC or one of its affiliated companies in the United States and/or other countries. All other trademarks or registered trademarks are the property of their respective owners. When referring to drive capacity, one gigabyte, or GB, equals one billion bytes, and one terabyte, or TB, equals one trillion bytes. Your computer's operating system may use a different standard of measurement and report a lower capacity. In addition, some of the listed capacity is used for formatting and other functions, and thus will not be available for data storage. Actual data rates may vary depending on the operating environment and other factors, such as chosen interface and disk capacity. The export or re-export of Seagate hardware or software is regulated by the U.S. Department of Commerce, Bureau of Industry and Security (for more information, visit [www.bis.doc.gov](http://www.bis.doc.gov)), and may be controlled for export, import, and use in other countries. Seagate reserves the right to change, without notice, product offerings or specifications. DS1994.8-2212US