WATER PANTHER EXPANSE SAN DRIVE SERIES

Water Panther Expanse delivers highly available and qualified expansive storage solutions. These enterprise data center hard disk drives and eSSD options are validated for storage-area-network (SAN) storage servers, hyper-converged virtualized SAN appliances, and hybrid SAN clusters with software defined storage management. Managed service providers and value-added resellers alike can streamline storage expansion with various encryption, sector format, endurance, and capacity levels. The Expanse series mitigates hardware bottlenecks and lowers software overhead through end-to-end data protection from using advanced onboard ECC algorithms. All Expanse drives further preserve data integrity by using non-volatile write cache flushing mechanisms which enable power-loss data protection in cases such as kernel errors and unexpected cold reboots. Expand your horizons and take data to new heights with the Water Panther Expanse series.

Compatible Host Operating Systems

- Canonical® Ubuntu® LTS
- Citrix® XenServer®
- Microsoft Windows Server® with Hyper-V
- Red Hat® Enterprise Linux
- SUSE® Linux Enterprise Server
- VMware® ESXi

Features

- Cache Buffer: Advanced onboard ECC for end-to-end data protection, non-volatile write cache flushing technology for power-loss protection.

- Sector Format Options: Legacy 512-byte support, 4K native (4Kn) HDD options available which require UEFI boot if used as boot disks and 4Kn drives cannot be mixed with 512-byte formatted arrays.

- Encryption Options: Standard models feature overwrite secure erase, SED models enable crypto sanitize for streamlined drive retirement and require TCG compliant disk controllers.

- Interface: Wide selection of standard SATA, power-disable SATA, SAS, and U.2 NVMe (SAS and U.2 NVMe require compatible disk controllers and backplane).

- Streamlined: Many drive type options that enable multi-tiered and multi-system environment configurations. Value-added resellers and managed-service providers can stream line storage configurations with ease.

- Power Management: Host-managed power-disable SATA options, standard feature on SAS options.

Environments and Applications

- Artificial intelligence and machine learning.
- Enterprise resource planning and business intelligence systems.
- Centralized video surveillance.
- Serialized data event streams.
- Online analytical processing (OLAP) relational databases.
- Online transaction processing (OLTP) real-time transactional databases.
- Digital content creation.
- Active backup and restore data warehousing.

Prefix Part Number Decoder
WESA5SLC0200D

1st Letter:	3rd Letter:	4th Letter:
W: Water Panther	**S**: Standard 3.5" LFF	**A**: SATA 6Gb/s
2nd Letter:	**C**: Compact 2.5" SFF	**S**: SAS 12Gb/s
E: Expanse SAN series		**P**: U.2 PCIe x4

HDD

Raw Capacity Range: 10TB - 20TB

Storage Technology: Conventional

magnetic recording (CMR)

Spindle Rotational Speed: 7,200 RPM

Cache: ECC capable, 256MB cache buffer size

Phyiscal Dimension: 3.5-inch large form factor (LFF)

Special Features: Power-loss protection, helium sealed

design, low latency caching

Reliability: 1 in 10E15 bit error rate, 0.44% annualized failure

rate (AFR).

Transfer Speed:

10TB: 240MBytes/s

12TB: 245MBytes/s

14TB: 250MBytes/s

16TB: 255MBytes/s

18TB: 260MBytes/s

20TB: 275MBytes/s

Average Latency: 4.16ms

Power Usauge: 9W operating, 6W idle

Interface:

• 12Gbit per sec. SAS Gen3, compatible with SAS 6Gbps

connections.

• 6Gbit per sec. SATA Gen3, compatible with SATA 3Gbps and

SAS connections

• Power-disable feature: Standard feature on SAS interface

options, SATA options with this feature must have system with

SATA Gen3.3 revision compliance

• Sector Format Type: 512 emulation (512e) ships as 512-byte by

default, can be formatted with 4Kn sector size.

Models as 4K native (4Kn) can only be formatted as 4Kn and

require UEFI boot if used as boot disk. 4Kn only options require

every disk in an array to be formatted as 4K native.

HDD Part Number Decoder

WESA**5SLC**0200D

5 = 512e sector format type (512-byte emulation)

4 = 4Kn sector format type (4K native)

S = Standard Secure Erase, overwrite (SE)

E = TCG self-encrypting drive (SED)

L = Legacy Pin3 (LP) power

P = Host-managed power-disable (PD)

C = CMR storage technology

Capacity (Next 4 Digits):

HDD (x100):

0100D = 10000 GB

Last Letter:

D: Hard Disk Drive

SSD

Raw Capacity Range: 200GB - 30.72TB

NAND Flash Memory Type: Enterprise-grade NAND (eNAND)

Cache: Features advanced ECC and power-loss protection

Physical Dimensions: 2.5-inch form factor (SFF)

Special Features: Power-loss protection, low latency caching

Reliability: 1 in 10E17 bit error rate, 0.44% annualized failure rate (AFR)

Power Usauge: 25W operating, 9W idle

Interface:

• 12Gbit per sec. SAS Gen3, compatible with SAS 6Gbps connections.

• 32Gbit per sec. PCIe Gen3, compatible with PCIe 2.0 and U.2 backplane connections.

• Sector Format Type: 512-byte support, can be configured as 4096b.

SAS Model Transfer Speeds:

200GB / 400GB:

• Sustained Read/Writes of 1100/700 MBytes/s

• Random 4KB Read/Writes of 110K/30K IOPS

• Read/Write Latency of 120/70 µs

480GB / 800GB / 960GB:

• Sustained Read/Writes of 1200/800 MBytes/s

• Random 4KB Read/Writes of 130K/35K IOPS

• Read/Write Latency of 110/70 µs

1.6TB / 1.92TB / 3.2TB / 3.84TB:

• Sustained Read/Writes of 1800/1000 MBytes/s

• Random 4KB Read/Writes of 150K/37K IOPS

• Read/Write Latency of 100/60 µs

6.4TB / 7.68TB / 15.36TB / 30.72TB:

• Sustained Read/Writes of 2200/1600 MBytes/s

• Random 4KB Read/Writes of 250K/40K IOPS

• Read/Write Latency of 70/50 µs

U.2 NVMe Model Transfer Speeds:

480GB / 800GB / 960GB:

• Sustained Read/Writes of 3200/2000 MBytes/s

• Random 4KB Read/Writes of 300K/70K IOPS

• Read/Write Latency of 70/30 µs

1.6TB / 1.92TB / 3.2TB / 3.84TB:

• Sustained Read/Writes of 3300/2100 MBytes/s

• Random 4KB Read/Writes of 340K/75K IOPS

• Read/Write Latency of 70/30 µs

6.4TB / 7.68TB / 15.36TB / 30.72TB:

• Sustained Read/Writes of 3400/2400 MBytes/s

• Random 4KB Read/Writes of 450K/75K IOPS

• Read/Write Latency of 60/30 µs

SSD Part Number Decoder

WECS**5S3X**3072S

5 = 512e sector format type (512-byte emulation)

4 = 4Kn sector format type

S = Standard Secure Erase, overwrite (SE)

E = TCG self-encrypting drive (SED)

3 = SAS-3 12Gb/s or NVMe PCIe Gen3

4 = NVMe PCIe Gen4

1 = 1 full drive writes per day (1DWPD)

3 = 3 full drive writes per day (3DWPD)

X = 10 full drive writes per day (10DWPD)

Capacity (Next 4 Digits):

SSD (x10):

1536S = 15360 GB

Last Letter:

S: Solid State Drive