# PAC Storage PS Family Product Line
# Gen 3
# SAN & NAS Enterprise Data Storage

## PS Gen 3 Features:

### High Performance and Scalability

- Massive sequential throughput of up to 16GB/s read and 12GB/s write per appliance
- Scalable up to 896 Drives with recommended up to 4 expansion JBODs for best performance and capacity
- Up to 240TB Read & Write Cache Option with up to Qty 8 SSDs on all form factors or NVMe Cache Options on the 40/60/90 bay models

### Easy to Use and Manage

- Single namespace for easier data access
- Auto-balancing to reduce the burden of storage management for IT staff

### High-Density Design

- Reduce hardware footprint with 4U 40/60/90 bay models

### Lower Total Cost of Ownership

- Maximize budgets by using a few NVMe drives for cache to reach near all-flash system performance, in both SAN and NAS environments

### Nondisruptive Operations

- High Availability with 5 9's uptime ensures non-stop operations with a near-zero RTO (recovery time objective)

***PAC Storage PS Product Line Gen 3 brings Intel's new Ice Lake CPU along with new hardware and software features. This new combination offers the ultimate of high-performance solutions for enterprises with its unprecedented advantages in performance, flexibility, and high expandability. Supporting hybrid environments that integrate SAN, NAS, and cloud services, the PS series includes a wide range of models and connectivity options. The systems master requirements from performance-hungry application needs, general enterprise workloads and storage solutions requiring high-density hardware design.***

**High Performance** The PS Product Line provides high throughput to handle large amounts of I/O and file transfers, even under heavy workloads. PAC Storage PS Line features high-speed transmission interfaces and protocols, delivering up to 16Gb/s read and 12Gb/s write in throughput on a single appliance.

**Simple IT Management** Users can access shared folders in a single root directory under a single namespace, without having to worry about where the data is stored. Auto-balancing is also supported to achieve load balancing, which relieves the burden of manual planning and configuration for IT personnel.

**Complete Data Protection and Backup** PAC Storage's unique RAID technology manages your data to keep it intact in the event of a drive or system failure. With the flexibility of snapshot, you can back up locally by schedule on the PS storage system and revert to a previous version when needed. Remote replication is also available to backup to a remote PS system or to a cloud account utilizing the cloud gateway feature. The object storage function can be used to safeguard against ransomware attacks in conjunction with WORM technology. PS storage systems also offer encrypted drives as an option.

**Symmetric Active-Active Controllers** PAC Storage PS Family Gen 3 offers symmetric active-active controllers for performance and high availability. Hosts can access the same LUNs simultaneously via both controllers. I/O are more equally distributed across both controllers and all paths, effectively minimizing costly path management time. In the event of a path failure, I/O can automatically continue through the remaining paths with little or no failover.

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## PHYSICAL SPECIFICATIONS

| Product Series | | PS 3000 G3 | PS 4000 G3 |
|---|---|---|---|
| Form Factor | 2U 12-bay | **PS** 3012**R3/S3** | **PS** 4012**R3/S3** |
| | 3U 16-bay | **PS** 3016**R3/S3** | **PS** 4016**R3/S3** |
| | 4U 24-bay | **PS** 3024**R3/S3** | **PS** 4024**R3/S3** |
| | 4U 40-bay | **PS** 3040**R3/S3**<br>**PS** 3040**R3C/S3C** | **PS** 4040**R3/S3**<br>**PS** 4040**R3C/S3C** |
| | 4U 60-bay | **PS** 3060**R3/S3**<br>**PS** 3060**R3C/S3C** | **PS** 4060**R3/S3**<br>**PS** 4060**R3C/S3C** |
| | 4U 90-bay | **PS** 3090**R3/S3**<br>**PS** 3090**R3C/S3C** | **PS** 4090**R3/S3**<br>**PS** 4090**R3C/S3C** |
| Controller | | Dual redundant or single upgradable to dual redundant | |
| Cache Backup Technology | | Super capacitor + flash module | |
| CPU | | Intel® Ice Lake Xeon® D 4-Core | Intel® Ice Lake Xeon® D 6-Core |
| Cache Memory | | Default DDR4 196GB Expandable up to 38GB | Default DDR4 384GB |
| Supported Drives | | 2.5" SAS SSD<br>3.5" 12Gb/s NL-SAS 7,200 RPM HDD<br>Bundled 2.5" NVMe for cache models | |
| Max. Drive Number | via expansion enclosure, per appliance | 896 | |
| Max. SSD Cache Pool (Block-level) | | 4TB | |
| Onboard 25GbE Ports (SFP28) | | 4 | - |
| Onboard SAS Expansion Ports | | 2 | |
| Max. Host Board Slots | | 4 | |
| Host Board Options | | 16Gb/s FC x 4<br>32Gb/s FC x 2<br>32Gb/s FC x 4<br>10GbE (SFP+) x 2<br>25GbE (SFP28) x 2<br>100GbE (QSFP28) | |
| Max. 16Gb/s FC Ports | | 16 | |
| Max. 32Gb/s FC Ports | | 16 | |
| Max. 25GbE Ports (SFP28) | | 12 | 8 |
| Max. 12Gb/s SAS Ports | | 8 | |
| Expansion Enclosures (JBODs) | | 12 bay, 16 bay, 60 bay, 90 bay expansion chassis | |
| Dimensions (Without Chassis Ears and Protrusions) (W x H x D) | | 2U 12-bay: 449 x 88 x 509.8 mm<br>3U 16-bay: 449 x 130 x 509.8 mm<br>4U 24-bay: 449 x 174.6 x 509.8 mm | 4U 40-bay: 443.2 x 176 x 735.8 mm<br>4U 60-bay: 443.2 x 176 x 849.8 mm<br>4U 90-bay: 435 x 176 x 1088.8 mm |
| Package Dimensions (W x H x D) | | 2U 12-bay: 780 x 379 x 588 mm<br>3U 16-bay: 780 x 423 x 588 mm<br>4U 24-bay: 780 x 465 x 588 mm | 4U 40-bay: 625 x 460 x 1032 mm<br>4U 60-bay: 620 x 460 x 1140 mm<br>4U 90-bay: 620 x 500 x 1400 mm |
| Power Supply Unit | Power Supplies (Redundant and Hot-swappable) | 2U 12-bay/3U 16-bay/4U 24-bay: 530W x 2 (80 PLUS Bronze, 80 PLUS Gold for EU)<br>4U 40-bay/60-bay: 1200W x 2 (80 PLUS Platinum)<br>4U 90-bay: 1600W x 2 (80 PLUS Platinum) | |
| | AC Voltage | 2U 12-bay/3U 16-bay/4U 24-bay: 100VAC @10A to 240VAC @5A<br>4U 40-bay/60-bay: 100-127VAC @10A, 200-240VAC @8A | 4U 90-bay: 100-127VAC @12A, 200-240VAC @10A |
| | Frequency | 50-60 Hz | |
| Safety Standards | | • Electromagnetic Compatibility: CE, BSMI, FCC<br>• Safety: UL, BSMI, CB | |

Note: **S**: Single controller, upgradable to dual redundant controllers
**R**: Dual redundant controllers
**3**: GEN 3
**C**: NVMe cache

## SOFTWARE SPECIFICATIONS

| | | |
|---|---|---|
| Max. Logical Drive Number | | 30 |
| Max. Logical Drive Capacity | | 512TB |
| Stripe Size | | 16KB, 32KB, 64KB, 128KB, 256KB, 512KB, or 1024KB per logical drive |
| Write Policy | | Write-Back or write-through per logical drive. |
| Max. Pool Size | | 2PB |
| Max. Pool Number | | 30 |
| Max. Volume Size | | 2PB |
| Max. Volume Number | | 1024 |
| Max. Host LUN Mapping Number | | 4096 |
| Max. Reserved Tag Number (per Host-LUN Connection) | | 256 |
| Max. iSCSI Initiators (per Controller) | | 416 |
| Max. Host Connection Number (per FC) | | 128 |
| RAID Options | | RAID 0, RAID 1, RAID 3, RAID 5, RAID 6, RAID 10, RAID 30, RAID 50, RAID 60 |
| Supported Protocols | File Level | CIFS/SMB (Version 2.0/3.0), NFS (Version 2/3/4), AFP (Version 3.1.12), FTP/FXP (vsftp 2.3.4), WebDAV (httpd package 2.4.6) |
| | Block Level | FC, iSCSI, SAS |
| | Object Level | RESTful API |
| File Level | Max. File System Size | 2PB |
| | Max. Number of User Accounts | 20000 |
| | Max. Number of User Groups | 512 |
| | Max. Number of Shared Folder | 2048 (NFS/CIFS/FTP) \| 255 (AFP) |
| | Max. Number of Rsync Jobs | 1024 |
| | Max. Number of Concurrent Rsync Processes | 64 |
| | Max. Number of Connections | 2048 (NFS/CIFS/AFP) \| 1024 (FTP) |
| Management | | • SMI-S standard interface for hypervisor management applications<br>• Muti-factor authentication login mechanism<br>• Web-based management software<br>• User account management<br>• Group management<br>• Folder management - folder access control<br>• Quota management<br>• Folder encryption with AES<br>• Integration with Microsoft Active Directory (AD) and Linux LDAP<br>• Storage Resource Management to analyze history of resource usage |
| Availability and Reliability | | • Immutable object storage<br>• Hot-swappable hardware modules<br>• Device mapper<br>• Antivirus<br>• Trunk group<br>• Cache safe technology<br>• UPS<br>• WORM (file level only)<br>• SMB Multichannel |
| Efficiency | | • Inline compression<br>• Offline deduplication |
| Notification | | • Email • SNMP traps |
| Applications | | • Web-based file explorer • Syslog server • LDAP server<br>• Proxy server • VPN server • Docker |
| Supported Cloud Services | | Cloud Gateway supports integration with the following cloud providers: Amazon S3, Microsoft Azure, Alibaba Cloud, OpenStack, Baidu Cloud, Google Cloud, Tencent Cloud, Wasabi Cloud, etc. |
| Supported OS | | Microsoft Windows Server, Red Hat Enterprise Linux, Mac OS X, VMware. |

## DATA SERVICES

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|---|---|---|---|---|---|
| Thin Provisioning | | Block level | Default | "Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space. | |
| File Snapshot | | | Optional | Snapshot images per folder: 1024 | |
| Local Replication | Snapshot | Block level | Default | Snapshot images per source volume: 64 | Snapshot images per pool: 128 |
| | | | Optional | Snapshot images per source volume: 256 | Snapshot images per pool: 4096 |
| | Volume Copy/Mirror | | Default | Replication pairs per source volume: 4 | Replication pairs per system: 16 |
| | | | Optional | Replication pairs per source volume: 8 | Replication pairs per system: 256 |
| Remote Replication | | File level | Default | Rsync with 128-bit SSH encryption | |
| | | Block level | Optional | Replication pairs per source volume: 8 | Replication pairs per system: 64 |
| | | | | Note: 1. The maximum number of replication pairs per source volume is 8, whether they are remote asynchronous pairs, remote synchronous pairs, or local volume pairs.<br>2. 16Gb FC x 4, 32Gb FC x 2, and 32Gb FC x 4 host boards do not support Remote Replication. | |
| Automated Storage Tiering | | | Optional | Storage tiers per pool: 4 | |
| Scale-out | | File level | Default | Appliances per cluster: 1 | |
| | | | Optional | Appliances per cluster: 4 | |
| | | Block level | Default | Appliances per cluster: 4 | |
| HA Service | | File level | Optional | Delivering continuous availability and eliminating downtime for mission-critical workloads that require non-stop operations | |
| | | Block level | | | |
| SSD Cache | | File level | Optional | Accelerating file operations and data access performance for both read and write<br>Max. SSD number per controller: 8 | |
| | | Block level | Optional | Accelerating data access for random read-intensive environments (e.g. OLTP)<br>Max. SSD number per controller: 4 | |
| | | | | Recommended DIMM capacity per controller for SSD Cache pool | |
| | | | | DRAM:8GB | Max SSD Cache Pool Size: 0.5TB |
| | | | | DRAM:16GB | Max SSD Cache Pool Size: 1TB |
| | | | | DRAM:32GB | Max SSD Cache Pool Size: 2TB |
| | | | | DRAM:64GB and up | Max SSD Cache Pool Size: 4TB |

## WARRANTY AND SERVICE

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|---|---|
| Service and Support | 3-year hardware warranty upgradeable to 10 years |

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