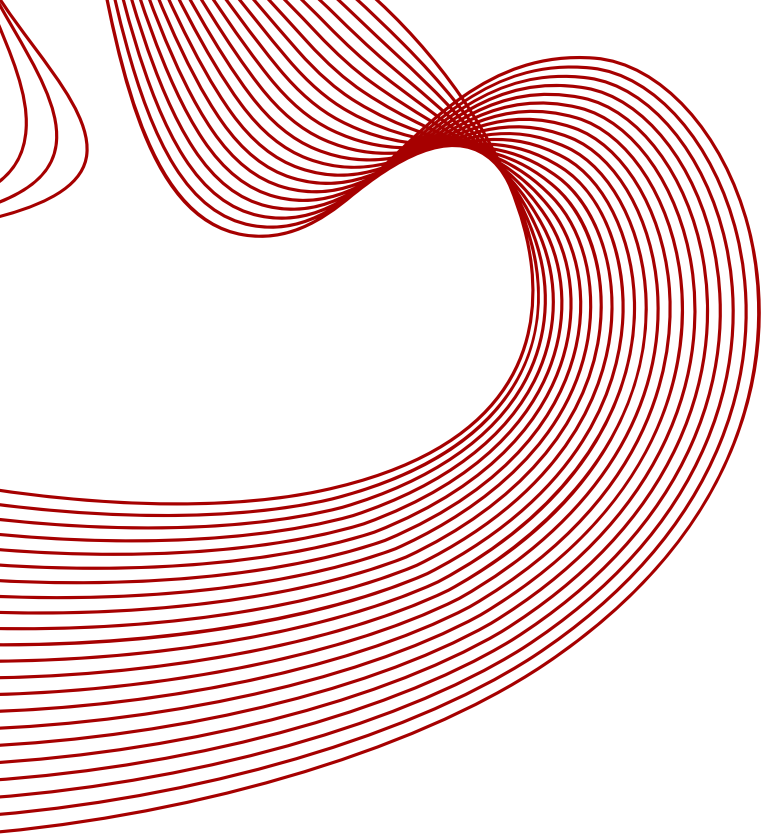
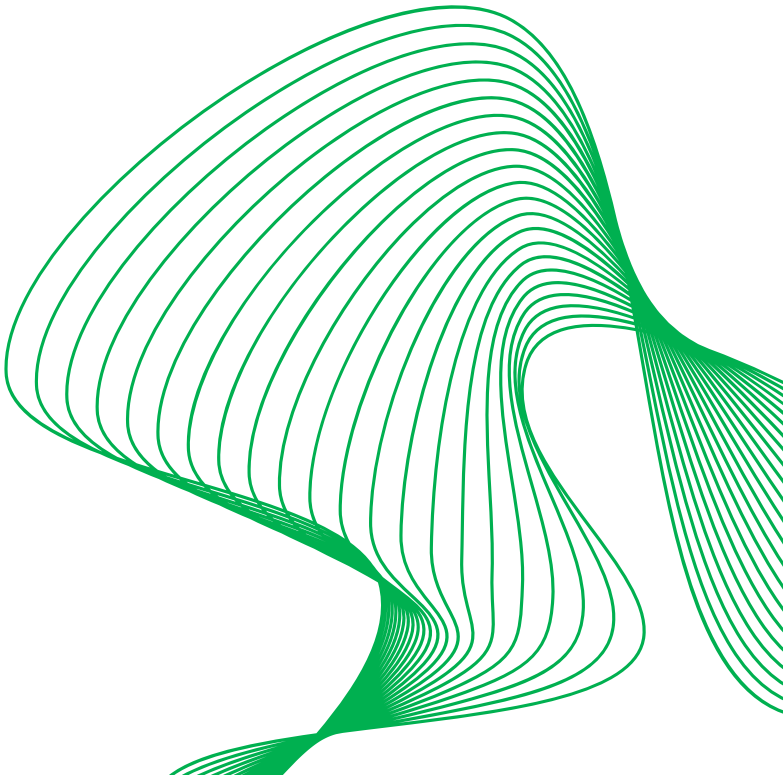
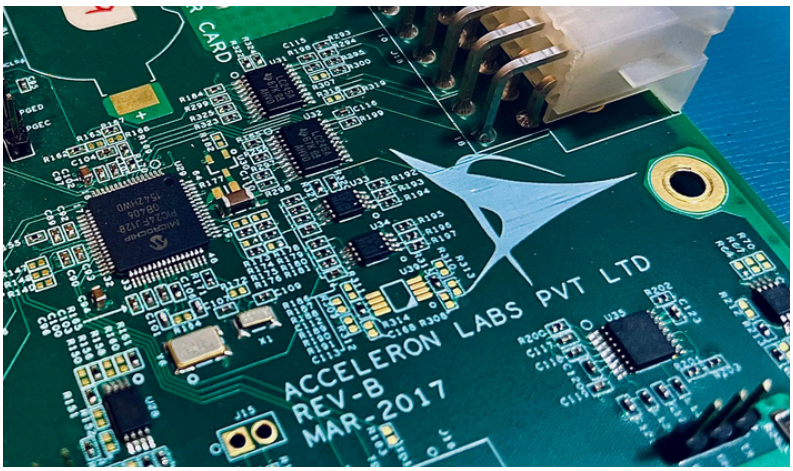


Acceleron Labs C100-S0

Acceleron Unified Storage® C-Series with Scale Out capability



Acceleron AUS C100-SO



Acceleron Unified Storage (AUS) with Scale out features is a unified storage arrays are designed with enterprise features and reliability with scale out capability. This Software Defined Storage solution well suited for wide range of applications. It is suitable for Enterprises looking for flexible storage options. Acceleron AUS C100 provide unified file, block and object storage and are available in single hybrid or all-flash configurations. The Acceleron AUS C-Series offers excellent reliability and affordability for small and medium IT environments. AUS C100-SO model support more than two controllers and it can be scaleup to minimum 12 controllers.

The Acceleron AUS C-Series fits a wide range of applications from file and media storage to business continuity, video surveillance, AI and many others. The Acceleron AUS C-Series provides data integrity, high availability, reliability, and ease-of management for business. The Acceleron AUS C-Series is a dedicated & optimized solution for both file, block and object support as an appliance using Acceleron distributed file system (ADUFS).

FLASH ASSISTED PERFORMANCE

Acceleron AUS gives Solid-state performance by caching read and write. Acceleron AUS leverages Ceph to merge multi-layer DRAM and flash cache with high-density spinning disks: system RAM and SSDs are used to cache reads and writes while HDDs store the data.

STORAGE OPTIMIZATION

Acceleron AUS C-series is a dedicated appliance specially optimized OS for NAS and SAN. Acceleron AUS maximizes storage efficiency and performance by offering compression, deduplication, and thin provisioning at no extra cost. Before data is stored, Acceleron AUS dynamically detects and compresses what it can and skips over any data too inefficient to be worthwhile.

UNLIMITED SNAPSHOTS AND REPLICATION

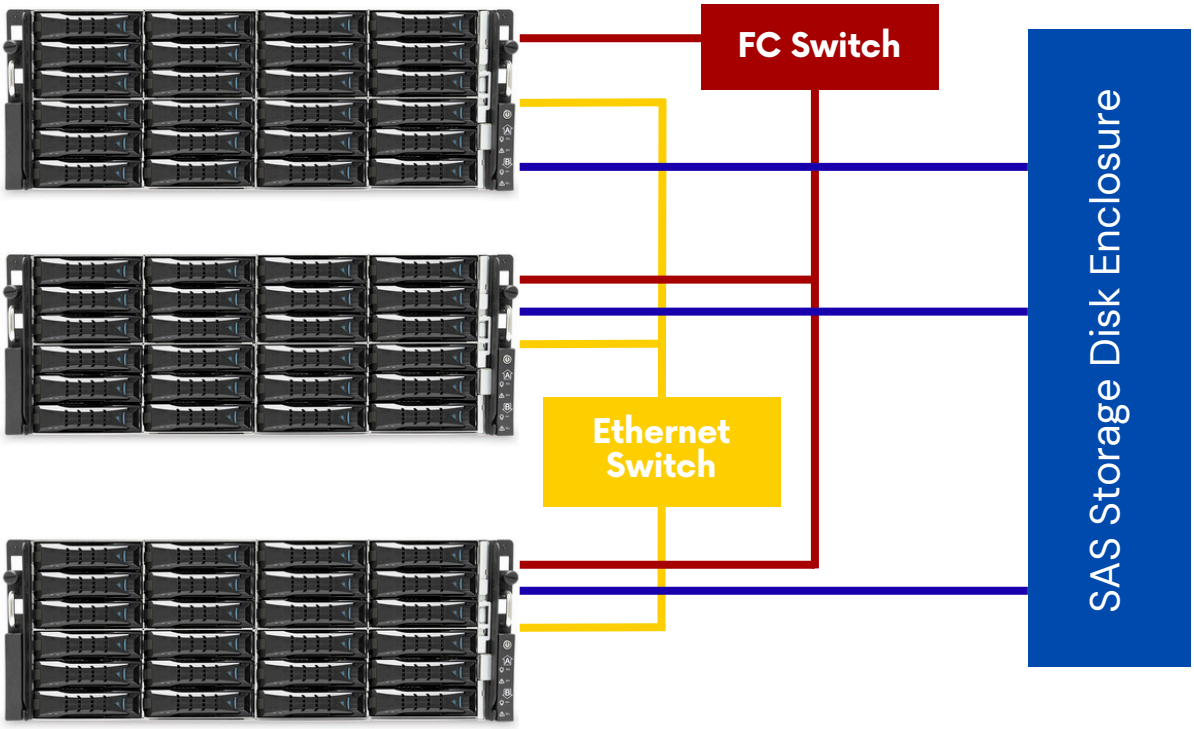
Most storage appliances require additional licenses for advanced features – but not Acceleron AUS. Unlimited file version retention, restoration, and replication are some of these features. Data is automatically protected locally against unintentional alteration, such as ransomware or malware, with minimal storage consumption. Data can be replicated locally, remotely, or to the cloud for backups or disaster recovery. It supports configurable snapshots for block level and file level data with both create & restore functionality. Acceleron AUS C100-SO offer minimum 64 Snapshots and it support of minimum 5000 Redirect on copy on write snapshots per System, which is an incremental snapshot feature which save point-in-time copies.

ACCELERON AUS DATA PROTECTION

Acceleron AUS C-Series has automatic and scheduled multi-layer data integrity checks ensure data consistency, while unlimited snapshots and clones make it is easy to implement a disaster protection strategy and to instantly roll back to a previous point-in-time. At the same time, a scheduled self-healing mechanism fixes malfunctions and automatically restores full data redundancy in the system. Even when a disk fails, the software-based spare function offers one disk to several RAID arrays, saving you money on extra hardware without compromising data safety

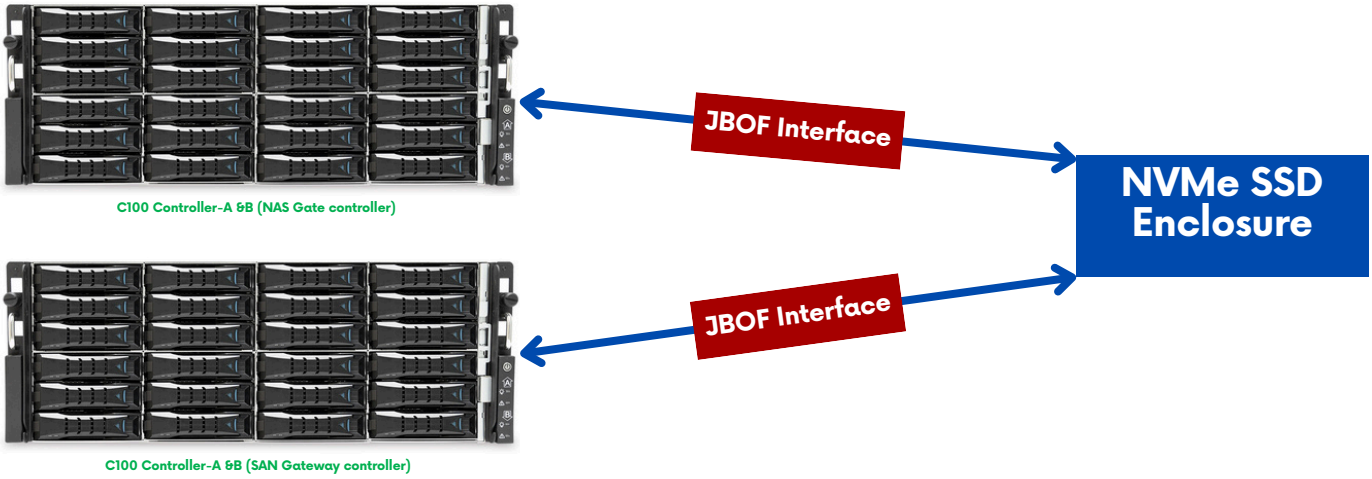
FLASH ASSISTED PERFORMANCE

The Acceleron AUS C-Series is optimized for the modern data center, ready for compute-intensive applications that involve big data, AI, intensive virtualization workloads and higher-density server configurations. It helps customers a web based management of storage infrastructures and maintaining continuous operations during updates or refreshes. It supports various configurable options such as Intel/AMD CPU power, Fibre Channel connections, networks running, 10, 25, 40, 50, 100 or 200 Gb Ethernet while developing solutions specialized for datacenter. AUS C100-SO also support Fibre Channel (FC) protocols with interface speed from 8, 16,32Gbps.



Acceleron AUS Scalability

Acceleron AUS C-Series will let you experience unlimited flexibility and minimize downtime. Acceleron AUS C-Series uses a 128-bit file system that includes unlimited snapshots for easy backup, unlimited clones for easy duplication, unlimited capacity with volume sizes up to one Zetabyte, as well as unlimited amount of disks which can be increased on the fly without effort by using thin provisioning and file systems can have the capability to grow online. There are no limitations, and you may easily control the total cost of ownership and expand your storage infrastructure as data grow. AUS C-Series supports more than 1000 active concurrent file sessions. AUS C-Series can scale out by adding controllers to existing storage. Existing controller can be scaleup using SAS interface and JBOF NVMe-oF interface. Additional disk enclosure can be connected using SAS interface in case of SAS/NL-SAS HDD, SAS SSD storage. Whereas JBOF will be used to expand storage with NVMe disks. Acceleron AUS C100-SO enhances its performance 4 times by using scale up and scale out architecture.



High Availability

AAcceleron AUS C-Series has high available internal configuration with No Single Point of Failure(NSPoF) architecture and redundancy features at all levels, controllers, hot swap power supplies, PDUs, cache, links between subsystems etc. Acceleron AUS C-Series provides equivalent RAID protection mechanism for RAID levels 0/1/10, 4/5/6. Acceleron AUS C-Series support different RAID groups within one storage system. There are dual storage and file redundant controllers in active-active mode with automatic fail over to each other in case of failure. There are separate NAS Gateway and SAN Gateway controllers available for enterprise storage looking for 99.9999% HA for NAS and SAN functions. The same controllers will provide all the required functionality of NAS and SAN for AUCS C-100-SO an enterprise class storage array that guarantees 99.9999% high availability.

Storage Array Capacity Expansion

Acceleron AUS C-Series has minimum two controllers, and it is called its base units. The base unit has expansion disk enclosures and disks are interconnected with multiple SAS-2/NVMeoF backend links with failover. From all the controllers SAS/NVMeOF cables links will be connected to external expansion disk enclosure and within disk enclosure enterprise class and dual-ported disks are connected. The base unit and disk expansion units are seamlessly connected in RAID configurations. RAID groups and LUNs are spanned across the enclosures. Acceleron AUS C-Series storage supports configuring volumes/ LUNs across all the disks. Acceleron AUS C100-SO storage base unit scalable to at least 1PiB usable capacity within the same chassis, utilizing the 30.72TB NVMe drive capacity. Also, AUS C100-SO model can scaleup to 12 controllers or 6 appliances within single name space in the cluster for future expansion.

Acceleron AUS C100-SO storage supports minimum of 96 or more NVMe Drives within the dual controllers/appliance and can be scale upto 384 NVMe drive within a single cluster. Acceleron AUS C100-SO storage supports more than 800 hybrid drives ((including SATA, NLSAS, SAS 2.5”/3.5” drives) with external expansion disk enclosures within the dual controller. Acceleron AUS C100-SO storage supports minimum 3000 drives (including SATA, SAS 2.5”/3.5” drives) using 12 controller cluster.

Acceleron AUS C100-SO support upto 4PB with NVMe file share and at least 50PB or more with Hybrid drives (NVMe and SAS Drive) within a single namespace where data is spanning across 8 controllers/4 appliances and data is accessible for users under single name space from all available controllers/appliances.

Read and Write Cache Operations

Acceleron AUS C100-SO Series has support caching data read and write operations, write cache has RAID 1 (mirror) protection. All controllers should have the same cache configuration and for read cache, it is RAM is used whereas write cache is implemented with RAM or NVMe or SAS SSD disks. Acceleron AUS C100-SO Series supports cache memory from 128GB to 1TB DDR4 RAM. Write cache is protected by de-staging to a persistent device like SSDs or p-Mem etc. AUS C100-OS controller will be configured according to base unit.

Disk Type Support

Acceleron AUS C100-SO Series supports NVMe, SSD, SAS & NL-SAS disks and enclosures within same storage system. Acceleron AUS C100-SO Series supports configurable hot spare support. User will be able to configure the homogeneous disks as hot spare for a storage disk cluster. Acceleron AUS C100-SO Series support Global hot spare and it can be assigned to any disk cluster. There is a provision to define/ configure the required RAID levels, RAID groups, data & parity disks and global hot spare disks allocation.

Access Client Systems and Protocol Support

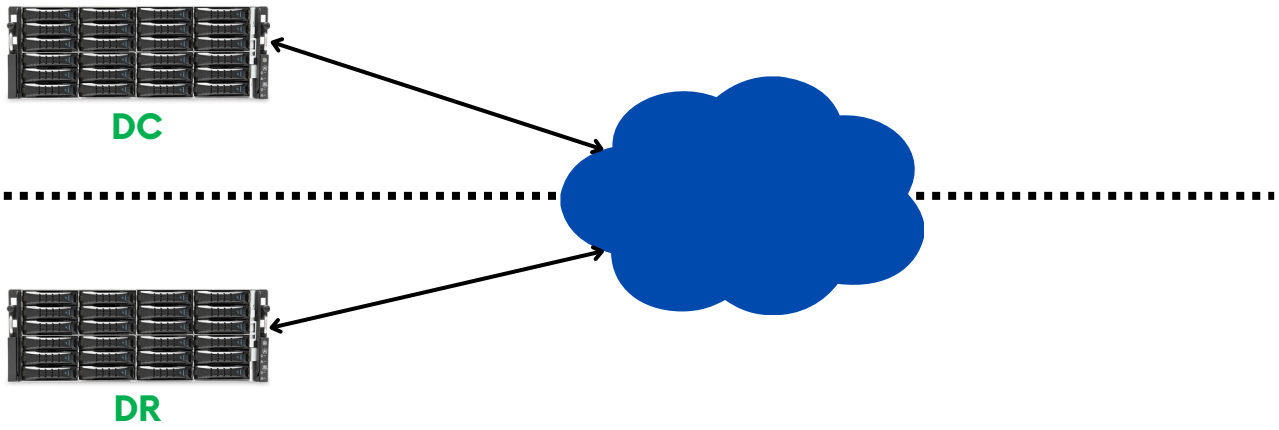
Acceleron AUS C-Series supports heterogeneous client operating systems on both block and file which include all popular flavors of Windows, Linux and virtualization hypervisors (VMware, Xen, Hyper-V, etc.). Acceleron AUS C-Series can be configured with NFS, SMB, CIFS, WebDav, FC and iSCSI for legacy protocols. Acceleron AUS C100-SO support NVMeoF for high performance targets. It provides multiple levels of access control including role-based security and auditing and also support Active Directory and LDAP integration. It also provides user/group/directory-based file system quotas with access controls, It supports concurrent access using NFS/ SMB/ FTP/WebDav on each file system.

Local and Remote Replication Support

Acceleron AUS C-Series supports the on- & off-site Data Protection feature allows users to back up and restore crucial company data in case of an unexpected disaster due to a combination of several technologies. This backup-focused feature enables creating consistent snapshots and asynchronous snapshot replication to local and/or remote destinations. The replication tasks can be set according to the specific user requirements thanks to advanced retention plans. On- and Off-site Data Protection is very flexible, as it covers a wide range of disaster recovery plans without the need to use additional third-party tools.

Host and Host Application Support

Acceleron AUS C-Series supports various host and host applications such as VMware, Oracle, MS Exchange, Backup Server, Docker, LDAP Server, Mail Server, Nextcloud, Project Server, Proxy Server, Syslog Server, VPN Server, Web Server etc.



Auto-Tiering Support

Acceleron AUS C-Series supports cache tiring feature which implements auto-tiring feature, during setup user can specify different Tiering options to setup a volume based on the type of storage available in the storage box. It helps the administrator to setup a dynamic and automatic placement/ movement of data across the right disk storage tiers based on defined policies configured during initial configuration.

Acceleron AUS C-Series supports tiering of cold file and block data to Object storage within to a object storage which can be within the LAN or to WAN. Administrator can define the policy for tiering data from Primary volumes to Object Storage.

Storage Management

Acceleron AUS C-Series has management software (Web GUI, CLI) for configuring managing & administering block & file storage and associated functionalities including deployment and automation.

LAN Management

Acceleron AUS C-Series give dedicated management Ethernet port for management for the storage. It supports Ethernet Trunking and link aggregation for both management and Datapath Ethernet interfaces.

ACCELERON AUS C100-SO Software Specifications	
Storage Architecture	• HDD + Optional R/W Cache • SSD + NVMe R/W Cache • NVMe + persistent Memory (pMem) or battery backed up RAM
Storage Operating System	• Dedicated Storage System and Linux OS (debian) optimized for SAN and NAS.
Storage Technology	• SATA • SAS • NL-SAS • SSD • NVMe
Read Cache Technology	• SAS/NVMe SSD, NV-DIMM
Enterprise File System	• Acceleron Unified Distributed File System (AUDFS) • Block File System
Data Management	• Snapshots • Replication • Rollback • Clones • Encryption • Mirroring • Wide Stripping • RAID levels: 0, 1, 5, 6, 10, N+M (Erasure coding)
Data Reduction	• Thin Provisioning • Compression • Clones • De-duplication
Access Protocol	• SMB(V2/3) • CIFS • NFS (V2/3/4), AFP • S3 • FTP • Secure FTP • WebDav • iSCSI Target • FC Initiator and Target • NVMe-oF (TCP/RDMA)

Host Applications	• VMware • Oracle • MS Exchange • Backup Server • Docker • LDAP Server • Mail Server • Nextcloud • Project Server • Proxy Server, Syslog Server, VPN Server, Web Server etc
Software Compatibility	• Clients: Microsoft Windows, Linux, VmWare, RHEL, UNIX, Mac OS 8.0-10.5.8, X
Administration	• Unlimited number of users, groups, NICs or HDDs • English, German and Japanese language • Tuning Tools for advanced administrators • Remote Access Console • Automated update and rollback to previous OS version • Task and Schedule Manager • Command Line Interface (CLI) and WebGUI • Save and restore • Settings connection status and session management
Network management	• DHCP Client • Teaming / Bonding (including Adapter Fault Tolerance) • Proxy Settings • Jumbo Frames • Static Routing Manager • IPv6 Support
Storage management	• Software and Hardware iSCSI Initiator • Software RAID 0, 1, 4, 5, 6, 10 • Fibre Channel HBA support (initiator and target mode) • Multiple snapshots (multiple active snapshots - one LV at a time) • Logical Volumes and Groups • Online Logical Volume Expansion • Online RAID Capacity Expansion • Support for Automatic Session Reassignment (ASR) for FC and iSCSI protocols

Monitoring	• Hardware monitoring • S.M.A.R.T - monitoring system for hard disc drive failures SNMP v2, v3 • Performance for IOPS, throughput, latency • Able to monitor controllers, disk pools, NFS shares, drives.
Specific NAS functionality	• Active-Active NFS Failover • Windows Active Directory / Primary Domain Controller • Support for Network Information Service (NIS) Internal and external LDAP User and Group Quota Control Antivirus
Data integrity and availability	• 256-bit block level checksums • Mirror (RAID1), Stripping (RAID0), RAID5/6/10 • On- and Off-site Data Protection • Active-Active or Active-Passive HA Cluster for iSCSI, FC and S3, NFS, SMB (CIFS) • Self-healing against silent data corruption • Disk Multipathing • Hot Spare Disk configuration
Data optimization	• RAM, SSD and HDD hybrid pool • Tiered Caching • Unlimited Snapshots • Unlimited Clones (writable Snapshots) • Thin Provisioning • Over Provisioning • Inline Data Deduplication • Inline Compression
Management	• WebGUI, Console UI, CLI • SNMP and REST API • E-mail notification Roll-back to previous configuration • Remote Diagnostics from CLI
LUN Support	• Support more than 10000 LUNS • Support online LUN expansion
Replication	• Sync & Async Replication for both block and file protocols • 3-DC Zero Data Loss support using replication architecture

Examples of supported HA configurations	• Cluster in a Box (CiB) • Common Storage • Cluster over SAS Cluster over SAS with internal SAS expander • Cluster with multiple Disk Enclosures over SAS or FC • (Stretched) Metro Cluster over Ethernet And more...
Firmware Upgrade	• Non-disruptive online and offline firmware upgrade support for C100-SO controller and Disk controllers (HBA)
IOPS	• NLSAS Storage with 1.6TB SAS SSD based cache configuration, C100-SO achieves more than 70K IOPS@8K block size • NVMe Storage based C100-SO achieves 500K IOPS@8K block size with R:W 70:30 • IOPS and throughput varies based on hardware configuration. Refer BOM for these parameters for certain configuration
Predictive analysis	• Smart based predictive analysis to detect the drive failure and subsequent data cloning support.
QOS	• QoS feature to limit the amount of IO (IOPS) • It also bandwidth (MB/s) a particular application can drive on the array.
Multi tenancy	• Logical partitioning of physical storage into virtual storages.

ACCELERON AUS C100-SO Hardware Specifications	
Form factor	• 2U/4U, 19” rack mount • Dimensions (WxDxH) – 438 x 658 x 174 (mm)
Processor subsystem	• Dual Controller/Multi-controller (configured at purchase) • Minimum 12 CPU Cores per controller • One node failure tolerance • Intel Xeon /AMD Processor upto 270W • From 128GB to 1TB RAM • Support Intel® OptaneTM DC Persistent memory
Max Physical Storage	• It can scale upto 384 NVMe drive and 3000 SAS/SATA drives within a single cluster.
Front Control	• Power button • System reset button
Front I/O Ports	• 2 x USB 3.0
Visual Indicators	• Power • UID • LAN activity • HDD status
Rear Panel	• 16 x10Gbps Network interfaces (BaseT/SFP+) - Auto negotiating 1/10Gbps Ethernet Interfaces • 4 x40Gbps /4 x100 Gbps Network interfaces • 8 x 25Gbps Ethernet ports • 2 x 1Gbps Base-T for management ports • 1 x IPMI interface (10/100/1000 Base-T)
Fibre Channel	• 8 x 16/32 Gbps FC ports. Auto negotiating 8/16Gbps FC interface
SAS Interface	• External SAS Interface for Additional Disk Enclosure
JBOF (NVMe-oF)	• External JBOF interface for additional Disk Enclosure connection through 100Gbps ports (populated based on custom requirements)

Power	• 2 (1+1) CRPS (80+ Platinum), 200-240V, 50Hz AC Supply
Cooling	• 80 x 25/38mm internal fans
Temperature	• Operating: 10oC to 35oC (50oF to 95oF) • Non-operating: -40oC to 70oC (-40oF to 158oF)
Weight	• 15Kg
Operating System	• Linux
Warranty	• 1/2/3/5 years options are available