



# EonStor GS U.2 NVMe Hybrid Flash Storage

## Scale-out Unified Storage with High Availability for Enterprises

### Highlights

#### Extreme Performance

- Up to 1.3M end-to-end IOPS to accelerate storage operations
- Massive sequential throughput of up to 50GB/s

#### Cost-Effective Storage

- U.2 NVMe SSD to deliver better performance at lower costs
- QLC SSD support for higher capacity at reduced costs
- Automated storage tiering to fully utilize SSD and HDD

#### Flexible Scalability

- Scale-out and scale-up expansions to easily expand performance and capacity to more than 70PB

#### Easy to Use and Manage

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

#### Nondisruptive Operations

- HA service ensures non-stop operations with a near-zero RTO (recovery time objective) by deploying two storage devices to provide services from two separate sites.

### Introduction

*EonStor GS U.2 NVMe hybrid flash storage is a high performance storage solution for enterprises. Equipped with U.2 NVMe SSD, it provides higher IOPS and throughput and is more cost-effective. GS U.2 is a unified storage that supports both SAN and NAS services. With block-level and file-level scale-out support, it can linearly increase performance and capacity. Complete data protection allows IT staff to focus on higher value projects. It is a perfect fit for such applications as AI, HPC, M&E, virtualization, and database.*

#### End-to-End High Performance with U.2 NVMe SSD

The most high-end model, GS 5000U, features 100GbE connectivity with RDMA and NVMe over Fabrics (NVMe-oF), achieving up to 50GB/s read throughput and 1.3M IOPS on a single appliance.

#### Cost-Effectiveness and High Storage Efficiency

U.2 NVMe SSD is becoming mainstream in the market as it combines the advantages of SAS and SATA SSDs, allowing enterprises to enjoy higher performance at a competitive price.

With significant improvement in performance and durability in recent years, quad-level cell (QLC) SSDs have become a compelling option for applications requiring high capacity and flash-level performance. QLC SSDs offer 33% more storage capacity per cell compared to triple-level cell (TLC) SSDs, all while costing less. EonStor GS U.2 NVMe storage supports QLC SSDs to provide greater flexibility, catering to a wide range of enterprise applications and requirements.

EonStor GS U.2 NVMe storage supports hybrid storage, and with automated storage tiering, the storage system can automatically leverage the high throughput and low latency of U.2 NVMe SSDs for frequently accessed data, while using HDDs on expansion enclosures as data backup media, thereby boosting system performance at a reduced total cost of ownership.

The storage solution also comes with data compression and offline deduplication, which reduces the storage capacity required and thus saves storage costs. The compression feature greatly reduces the data size and the transfer time. To deal with repeated files saved by manual backups or archiving, offline deduplication helps you automatically remove duplicate data from an appliance or a cluster to free up storage space.

## Flexible Scalability with Scale-out and Scale-up

Through scale-out expansion, you can linearly increase performance and capacity for both block-level and file-level environments. When one storage appliance is no longer able to provide enough performance or capacity, you can simply add more appliances to form a cluster—with a maximum of 4 appliances.

Through scale-up expansion, each storage appliance can be connected to JBOD expansion enclosures to add up to 896 drives. Together with scale-out expansion, EonStor GS U.2 NVMe storage supports more than 3000 drives in total.

## Easy Data Access for Users and 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.

## Smart Management of SSD

EonStor GS U.2 NVMe storage uses an intelligent algorithm to handle data writes and optimize SSD usage. The algorithm not only extends SSD lifespan by reducing the total amount of writes on an SSD but also prevents multiple SSDs from failing at the time and causing data loss. Moreover, as EonStor GS U.2 NVMe storage monitors SSD status in real time, it estimates the remaining lifespan of each SSD and sends the administrator a reminder to replace the SSD that is about to fail.

## Complete Data Protection and Backup

EonStor GS U.2 NVMe offers various data protection mechanisms to guarantee data safety. First, Infortrend's unique RAID technology ensures your data remains intact even in case of a drive failure. With snapshot, a flexible backup tool, you can back up local resources on a storage system by schedule, including volumes and shared folders, and roll back to a previous version when needed. For further protection, you can back up data to a remote GS appliance using the remote replication feature, or to a public cloud with EonCloud Gateway.

Immutable object storage, another crucial feature for data protection, safeguards data against ransomware attacks. It retains data with WORM (write once read many) storage protection, where data gets “locked” and therefore cannot be modified, deleted, overwritten, or even encrypted by ransomware. By setting a retention period, you can easily follow government compliance requirements or company policies on data retention.

For companies requiring an easy-to-use and reliable storage solution for file backup, EonStor GS U.2 NVMe storage can be utilized as a backup appliance, allowing you to leverage its backup server function to back up data from PC, file servers, and public cloud through a GUI interface. Additionally, you can set options such as a backup schedule and a retention period to best fit your needs.

## New Level of High Availability

From power supplies, cooling fans, controllers, to host boards, the modular design of all these hardware components lowers maintenance complexity and provides fast, precise technical support and RMA services, keeping EonStor GS U.2 NVMe storage safe from any downtime to maintain nonstop services, increase productivity, and enhance competitiveness.

In addition, EonStor GS U.2 NVMe storage offers HA service to deliver continuous availability with a near-zero RTO (recovery time objective) and a zero RPO (recovery point objective). With two storage devices deployed at near sites, the HA service provides block-level active-active storage and file-level active-passive storage for business-critical applications that have an extremely low tolerance for downtime. Featuring synchronous remote replication and auto-failover, this solution ensures identical and complete copies of data are stored on both storage devices and avoids service downtime due to planned or unexpected events. Auto-failback is available in block-level HA service, allowing a storage device to resume services without switching manually.

## Intuitive Management Software

GS U.2 NVMe storage adopts EonOne, a web-based management software tool, to assist customers in raising storage and service efficiency for increased productivity. With its intuitive interface design, IT administrators can easily manage a cluster and multiple appliances, monitor performance and capacity usage, and complete system configurations, all from one centralized interface.

# PHYSICAL SPECIFICATIONS

Product Series			GS 2000U	GS 3000U	GS 3000UT	GS 4000U	GS 5000U
Form Factor	2U 24-bay		GS 2024UR	GS 3024UR	GS 3024URT	GS 4024UR	GS 5024URE
	4U 48-bay		-	-	GS 3048URT	GS 4048UR	-
			<b>Note:</b> U: NVMe storage R: Dual redundant controllers T: High performance				
Controller			Dual redundant				
Cache Backup Technology			Super capacitor + flash module				
CPU			Intel® Xeon® D 2-Core	Intel® Xeon® D 4-Core	Intel® Xeon® D 4-Core	Intel® Xeon® D 6-Core	Intel® Xeon® Scalable 12-Core
Cache Memory			Default DDR4 16GB, up to 128GB		Default DDR4 48GB, up to 384GB		Default DDR5 128GB, up to 1024GB
Supported Drives			2.5" U.2 NVMe SSD (must be purchased from Infortrend)				
			<b>Note:</b> For the latest compatibility details, refer to our official website for the latest Compatibility Guide.				
Max. Drive Number	Via Expansion Enclosures, per Appliance		896	896	896	896	896
	Via Scale-out with Other Series of Appliances, per Cluster		3584	3584	3584	3584	3584
Max. SSD Cache Pool (Block Level)			4TB				
Onboard 10GbE Ports (SFP+)			0	4	0	0	0
Onboard 25GbE Ports (SFP28)			0	0	4	0	0
Max. Host Board Slots			4	4	4	4	6
Host Board Options			<ul style="list-style-type: none"> <li>• 16Gb/s FC x 4</li> <li>• 32Gb/s FC x 2</li> <li>• 32Gb/s FC x 4</li> <li>• 10GbE (SFP+) x 2</li> <li>• 25GbE (SFP28) x 2</li> <li>• 25GbE (SFP28) x 4</li> <li>• 12Gb/s SAS x 2</li> </ul>	<ul style="list-style-type: none"> <li>• 16Gb/s FC x 4</li> <li>• 32Gb/s FC x 2</li> <li>• 32Gb/s FC x 4</li> <li>• 10GbE (SFP+) x 2</li> <li>• 25GbE (SFP28) x 2</li> <li>• 25GbE (SFP28) x 4</li> <li>• 100GbE (QSFP28) x 1, RDMA</li> <li>• 100GbE (QSFP28) x 2, RDMA</li> <li>• 12Gb/s SAS x 2</li> </ul>	<ul style="list-style-type: none"> <li>• 32Gb/s FC x 4</li> <li>• 25GbE (SFP28) x 2</li> <li>• 100GbE (QSFP28) x 1, RDMA</li> <li>• 12Gb/s SAS x 2</li> </ul>		
			<b>Note:</b> 1. One 100GbE x 2 host board delivers a maximum throughput of 100Gb/s. 2. It is strongly recommended that you refer to the latest Host Board and Memory Guide on our website for complete information, including supported combinations and important notes, before purchasing any host board for your model.				
Max. 16Gb/s FC Ports			16	16	16	16	0
Max. 32Gb/s FC Ports			16	16	16	16	24
Max. 10GbE Ports (SFP+)			8	8	8	8	0
Max. 25GbE Ports (SFP28)			16	16	16	16	12
Max. 100GbE Ports (QSFP28)			0	0	8	8	6
Max. 12Gb/s SAS Ports			8	8	8	8	12
Expansion Enclosures (JBODs)			JB 3012A, JB 3016A, JB 3024BA, JB 3025BA, JB 3060L, JB 3090				
Dimensions (Without Chassis Ears and Protrusions) (W x H x D)			449 x 88 x 500 mm		<ul style="list-style-type: none"> <li>• 2U 24-bay: 449 x 88 x 530 mm</li> <li>• 4U 48-bay: 449 x 176 x 530 mm</li> </ul>		449 x 88 x 830 mm
Package Dimensions (W x H x D)			<ul style="list-style-type: none"> <li>• 2U 24-bay: 588 x 338 x 780 mm</li> <li>• 4U 48-bay: 588 x 423 x 780 mm</li> </ul>				594 x 235 x 1106 mm
Power Supply Unit	Power Supplies (Redundant and Hot-swappable)	Global	<ul style="list-style-type: none"> <li>• 2U 24-bay: 530W x 2 (80 PLUS Bronze)</li> <li>• 4U 48-bay: 1300W x 2 (80 PLUS Titanium)</li> </ul>				1600W x 2 (80 PLUS Titanium)
		EU	<ul style="list-style-type: none"> <li>• 2U 24-bay: 800W x 2 (80 PLUS Titanium)</li> <li>• 4U 48-bay: 1300W x 2 (80 PLUS Titanium)</li> </ul>				
	AC Voltage	Global	<ul style="list-style-type: none"> <li>• 2U 24-bay: 100-240VAC @10-5A</li> <li>• 4U 48-bay: 100-127VAC @12A, 200-240VAC @8.5A</li> </ul>				100-127VAC @12A, 200-240VAC @10A
		EU	<ul style="list-style-type: none"> <li>• 2U 24-bay: 100-127VAC @10A, 200-240VAC @5A</li> <li>• 4U 48-bay: 100-127VAC @12A, 200-240VAC @8.5A</li> </ul>				
Frequency			50-60 Hz				
Safety Standards			• Electromagnetic compatibility: CE, BSMI, FCC		• Safety: UL, BSMI, CB		

## SOFTWARE SPECIFICATIONS

Max. Logical Drive Number	30	
Max. Logical Drive Capacity	512TB	
Stripe Size	16KB, 32KB, 64KB, 128KB, 256KB, 512KB, 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	256 (per Host-LUN connection)	
Max. iSCSI Initiators	832	
Max. Host Connection Number	128 (per FC)	
RAID Options	RAID 0, RAID 1, RAID 3, RAID 5/5F, RAID 6/6F, 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 (vsftpd 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 Folders	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	<ul style="list-style-type: none"> <li>• Web-based EonOne management software</li> <li>• User account management</li> <li>• Group management</li> <li>• Folder management - folder access control</li> <li>• Quota management</li> <li>• Folder encryption with AES</li> </ul>	<ul style="list-style-type: none"> <li>• Integration with Microsoft Active Directory (AD) and Linux LDAP</li> <li>• Storage Resource Management to analyze history of resource usage</li> <li>• Multi-factor authentication login mechanism</li> <li>• File-level QoS (network traffic control)</li> <li>• SMI-S standard interface for hypervisor management applications</li> </ul>
Availability and Reliability	<ul style="list-style-type: none"> <li>• Immutable object storage</li> <li>• Hot-swappable hardware modules</li> <li>• Device mapper</li> <li>• Antivirus</li> <li>• Trunk group</li> </ul>	<ul style="list-style-type: none"> <li>• Cache safe technology</li> <li>• UPS</li> <li>• WORM (file level only)</li> <li>• SMB Multichannel</li> </ul>
Efficiency	<ul style="list-style-type: none"> <li>• Inline compression</li> </ul>	<ul style="list-style-type: none"> <li>• Offline deduplication</li> </ul>
Notification	<ul style="list-style-type: none"> <li>• Email</li> </ul>	<ul style="list-style-type: none"> <li>• SNMP traps</li> </ul>
Applications	<ul style="list-style-type: none"> <li>• Anti-virus</li> <li>• Backup Server</li> <li>• Docker</li> <li>• LDAP Server</li> <li>• Mail Server</li> <li>• Nextcloud</li> </ul>	<ul style="list-style-type: none"> <li>• Project Server</li> <li>• Proxy Server</li> <li>• Syslog Server</li> <li>• VPN Server</li> <li>• Web Server</li> </ul>
Supported Cloud Services	<p>EonCloud Gateway supports integration with the following cloud providers: Amazon S3, Microsoft Azure, Alibaba Cloud, OpenStack, Baidu Cloud, Google Cloud, Tencent Cloud, Wasabi Cloud, etc.</p> <p><b>Note:</b> For complete information about supported cloud providers, please refer to EonCloud Gateway webpage <a href="https://www.infortrend.com/global/solutions/eoncloud">https://www.infortrend.com/global/solutions/eoncloud</a></p>	
Supported OS	<p>Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise, Sun Solaris, MacOS X, VMware</p> <p><b>Note:</b> For supported OS versions, please refer to the Compatibility Guide.</p>	

## DATA SERVICES

Thin Provisioning	Block Level	Default	"Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.	
Local Replication	File Level	Optional	Snapshot images per folder: 1024	
	Snapshot	Block Level	Default	Snapshot images per source volume: 64      Snapshot images per system: 128
		Optional	Snapshot images per source volume: 256      Snapshot images per system: 4096	
	Volume Copy/Mirror	Block Level	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	Support Rsync with 128-bit SSH encryption	
	Block Level	Optional	Replication pairs per source volume: 8      Replication pairs per system: 64	<b>Note:</b> The maximum number of replication pairs per source volume is 8, whether they are remote asynchronous pairs, remote synchronous pairs, or local volume pairs
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		<b>Note:</b> HA Service is not available on GS 2000U.	
SSD Cache	File Level	Optional	Accelerating file operations and data access performance for both read and write Max. SSD number: 8	
	Block Level	Optional	Accelerating data access in random read-intensive environments (e.g. OLTP) Max. SSD number: 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

Service and Support	Standard Service	3-year limited hardware warranty and 8 x 5 phone, web, and email support (batteries are covered under warranty for 2 years)	
	Upgrade or Extension Options	Warranty extension: Can extended standard service up to 5 years The following Service can be upgraded to 5 years	
		<ul style="list-style-type: none"> <li>• Upgrade: Replacement part dispatch on the next business day</li> <li>• Advanced service: phone, web, and email support + onsite diagnostics on the next business day</li> <li>• Premium service: phone, web, and email support + onsite diagnostics in 4 hours</li> </ul>	
	<b>Note:</b> Options may vary by region. For more details, please contact our sales representatives.		
	Technical Support	Get information on system installation and maintenance, download technical documents and software, or issue a support ticket	
	Product Services	Register products, download firmware, apply for licensing services, create product repair tickets, or check product repair status	

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