



# Technical Specification

## ECHO (36 Bay)



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## 1. Unit specifications

<b>Unit dimensions:</b>	17.8cm x 43.7cm x 69.9cm (7" x 17.2" x 27.5")
<b>Unit weight:</b>	41kg (90.4lbs)
<b>Input range:</b>	100 - 240 VAC, 50-60Hz
<b>PSU safety:</b>	EMC - USA-UL listed. Canada-CUL listed, Germany-TUV certified, EN60950/IEC 60950-Compliant, CB report, CCC certification
<b>Power supply:</b>	Dual redundant 1000W removable PSUs
<b>Power requirements standby:</b>	33W
<b>Power requirements full load:</b>	350W
<b>Operating temperature range:</b>	10°C - 20°C
<b>Non-operating range:</b>	-40°C - 70°C
<b>Operating humidity range:</b>	8 - 90% non-condensing
<b>Non-operating humidity range:</b>	5 - 95% non-condensing
<b>Unit form factor:</b>	4U rackmount (rack mounts included)

Bootable replacement OS is provided on **Rescue Capsule** USB drive for fast system recovery.

## 2. Configurable capacities

- **ECHO (36 Bay)** 64TB, 128TB, 192TB, 256TB, 320TB, 384TB and 448TB
- **ECHO EX (36 Bay)** 64TB, 128TB, 192TB, 256TB, 320TB, 384TB and 448TB (Up to 10.8PB)

## 3. Connectivity

### On Motherboard

- 2 x USB 3.0 ports and 2 x USB 2.0 ports
- 1 x VGA connector
- 1 x COM port
- 2 x 10Gb Ethernet ports (RJ45) - Backwards compatible with 1Gb Ethernet (RJ45)
- 1 x RJ45 dedicated IPMI LAN port

### Other

- 2 x 10/40Gb Ethernet ports
- Option for additional 1Gb, 10Gb, 25Gb and 40Gb Ethernet ports (RJ45 or SFP+)

## 4. Key Features

- **CORE.4 OS**

Ultimately designed to elegantly manipulate data.

With the powerful and highly intelligent CORE.4 operating system at their centre, GB Labs' storage systems can not only govern and regulate read/write requests simultaneously – which is unique to the market – but can make autonomous decisions on how and where to read, or place that data (that's the intelligent bit), in safe and secure ways that both smooths and accelerates the process, saving a lot of time, money, and aggravation.

This is because, as powerful and clever as CORE.4 is, it's ultimately designed to elegantly manipulate data with a fluidity and lightness of touch that is as kind to that data as possible, using as few disks as possible, but always with speed, accuracy, and economy of effort.

Most central storage systems can either read or write, but not at the same time, whether it's an SSD, HDD, or hybrid system. The notion some have that SSD can read/write at the same time is a fallacy. In mixed read/write environments, their performance nosedives.

The inevitable peaks and troughs of read/write processes absolutely kill performance and those systems have little or no in-built intelligence to govern how those read/write requests are handled because, frankly, they're very difficult and complicated algorithms to create, so most manufacturers don't bother.

- **Dynamic Bandwidth Control**

Dynamic Bandwidth Control is an extremely valuable benefit only available in GB Labs storage systems.

Traditionally, client storage usage is capped at certain levels to reserve storage capacity for priority users, whether or not it is being used. Storage that is reserved but not used can unnecessarily restrict the performance of others who could make beneficial use of that extra capacity.

GB Labs resolved this problem by developing Dynamic Bandwidth Control, which swiftly identifies and selects high, medium, and low priority users and constantly evaluates and balances performance. This guarantees that not only is every user getting the full performance they need and expect, but that the entire system is operating at peak performance at all times.

- **HyperSpace compatible**

HyperSpace is an intelligent SSD based acceleration unit. This SSD based accelerator addresses the I/O performance gap between HDD systems and the ultimate performance of the SSD range, by intelligently lowering latency and increasing IOPS performance.

The system delivers exceptional performance, using two unique technologies - IDA<sup>2</sup> (In-flight Data Acceleration) and the DRAM based Chaos Cache. Working as a single volume, HyperSpace SSD's and ECHO 36 HDD's offer highly cost-effective performance with expandable capacities.

- **Data protection**

RAID 6 data protection.

Optional Hardware based RAID 0/1/5/6 and Software based RAID 0/1/5/50/60.

- **Replication**

Designed to create near-line, or online, backups of your data. Replication is used to transfer files between GB Labs systems and other storage systems. All replications are performed using Smart Sync, which means that files are only sent when they need to be. Files can be checksummed for extra security to ensure that files are transferred correctly.

- **Snapshots**

A set of reference markers, pointers or data stored on a disk drive, tape drive or storage network (NAS/SAN). A Snapshot is like a detailed table of contents that is treated by the computer as a complete data backup. Snapshots streamline access to stored data and can speed up the process of data recovery. The GB Labs Snapshot tool takes incremental backups of a workspace, or other servers, on a connected network which allows you to then recover a workspace to a specific point in time.

- **Automation**

ECHO 36 has automation built into its' CORE OS which, when enabled, can watch a folder and perform actions when a file event occurs. CORE OS uses these rules to perform actions when these events occur, such as; permission changes and transferring of files.

- **Active Directory**

If you have an Active Directory (AD) server on your network, you can enable the system to authenticate against the users on the AD server, and use that authentication with AFP, SMB and HTTP.

- **Workspace access control**

GB Labs CORE OS can control access to workspaces via IP addresses.

This control allows you to override all other sharing access by setting access based rules around IP address, range or entire subnet of any active range connected to the system.

- **Mosaic**

The introduction of Mosaic is an industry-first combination of AI and intelligent storage.

All new GB Labs storage systems now include GB Labs' 'Mosaic' automatic asset organiser - a dynamic, intelligent, and vastly enriched way to track and find media, that saves users enormous amounts of time. Mosaic is streets ahead of old and inefficient search methods. It automatically scours all in-built metadata and integrates it with a highly professional AI tagging system.

In short, users no longer need to tag anything. Mosaic takes care of that.

All the user has to do is enter a date, location, or object located within the assets; select the useful clips presented to them; and load them into a basket that can be subsequently opened on a client workstation.

Content is tagged automatically with a great deal of information giving far more consistency in how and where it's stored and the ability to rapidly retrieve it later. That means that subsequent search parameters can be refined by every user's preferences and requirements, enabling them to find what they want very quickly, select from the relevant options presented to them, and effortlessly manage those assets the rest of the way through the editing process.

- **File Manager**

Allows you to copy or move files around the workspaces on your system, or to and from other CORE OS systems on the network. File Manager enables changes to permissions and file ownership, in addition to being able to preview and retrieve file information.

- **Analytics Centre**

GB Labs Analytics Centre is an easy way to see, at a glance, everything that is taking place on a network.

Any issues, anywhere, are flagged the instant they occur with a straight-line path that enables users to find out exactly what happened, when, where, and determine how it can be resolved.

A ghost graph on the Analytics Centre UI clearly displays the most important, top line operational information, and can be used to delve much deeper into certain areas with a click.

Not only will Analytics Centre display historical data, it will also indicate who is - and has been - consuming the most data; how they are connected; by what protocol; and if they are performing at peak efficiency on the storage network.

For most, this is everything, and more, that they will need to have a very

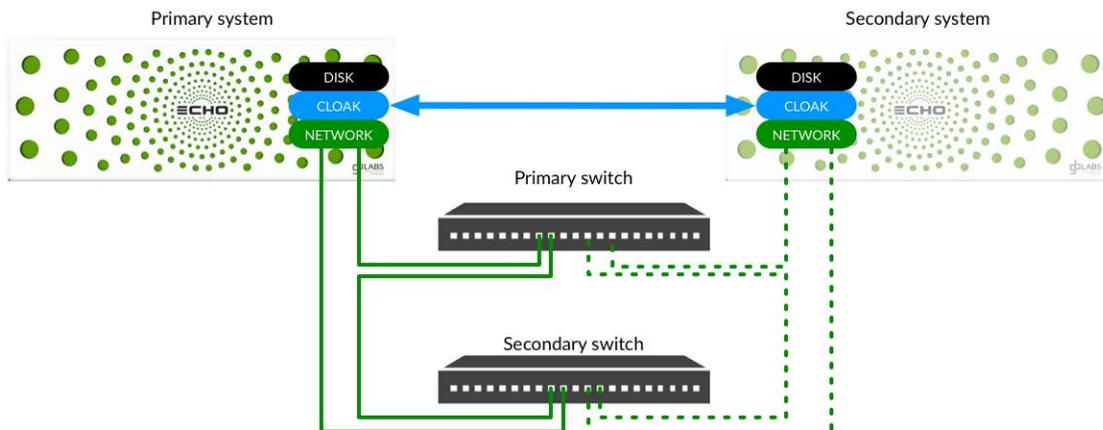
clear and comprehensive view of what's transpiring on their network. Whether it analyses the activity of five users or 500, GB Labs' Analytics Centre helps to make sure everyone is productive.



- CloakDR**  
 Full and seamless failover disaster recovery (DR) solution. CloakDR requires 2 x ECHO 36 units with CORE.4 OS. When enabled, both units function as a single unit with the capacity of only 1 unit available to the network.

This unique GB Labs automatic failover technology is available on the ECHO 36 platform delivering high availability. The ECHO 36 unit can be linked to another ECHO 36 unit on the network (using 10GbE, 25GbE 40GbE or 100GbE) and present a single, virtualised IP address, whilst channelling new data to both units simultaneously, maintaining its ultra-fast read performance.

For highly resilient deployments, switches and clients can also be channel-bonded for no single point of failure. ECHO 36 can therefore suffer complete failure, or even removal, without serious issue as the secondary system will go live within 2-4 seconds. Any incoming new data will be held and safely written after failover has occurred.



## 5. File System

XFS is a 64-bit, high-performance, journaling file system used on all GB Labs storage platforms. XFS is particularly proficient at parallel I/O due to its design based on allocation groups. This enables extreme scalability of the I/O threads, file system bandwidth, and file system sizes when spanning multiple storage devices.

XFS ensures data consistency by performing metadata journaling and supporting write barriers. Capacity allocation is performed through extents with data structures stored in B+ trees, improving the overall file system performance, especially when handling large files. Delayed allocation helps in preventing file system fragmentation, while online defragmentation is also supported.

As a feature unique to XFS, I/O bandwidth can be pre-allocated for a guaranteed rate, that is suitable for many real-time applications.

## 6. Data security and disaster recovery

Any single system that is being used for storage of valuable assets is susceptible to data loss and force majeure, regardless of how sophisticated the RAID level or clustering of the disks. It is critical that data is backed up and readily accessible for the purposes of business continuity and preservation of assets.

ECHO 36 units can automatically replicate to other GB Labs servers on the network, which allows for data to be available in an emergency on a separate storage volume. Using long-range fibre, this can be up to 10km away.

ECHO 36 is the larger of the ECHO storage range and comes with mirrored OS, dual 40Gbe and hot spare disks as standard with ECHO 36 EX for further expansion. With a native capacity of 448TB, this size of unit means that future expansion can go beyond 10PB utilising just one head unit.

It is also possible to re-purpose Fibre Channel RAID arrays or SAS JBODs with ECHO Bridge to provide this replication function. For compatibility of RAID arrays, please contact us.

The GB Labs range is also complimented by high speed LTO-6, LTO-7 or LTO-8 units that run comprehensive software designed to work within the GB Labs Ecosystem. CORE software will also connect to other network servers, allowing Archive, Backup and LTFS workflows to be flexible.

## 7. API and third-party integration

A complete and comprehensive API is available for third-party integration with functions of CORE OS, including, File Manager and HSM automation capabilities of all GB Labs servers.

In addition, there is also a complete API for the VAULT product range, which is also readily available to provide powerful integration with other servers running management services, such as; MAM and DAM software.



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