GB LABS
INTELLIGENT
STORAGE

Technical RFI

FastNAS F-8 Nitro Studio

FAST NAS
F-8 STUDIO
BUILT BY GB LABS

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1. Unit specifications

Unit dimensions: 8.9cm x 47.3cm x 65.0cm (3.5” x 18.6” x 25.5”)
Unit weight: 28kg (31.7lbs)
Input range: 100 - 240 VAC, 50-60Hz
PSU safety: EMC - USA-UL listed. Canada-CUL listed, Germany-TUV certified, EN60950/IEC 60950-Compliant, CB report, CCC certification
Power supply: Single redundant 500W removable PSUs

Power requirements standby: 33W
Power requirements full load: 350W

Operating temperature range: 10°C - 35°C
Non-operating range: -40°C - 70°C
Operating humidity range: 8 - 90% non-condensing
Non-operating humidity range: 5 - 95% non-condensing

Unit form factor: Portable

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

2. Configurable capacities

- **FastNAS F-8 Nitro Studio** 16TB, 32TB, 48TB, 64TB, 80TB and 96TB

3. Connectivity

- 4 x 1Gb Ethernet (RJ45) ports
- 1 x RJ45 dedicated IPMI LAN port
- 2 x USB 2.0 ports
- 2 x USB 3.0 ports and eSATA
- 1 x VGA connector
- Option for additional 1Gb, 10Gb, 25Gb and 40Gb Ethernet ports

4. Key Features

- **CORE.4 Lite OS**
  Highly intelligent and powerful operating system developed by the GB Labs engineering team specifically designed for the creative world.
  Friendly, full of features and management tools accessible through a clean and easy-to-use web interface, powered by set of intelligence and technology gained over years of experience in the Media and Entertainment industry.
  CORE.4 Lite OS offers a feature set that can adapt as workflow evolves and changes.

- **Nitro Hybrid Boost Technology**
  GB Labs developed Nitro Hybrid Boost Technology is an intelligent, hybrid disk technology. Unlike Cache or general purpose hybrid approaches, GB Labs Nitro is specifically designed to real-world usage and brings dramatic enhancement to collaborative media workfows, offering close-to-pure SSD experience.

- **Data protection**
  RAID 5 data protection.
  Optional Hardware based RAID 0/1/5/6 and Software based RAID 0/1/5/50/60.

- **Velocity RAID Engine**
  Optimised for AV usage and low latency response, the Velocity RAID Engine (VRE) is at the very heart of the FastNAS experience. This unique technology, developed by GB Labs, offers superb performance using minimal system resources and offering lightning-fast, random-access capabilities. VRE offers industrial grade resilience and protection of your assets in either RAID 5 or RAID 6.

- **OS Agnostic**
  Cross-platform support allowing Linux, Mac and Windows to co-exist on a CORE.4 Lite OS NAS.

- **Network Loop Protection**
  With clients and users often connected to both AV and House networks, Network Loop Protection (NLP) is designed to ensure AV traffic remains on the AV network and will reject packets which are not destined for the correct interface.

- **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.

- **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.

- **Mosaic**
  Automatic asset organisation software for CORE.4 OS that indexes files on local storage - giving users the ability to browse their assets. Mosaic's variety of organisation tools enable different organisation strategies around user collaboration and data sharing. Mosaic is designed to support various asset types such as; images, audio and video.

- **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.

5. Performance

To guarantee stream performance, FastNAS will utilise the full performance of its 6Gb SAS backplane, Velocity RAID Engine (VRE) and latest generation disks. Combining the raw performance with our Nitro technology, performance is sustained when delivered to network clients.

The Hierarchial Storage Management (HSM) automated tiering of the GB Labs systems is key to efficient management of digital assets and the provision of sustained performance for all workstations. A Digital Asset Management (DAM) or Media Asset Management (MAM) server with 10/25/40GbE access to all storage platforms on the network, and in conjunction with the powerful automation functionality built into GB Labs servers, is able to push and pull data between CORE OS platforms within the network ecosystem.

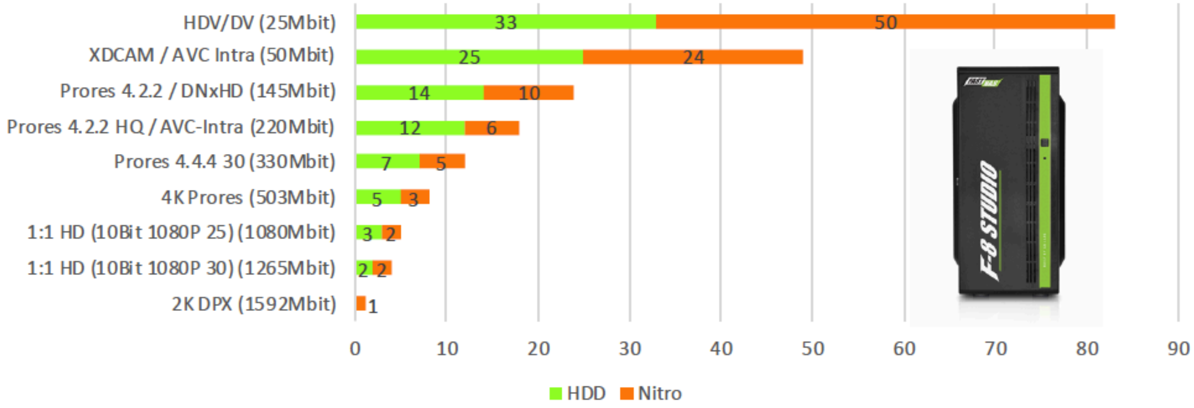
This functionality can move large quantities of data between storage volumes, without the inherent ‘bottle-necking’ usually associated with this type of topology. Therefore, the DAM or MAM server is able to work intelligently across the various available volumes of data, whilst keeping track of the growing number of assets.

As assets reach maturity, EasyLTO, in conjunction with GB Labs storage servers, can rapidly archive or re-establish assets in the future.

6. Performance Analysis - Delivery to Network

The chart below demonstrates a number of unique AV streams that can be read from a single FastNAS F-8 Nitro solution.

Each AV streams consists of a number of media files being pulled from the storage to a Non-linear Editing (NLE) timeline, where each file is unique.



7. 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 CORE OS XFS, I/O bandwidth can be pre-allocated for a guaranteed rate, that is suitable for many real-time applications.

8. 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.

FastNAS 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.

GB Labs ECHO is the most popular backup or near-line solution for FastNAS deployments, available in similar capacities to FastNAS (up to 224TB per unit or further by expansion).

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 RAIDs or SAS JBODs with ECHO Bridge to provide this replication function. For compatibility of RAIDs, please contact us.

The GB Labs FastNAS 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 and also capable of running with an additional Quantum Autoloader solution. CORE software will also connect to other network servers, allowing Archive, Backup and LTFS workflows to be flexible.

9. 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 LTO 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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