QNAP

BlueGlacier

Tiering Archive Storage

Powered by Panasonic freeze-ray™

Combined Best in Class Enterprise NAS &
Next-Generation Optical Disc Archiver

Together, QNAP & Panasonic Build a
Cutting-Edge Tiering Archive Storage Solution

freeze-ray™ is a Trademark of Panasonic's Optical Disc-based Archive System

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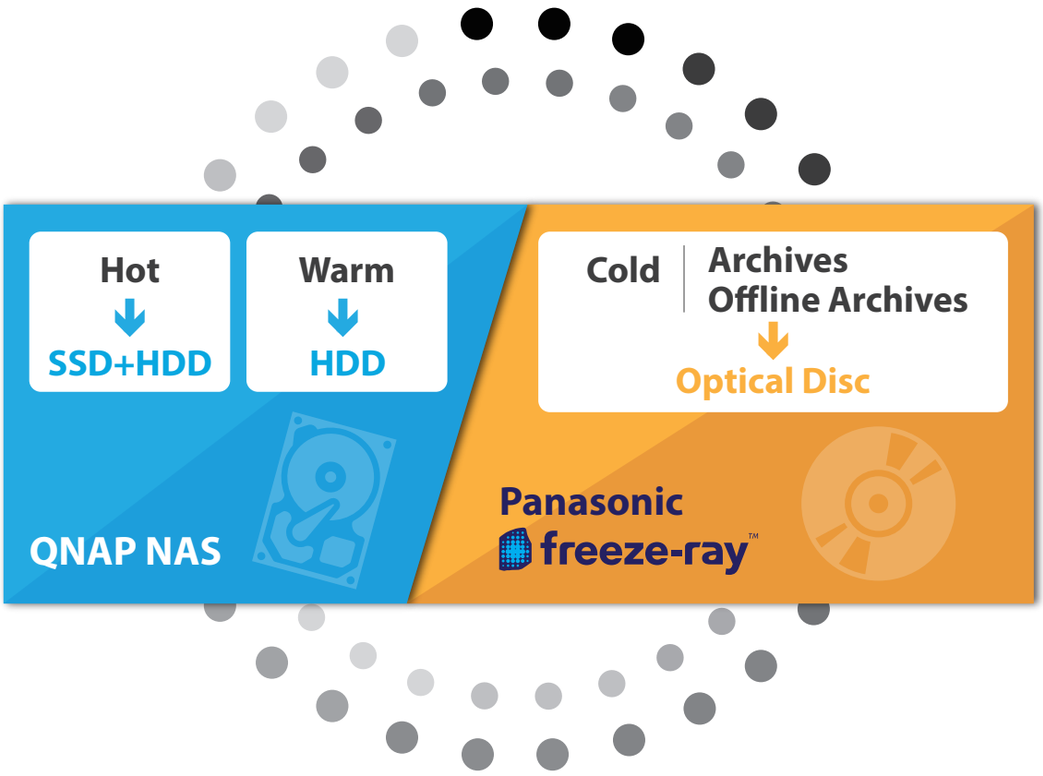
BlueGlacier

BlueGlacier Tiering Archive Storage Highlights

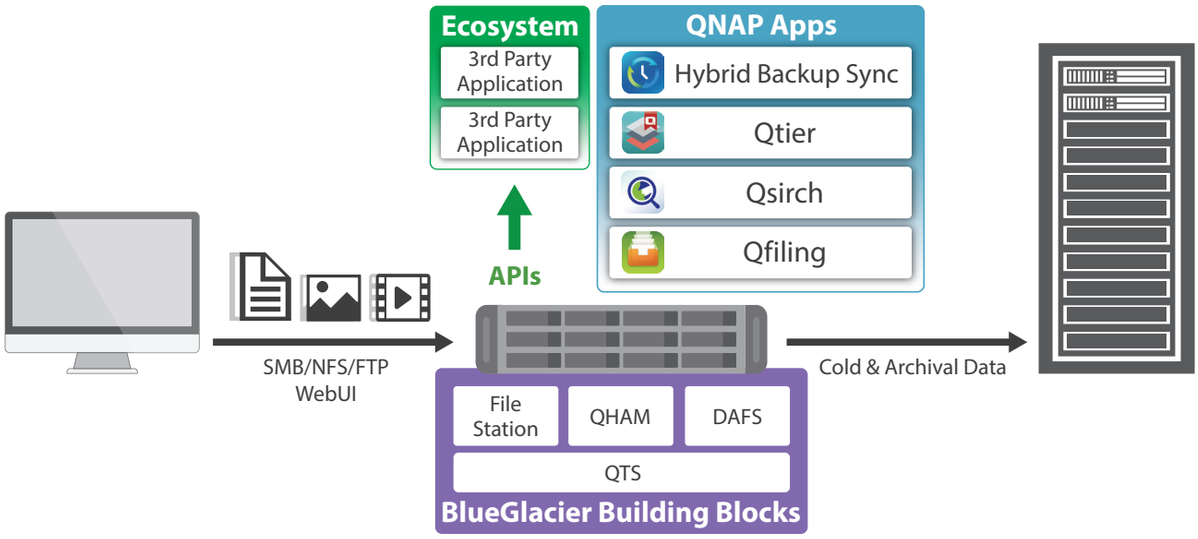
BlueGlacier Tiering Archive Storage is an integrated solution comprising enterprise NAS, optical disc libraries, and software stacks, which satisfies user requirements from primary storage to cold data storage and off-line storage. BlueGlacier is the ideal choice to secure your data across its whole lifespan and to simplify backup and archive workflows. BlueGlacier also provides the following benefits:

- **One-stop solution** — A single-tier storage solution that integrates QNAP NAS and Panasonic freeze-ray, an optical disc-based data archive system, for diverse storage performance needs.
- **Ease of use** — Best-in-class enterprise NAS user interface and advanced archival file system eliminates data archiving obstacles.
- **Sustainable storage** — Optical discs maintain your critical and valuable data for 100 years. *Estimated lifetime based on acceleration tests that are being conducted by Panasonic.
- **Strong ecosystem** — Supports diverse QNAP applications and provides a comprehensive API for customization and third-party applications.
- **Data protection** — Follows best practices to meet 3-2-1 data protection rules.

BlueGlacier is designed to fulfill different read/write patterns — SSD for high-I/O operations, HDD for general-purpose applications, and optical discs for storing cold data and archiving long-term data. The built-in 10 GbE interfaces provides high-speed connectivity for heavy workloads.
BlueGlacier has a best-in-class enterprise NAS platform with abundant native applications and productivity tools to enhance the manageability of files and data.
With QTS, File Station, QNAP Hybrid Archival Manager (QHAM),and Data Archival File System (DAFS), the building blocks of BlueGlacier deliver an easy-to-use data storage and archiving workflow.



QNAP caching technologies inside BlueGlacier effectively manage HDD & SSD arrays. Hybrid Backup Sync consolidates data backup, file sync, and disaster recovery into a single app. All of these deliver a highly-automated environment with excellent performance, greatly streamlining and consolidating workflows of everyday tasks into a single application.
On top of these system essentials, BlueGlacier users can leverage QNAP applications to enhance work productivity. For example, Qsirch lets you quickly find files and Qfiling helps to automate the organization and archiving of files and data. There are many more applications on QNAP NAS that can extend system functionality and to provide additional features.



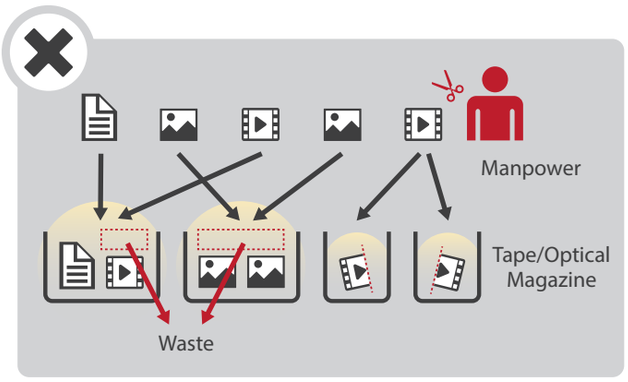
Advantages of BlueGlacier Tiering Archive Storage

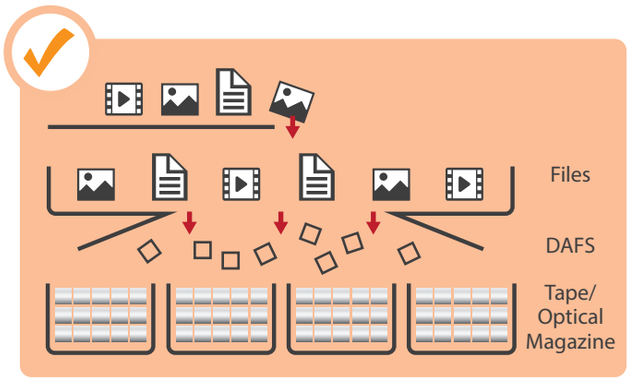
There is no steep learning curve or switching costs for adopting BlueGlacier Tiering Archive Storage. With QNAP's best-in-class NAS applications and user experience, BlueGlacier provides a user-friendly environment to manage data across every stage of its lifespan. It consolidates complex storage management operations into a simple web user interface.

BlueGlacier offers comprehensive API support (listed below) for partners and users. With these APIs, partners can integrate their applications into BlueGlacier as part of this strong enterprise storage ecosystem. It also provides great flexibility for customization.

- **freeze-ray system and magazine management API**
- **Data archival/retrieval job management API**
- **Data Archival File System (DAFS) management API**
- **File/folder read/write operations API**
- **NAS system management API**

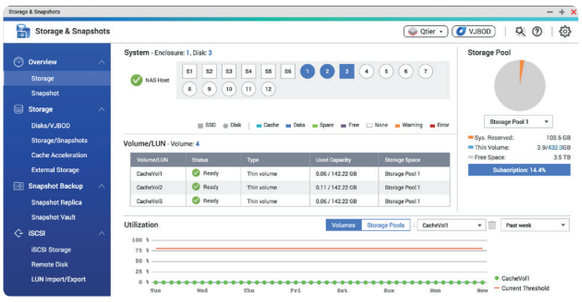
BlueGlacier's advanced Data Archival File System (DAFS) allows storage pools containing plural physical storage devices to be created. It cuts files into blocks and consequently distributes them to grouped physical devices. This eliminates the need to arrange files into storage devices and also enhances storage utilization. When large batches of files need to be archived/backed up, DAFS saves you from time-consuming tasks.

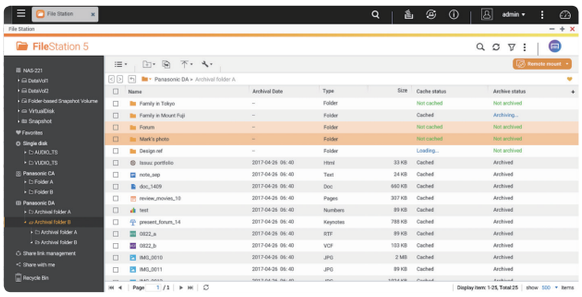




QNAP Storage & Snapshot Manager provides a secure, flexible and comprehensive approach to managing data on BlueGlacier before being archived on optical drives. BlueGlacier also offers a number of great features such as storage pools, multiple RAID groups, thin-provisioned volumes, space reclamation, and online capacity expansion. These features can effectively protect your valuable data.

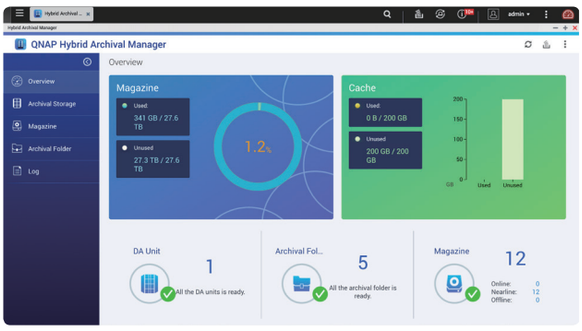
QNAP's File Station provides desktop-style file management in a web browser to simplify archiving operations and to increase productivity. Open a web browser, log in to File Station and you can immediately manage files stored on BlueGlacier.

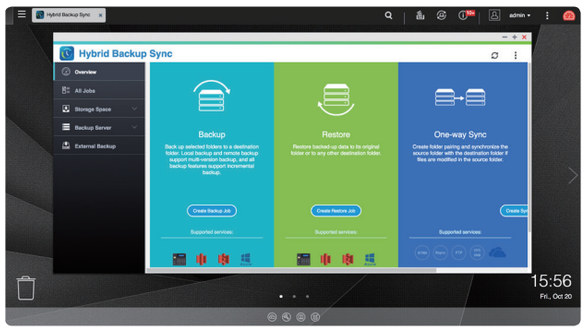




QNAP Hybrid Archival Manager simplifies and streamlines management operations of an optical drive library. With just a few clicks you can finish system configurations, magazine management, folder settings, and log tracking.

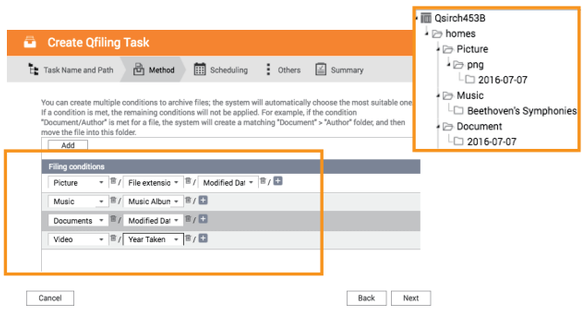
QNAP Hybrid Backup Sync enhances the efficiency of data backup, file synchronization and disaster recovery. Consolidating backup, restoration and synchronization functions into a single application, Hybrid Backup Sync can easily transfer your data to local, remote and cloud storage spaces as a comprehensive data storage and disaster recovery plan.



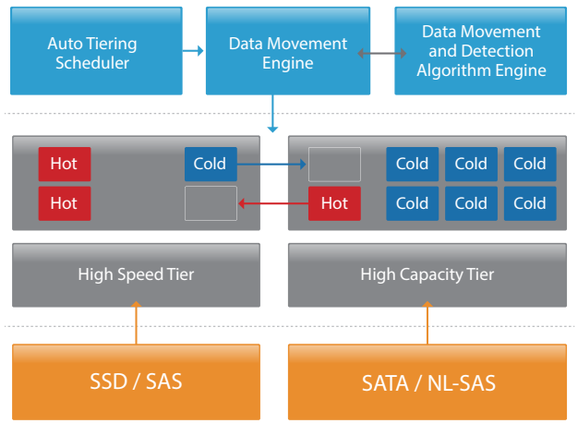


Qsirch is a powerful full-text search engine that quickly finds desired files to increase your work efficiency.

Qfiling automates your file organization. All you need to do is categorize your files, set a schedule, and Qfiling will do the rest.



QNAP SSD/HDD hybrid storage technology: Qtier™ Technology empowers automatic-tiering storage solutions that migrates frequently-accessed "hot" data to high-performance storage tiers and infrequently-accessed "cold" data to low-cost, high-capacity drives to optimize your storage performance and utilization.



BlueGlacier

QNAP offers a wide range of NAS solutions that fit every need and budget. With a selection of form factors (tower, rackmount, etc), storage capacities (up to PB scale), performance (pure HDD, hybrid, all-flash), and connectivity (up to 40 GbE), potential users can easily find a model for their unique hot and cold data storage tiers.

★ Most Superior ● Superior ▲ Rather Inferior ✖ Inferior

	HDDs (for near Line)	Tapes	Optical Discs	QNAP BlueGlacier
Data Security	▲	▲	★	★
Non-Volatility	▲	▲	★	★
Long Life	around 4 years	10-30 years	50-100 years	50-100 years
Durability	▲	▲	★	★
Compatibility	●	*▲	★	★
Total Cost of Operation(TCO)	✖	▲	★	★
Random Access Capability	★	▲	●	★
Transfer Rate	★	★	●	★

* up to two generations back

Optical discs have great potential to further enhance their recording density (storage capacity) with technological advancements. Drawing on its know-how and expertise in optical disc technology developed over the last 30 years, Panasonic has continued to make headway in developing higher-density optical discs. Panasonic now offers the next-generation optical disc, the "Archival Disc". Optimized for storing large volumes of data for an extended period of time, they are perfect replacements for tape and provide the best solution for data archiving.

▪ Data security

For data security, the recording media itself needs to have a non-overwritable structure. The write-once characteristic of optical discs uses physical changes to record data and makes overwriting impossible, so it is structurally very secure. Magnetic recording media such as HDDs and tape can be repeatedly overwritten, so additional measures (such as software) are needed to ensure the data security of these systems.

▪ Non-volatility

Magnetic recording media, such as HDDs and tapes, have the risk of losing recorded data when subjected to magnetic fields. Optical discs use physical changes for recording and have non-volatile memory. Non-volatility is one of the most important characteristics for ultra-long-term storage.

▪ Long archival life & great reliability

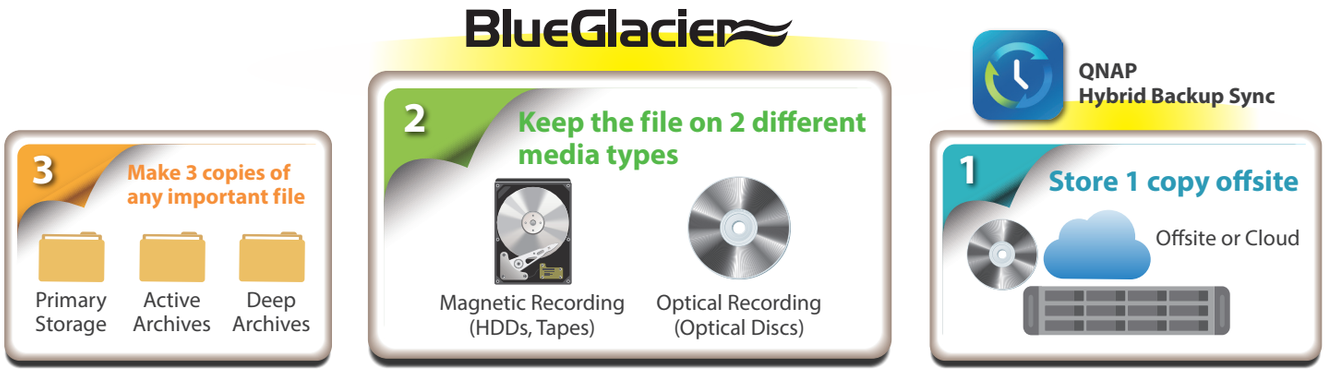
Longevity of data storage can be affected by the structure and the quality of the materials of the storage media in addition to environmental factors. These create the differences in the longevity of storage: less than 5 years for HDDs, and 10-30 years for tapes.

HDDs employ a system that combines a mechanical drive and recording media, and the longevity of these drives is generally short. Tape systems utilize long rolls of ultra-thin film which is prone to breakage. Optical discs have a stable recorded condition utilizing physical changes and this media has the longest storage capabilities. Panasonic “Archival Disc”, an optical disc for professional use, has an estimated lifespan of 100 years.

▪ Compatibility

Unless changes are made in the fundamental principles of recording, optical discs can remain compatible with discs from different generations from the past. For example, in the Archival Disc roadmap, as backward compatibility is maintained for drives from different generations, no work and no cost for migration would be necessary. In the case of tapes, compatibility may be lost due to the change of specifications to increase memory capacity. Provided that next-generation products are introduced every 2 to 3 years and the compatibility is basically supported up to the previous two generations, migration would be necessary about once every 7 years to maintain readability of past records.

For the 3-2-1 rule, BlueGlacier Tiering Archive Storage can help users establish backups effortlessly; provide optical disc storage, a physically distinct media from hard disk; and be set up offsite easily. On top of providing easy management of data, BlueGlacier is the perfect choice for long-term data archiving.

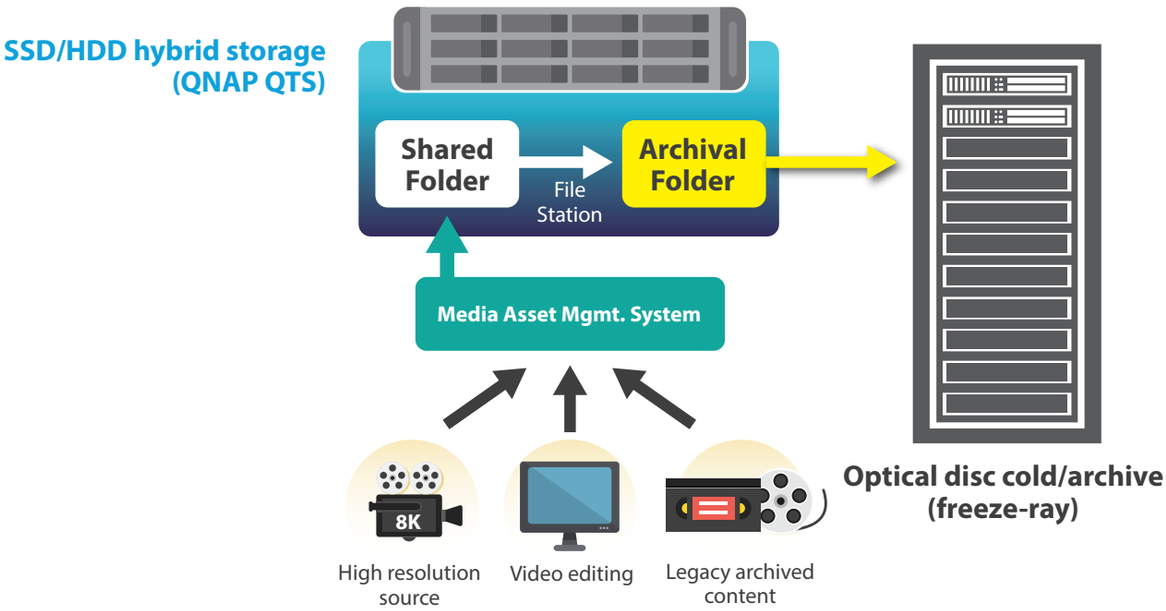


According to Data Backup Options, a United States Computer Emergency Readiness Team (US-CERT) publication, all computer users, from home users to professional information security officers, should back up their critical data to protect against loss or corruption. Saving just one backup file may not be enough to safeguard your information. To increase your chances of recovering lost or corrupted data, follow the 3-2-1 rule.

- **3 – Keep 3 copies of any important file: 1 primary and 2 backups.**
- **2 – Keep the files on 2 different media types to protect against different types of hazards.**
- **1 – Store 1 copy offsite (outside your home or business facility)**

Application Example of Media & Entertainment Industry

As multimedia technology improves, mainstream display resolutions have rapidly evolved from 1080p to 4K - with 8K and 16K on the horizon. With the increase in image quality comes a major increase in storage requirements for both producing and archiving media files. BlueGlacier Tiering Archive Storage offers an SSD/HDD hybrid tier to quickly respond to data from media asset management systems, and once the data is selected to be pushed to the cold/archive data storage, optical discs will be the best place for it. BlueGlacier's comprehensive API support also enables the possibility of integrating the media asset management system into BlueGlacier to improve user workflows.



	BlueGlacier Tiering Archive Storage			
Item	Starting Set		Optional Extension Kit	
	Storage Gateway	Optical Disc Module Set	Storage Gateway JBOD	Optical Disc Module w/o Drive
Description	Starting set for BlueGlacier storage. Includes one storage gateway, two optical disc modules, and one bottom module.		Optional JBOD unit to extend its SSD/HDD capacity.	Optional optical disc module to extend optical disc capacity. Two types available — with and without drive unit.
Model Number	BGA-PBRS-SS01		REXP-1220U-RP x1	BGA-EPBRD-001 (with drive) BGA-EPBR0-001 (w/o drive)
Content & Specifications	TES-1885U x1 Intel Xeon D-1531 32 GB (up to 128 GB) 4 TB HDD x6 256 GB SSD x4	Bottom Module x1 Base Module x1 Extension Module with Drive x1 Power Supply Unit x1 3.6 TB Magazine x76 (up to 152)	REXP-1220U-RP x1 SAS-12G2E 2-port 12Gb/s SAS HBA	Extension Module with Drive x2 (SAS HBA is required in particular configuration) and/or Extension Module without Drive x1
Drive Bays/ Magazine Slots	SFF/LFF x12 (front) SFF x6 (rear)	3.6 TB Magazine x152	SFF/LFF x12	3.6 TB Magazine x152 and/or 3.6 TB Magazine x76
Raw Capacity	24 TB HDD (up to *144 TB) 1 TB SSD (up to **72 TB)	273.6 TB (up to 547.2 TB)	Up to 144 TB HDD *** Up to 48 TB SSD	Up to 547.2 TB and/or Up to 273.6 TB
Rack Units	2U	18U	2U	12U and/or 6U
	20U/42U standard rack			
RAID Support	RAID 0, 1, 5, 6, 10	RAID 0, 5, 6	RAID 0, 1, 5, 6, 10	RAID 0, 5, 6

* Maximum capacity is based on 12x 10 TB HDD.

** All SSD configuration is available and will occupy front LFF bays and HDD capacity. 4 TB SSD used for 72 TB all SSD SKU.

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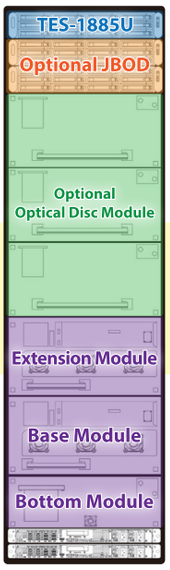

The BlueGlacier Tiering Archive Storage Specifications and SKUs

※ BlueGlacier will initially be available in Taiwan and Japan, please contact blueglacier@qnap.com for further information.

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