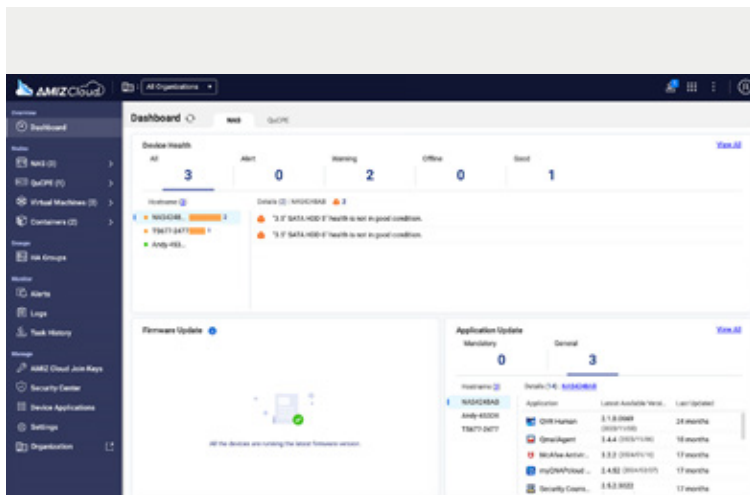## Delegated administration improves management productivity and data security

NAS administrators can delegate 8 types of roles to other users with specified permissions to management tasks and NAS data. For growing organizations, role delegation helps ease management workloads without sacrificing data access controls.

Monitor and manage multiple NAS using AMIZ Cloud management platform

AMIZ Cloud, a centralized cloud management platform, can remotely monitor not only QuCPE Network Virtualization Premise Equipment but also QNAP NAS. It enables remote monitoring NAS resources and system status, conducting firmware updates, and batch install/update/start/stop apps. For organizations with multiple sites or branches, IT staff can easily manage multi-site devices from a single place.

Enhance cybersecurity and safeguard enterprise privacy

▪ **Enhanced performance of encrypted folders/LUNs**

You can encrypt the contents of specific shared folders and LUNs to prevent unauthorized access. From QuTS h5.1.0, the performance of encrypted shared folders and LUNs has been greatly enhanced.

▪ **Supports AES-128-GMAC for SMB signing acceleration**

It greatly increases data signing efficiency over SMB 3.1.1 and enhances the CPU utilization of the NAS system. (Only applicable in Windows Server 2022 and Windows 11 clients)

▪ **QNAP Authenticator supports passwordless login**

The QNAP Authenticator mobile app is available for setting up two-step log-in process to NAS accounts, including time-based one-time passwords, QR code scanning, and login approval. Passwordless login is also supported.

QNAP

QuTS hero 5.1

High-performance ZFS-based operating system with greater reliability

The ZFS-based QuTS hero operating system not only prioritizes data integrity and security but also offers advantages in optimizing SSD applications that other file systems cannot match. QuTS hero NAS provides a variety of storage solutions that fully utilize the benefits of ZFS, including a rich selection of HDD+SSD hybrid storage models, assisting enterprises in seamlessly integrating them into their IT infrastructure.

Meets diverse business needs

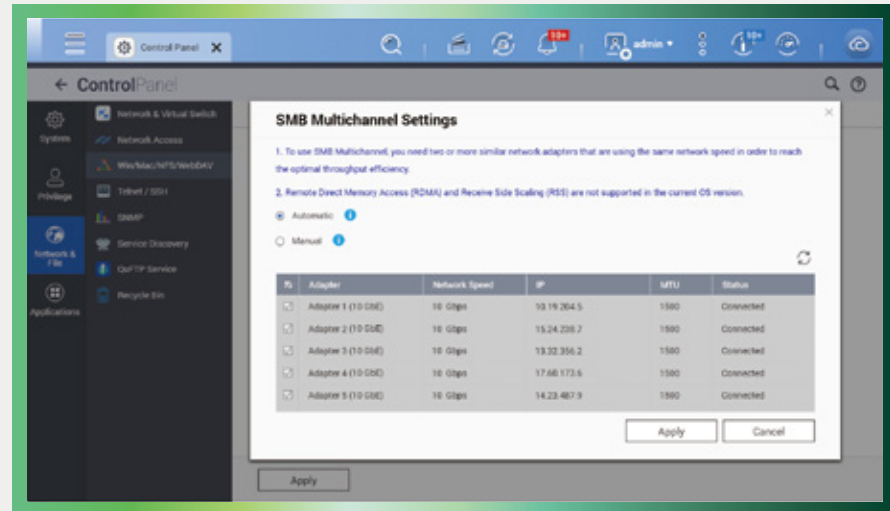| Media and Entertainment production	Enterprises	Data Centers
QuTS hero inline data compression and deduplication enhances smooth video editing	QuTS hero empowers high-performance VDI and future-proofed disaster recovery planning	QuTS hero emphasizes data security, supports virtualization, and cloud integration

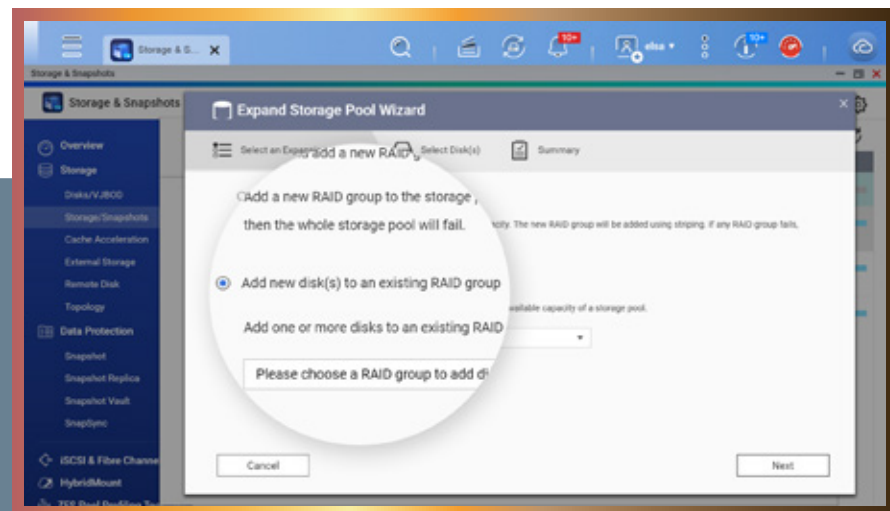## SMB multichannel for full throughput and multi-path protection

SMB multichannel aggregates multiple network connections to maximize available bandwidth with higher transfer speeds – especially ideal for large file and multimedia transfer. SMB multichannel also allows network fault tolerance to prevent service interruption.

Ensure data integrity and prevent data corruption

▪ **Expand ZFS RAID-Z capacity by adding a single disk**

Users can simply add a single disk to an existing RAID-Z for storage expansion, or conveniently add 2 to 3 disks for upgrading RAID levels with Parity.

▪ **Automatic RAID disk replacement with spares before potential failure**

If potential drive errors are detected, the system automatically moves data from the affected disk in a RAID group to a spare disk, before the data on the affected disk is completely corrupted. It prevents the time and risk from RAID rebuilding, thus greatly improving system reliability.

▪ **Automatic data checksum**

ZFS has self-healing capabilities to prevent silent data corruption. It conducts checksum verification for all data blocks and automatically repairs any detected errors, ensuring data integrity and accuracy.

▪ **WORM (Write Once, Read Many)**

By enabling WORM, written data cannot be overwritten, modified, or deleted. This ensures the integrity and immutability of archived data for a specified period, making it suitable for specific use cases and compliance retention policies.

Efficient data deduplication and compression algorithms

▪ **Inline data deduplication**

Removes repeated data before writing it to disk, leading to substantial savings in storage space and maintaining optimal disk capacity.

▪ **Inline compression**

Shrinks large files to smaller sizes, helping to reduce the actual I/O load on backend storage and achieve accelerated access. In VDI environments, this can significantly streamline virtual desktop operating system files, making them more cache-friendly and boosting operational performance.

▪ **Inline compaction**

Merges small data into the same block space, assembling fragmented data into complete blocks to significantly improve space utilization. This is particularly beneficial in scenarios with high data redundancy or frequent access to small-sized data (such as transaction logs for banks or business websites), where the benefits of improving SSD space utilization are particularly evident.

▪ **Large folder space**

A single ZFS shared folder space supports up to 5 PB, helping enterprises overcome challenges in massive data storage for current big data analytics, edge computing, AI applications, and more.
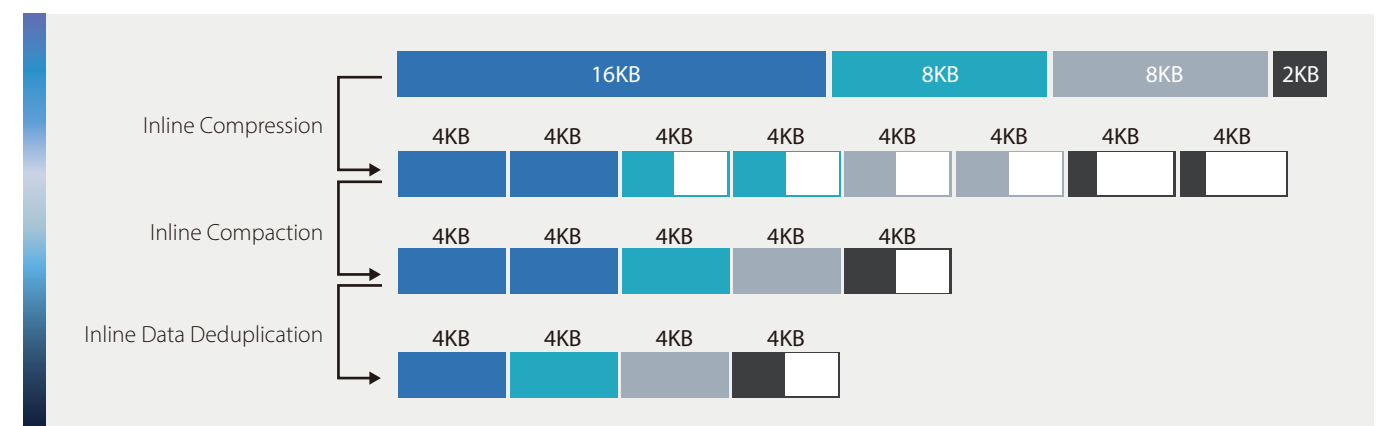
Improved iSCSI read performance by socket zero-copy

In high-speed data transmission, iSCSI performance is possibly affected by CPU overhead. QuTS hero 5.1.0 supports socket zero-copy technology that significantly offloads CPU resources, thus improving read performance for iSCSI LUN.