

QNAP®

# Business Solution Guide

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About QNAP



From Storage Pioneer to Digital Resilience Guardian

Smart Connected Data, Security Empowered — Building a Foundation of Trust through Global Compliance

QNAP embraces the "Security by Design" philosophy, providing outstanding software and hardware solutions that meet the highest international compliance standards. We focus on every aspect, from development and privacy protection to supply chain management, creating a robust protective framework for your data.

Security First and Privacy Protection

Deeply understanding the emphasis on data sovereignty in highly regulated industries, we have established ISO 27001 / 27017 / 27018 cloud and on-premises security perimeters. By strictly enforcing GDPR and HIPAA privacy regulations, we provide all-around protection for core enterprise data.

Resilient Secure Software Supply Chain

Forging a resilient defense from the source, we implement IEC 62443-4-1 secure product development and ISO 5230 open-source compliance. Furthermore, we align with the EU's NIS2 and CRA directives to construct a transparent and traceable secure software supply chain.

Win-Win Partnerships and Quality Commitment

Our commitment to our global partners is grounded in the ISO 9001 quality management system and TAA trade compliance. Each certification reflects this steadfast dedication. We continually pursue technological innovation, working together with businesses to establish a secure and agile foundation of trust in the midst of the AI wave.

Green Sustainability and Corporate Responsibility

Pursuing innovation while embracing sustainability responsibilities, we integrate ISO 14001 environmental management, ISO 14064-1 carbon footprint verification, and ISO 45001 occupational health and safety. By embedding green DNA into our corporate operations, we strive to co-create a sustainable future.

Security and Privacy Protection



Information Security Management System



Cloud Service Security



Cloud Privacy Protection



EU GDPR Compliance

Supply Chain Security and Development Resilience



Secure Product Development Lifecycle



Open Source License ComplianceOpenChain



Secure Software Supply Chain



EU NIS2 Directive Compliance



EU Cyber Resilience Act Compliance



Japan IoT Security Mark

Global Operations, Quality, and Intellectual Property



Quality Management



US TAA (Trade Agreements Act) Compliance



Taiwan Intellectual Property Management System (TIPS)

Sustainable Development and Social Responsibility



Environmental Management



Occupational Health and Safety



Greenhouse Gas Emissions Inventory



Founded in 2004, QNAP engineers the future of smart storage and networking. Guided by a Zero Trust philosophy, we embed ironclad cybersecurity into our core design, combining unyielding quality with cutting-edge AI innovation. Secure, intelligent, and built to scale—QNAP turns raw data into your strongest competitive advantage while protecting your digital world.



## Global Services

QNAP provides professional and stable services worldwide and ensures localized support.

19+

subsidiaries

50+

countries served worldwide

## A Brand Trusted by Professionals



### Products

We deliver integrated storage, networking, and smart surveillance solutions, combining advanced software and hardware to drive business digital transformation.



### Long-term Availability

Our long-term commitment to supporting models ensures consistent NAS performance and streamlined management for long-term projects.



### Warranty

Standard hardware repair and service are available for all QNAP products. An extended warranty is available for up to five years.



# Storage and Data Management



In today's data-driven era, data is a corporate asset, a driver of operational value, and the core of business transformation. QNAP's data storage and management solutions deliver outstanding efficiency, security, and scalability — effectively supporting enterprise IT storage strategies and handling AI and big data workloads, business growth, and long-term data retention compliance with ease.



# The First Choice for Highly Reliable ZFS Storage

QuTS hero NAS makes it easy to store, manage, and protect your most important business data — engineered for high performance, resilience, and intelligent operation.

20–50%

Storage pool reduction  
(deduplication + compression)

65,536

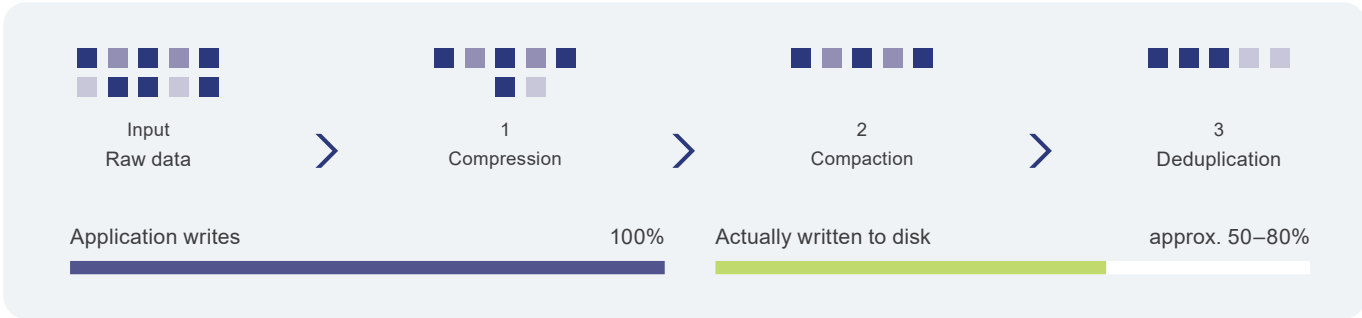
Snapshots per volume  
Restore in seconds

RPO≈0

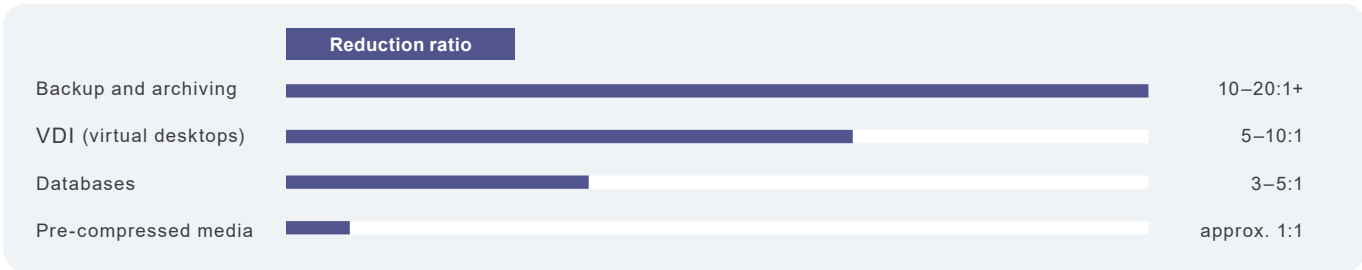
Real-time sync between two NAS units  
Zero data loss

## Same Data, Fewer Drives

QuTS hero shrinks data inline before it is written — three inline technologies so you never pay twice for duplicate bytes.



## Where It Matters Most — Verifiable Savings



Already-compressed files (JPG/MP4/ZIP) can barely be compressed any further.

20–50%

Typical storage pool reduction for mixed workloads — buy fewer drives, take up less rack space, and lower TCO. Deduplication requires at least 16 GB of memory.

Fewer drives

Less power

Less heat

Less rack space

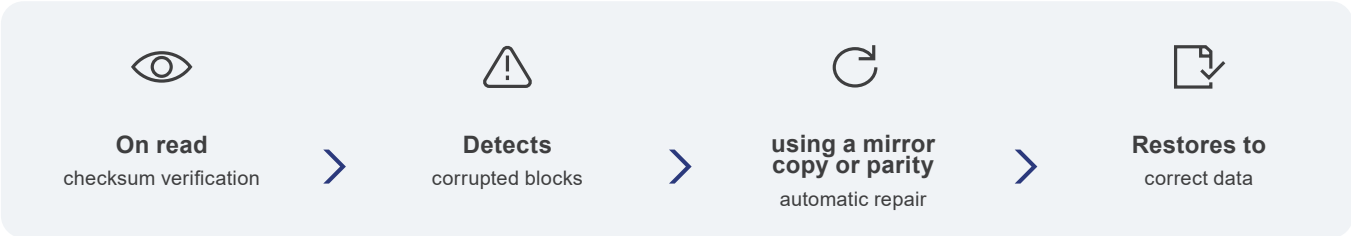
Lower carbon emissions

Every TB reduced advances both your cost and ESG goals.

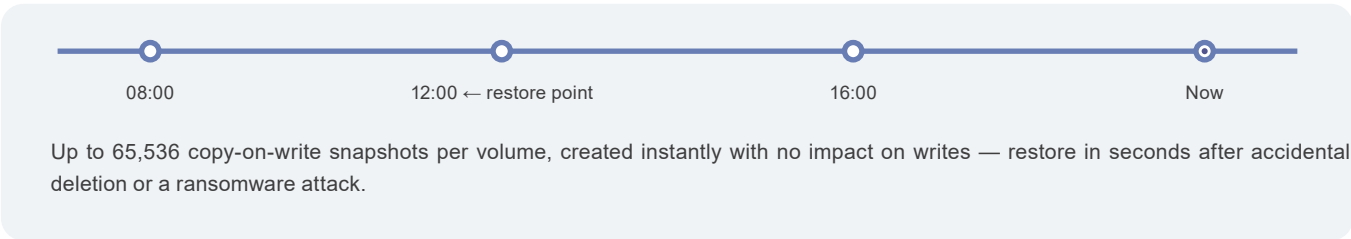
## Every Byte You Can Trust

Saving space should never mean risking data — ZFS continuously verifies and automatically repairs data, and snapshots let you return to the moment before anything went wrong.

### Self-Healing — Nowhere for Silent Corruption to Hide



### Near-Unlimited Snapshots — Back to a Restore Point in Seconds



### Two Operating Systems, One Ecosystem

QNAP's established QTS line uses the ext4 file system — architecturally different from ZFS, yet it offers the same key data protection capabilities, including Snapshot and Snapshot Replica for offsite replication. QuTS hero (ZFS) adds inline deduplication and compression, self-healing, and near-unlimited snapshots on top. QNAP provides the operating system that matches each hardware platform and workload, and both share the same app ecosystem.





# Support for All Three Storage Types

QNAP fully supports file, block, and object storage — ready across every storage type and protocol to elevate your business operations.

# Intelligent Automated Data Tiering

Enterprise storage keeps growing, yet most data is rarely accessed.

## File Storage

Supports the SMB/CIFS, AFP, WebDAV, and NFS protocols to transfer and share files between computers and workstations running different operating systems, and can be mounted as a network drive.

- Zero-latency sync across devices and operating systems for seamless team collaboration.
- Multi-version control retains every version whenever a file is modified, making file management and recovery easier.
- Share specific folders with designated users to flexibly manage data shared across departments and teams.
- Granular, flexible access permission management keeps security watertight.

## Object Storage

S3-compatible, with the scalability and flexibility to support long-term storage of data at scale for use cases such as AIOps, development and testing, and data mesh.

### QuObjects On-premises object storage



Certified Veeam Ready – Object with Immutability, with Object Lock support.

### myQNAPcloud Object cloud object storage



Supports free API calls for efficient communication and for sharing data or functionality.

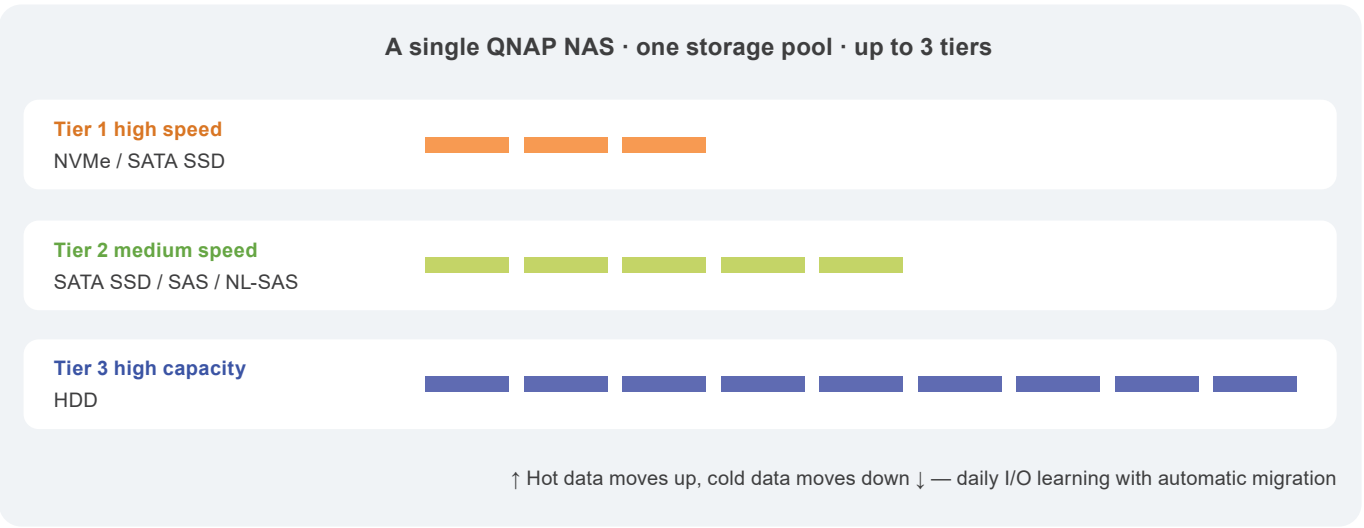
## Block Storage

Build a high-performance SAN storage architecture over the iSCSI or Fibre Channel protocol.

- Suited to large structured datasets such as large databases, virtualization platforms, and container workloads.
- Supports iSER acceleration, using RDMA to improve transfer performance and reduce CPU load.

## Put Data on the Right Tier

Qtier combines different drive types into a single storage pool and automatically moves data block by block across up to three tiers based on how hot or cold it is — delivering both performance and capacity.



## One Large Space for Users; Everything in Its Place for the System

Hot data such as VM cores and index databases is consolidated on SSDs, sharply reducing random I/O latency, while cold data automatically moves back to HDDs so SSD write endurance is not wasted — optimizing performance and TCO at the same time.

### Automatic tiering

#### QTS / QuTS hero

Moves data automatically block by block according to access frequency. Qtier 2.0 learns the pool's I/O patterns daily and picks the best time and speed for migration. You can specify migration windows (to avoid business hours) and reserve SSD space for hot data.

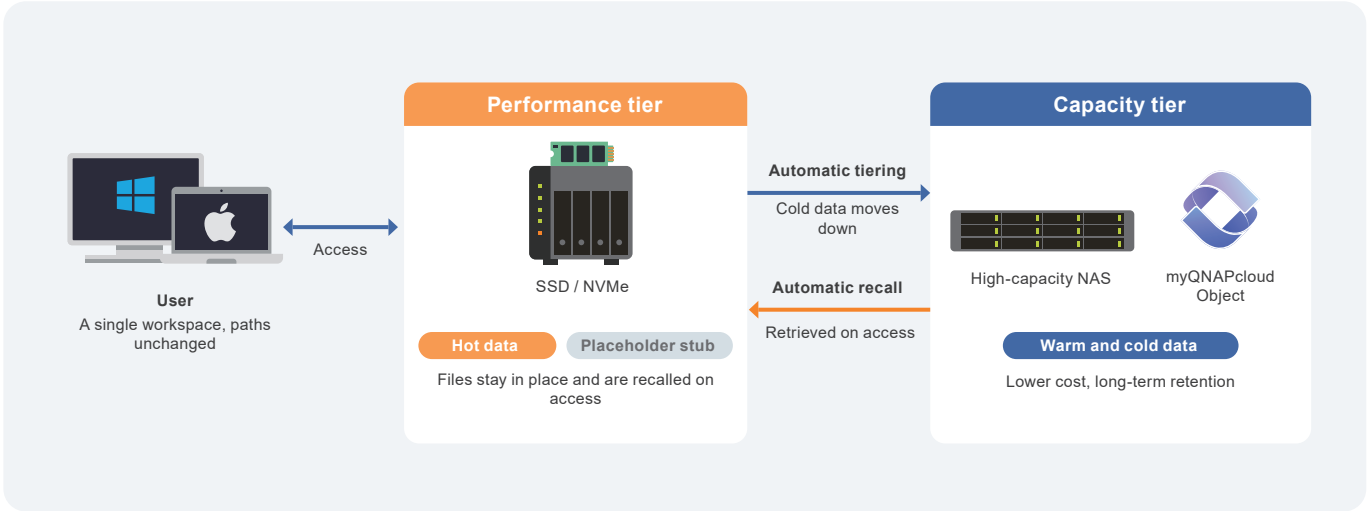
### Manual tiering

#### QuTS hero(Qtier hero)

You can pin a shared folder to HDDs (Tier 3) while using the SSD tier as a buffer to accelerate access, and set a retention period before data is migrated.

Configuration flexibility: specify migration windows (to avoid business hours) and reserve SSD space for hot data; Qtier 2.0 learns I/O patterns daily and picks the best time to migrate.

# How FileTiers Works



A cleanly separated two-tier architecture lets performance and capacity each do their job. Users work in a single, unchanging workspace while FileTiers moves data automatically in the background.

FileTiers automatically decides which tier data belongs on based on how often it is accessed, reserving the costly SSD/NVMe performance tier for active workloads and moving warm and cold data to high-capacity or cloud storage — with file paths and user habits completely unchanged.

**Performance tier · SSD / NVMe**

**Speed Where It Counts**

Holds frequently accessed, latency-sensitive data — team collaboration, video editing, and virtual machines — so core operations run at full speed.

**Capacity tier · high-capacity / cloud**

**Cost Where It Matters**

Holds warm and cold data — long-term retention, compliance records, and historical archives — on a more economical high-capacity NAS or myQNAPcloud.

**2 tiers**

Performance tier × capacity tier, automatically divided

**0**

changes to workflows or file paths

**100%**

ACL permissions fully preserved

# Core Features

Policy-driven automation frees up performance-tier space without adding operational overhead — and users never notice.

**Automatic hot/cold tiering**

The policy engine decides and moves data automatically by access time, file size, or folder — no manual selection or migration required.

**Transparent access**

Tiered files stay in place as placeholder stubs with the same name and size; opening one recalls it automatically, leaving workflows unaffected.

**Security and throttling**

NTFS and POSIX permissions are fully preserved across tiers, and mass recalls are queued automatically to avoid resource exhaustion and service interruption.

**Resilience and recovery**

Each tier can be protected with its own snapshots and HBS backups, and re-linking quickly restores the tiering relationship after a disaster.

# Use Cases

**Creative and video teams**

Projects in progress stay on the performance tier for full-speed collaboration; finished projects are archived automatically to the capacity tier, and older assets remain ready for reuse.

**Regulated industries**

Manufacturing, legal, and healthcare retain compliance data long term at lower cost, with fast retrieval for audits and incident reviews.

**Growing small and medium businesses**

One NAS focuses on performance and another on capacity, while users still see a single workspace.

**MSPs and system integrators**

Standardized tiering policies deliver solutions that balance performance and cost quickly, significantly reducing operational overhead.

# Enterprise-Grade Data Protection

**Full permission inheritance**

NTFS and POSIX ACLs are fully preserved across the performance and capacity tiers, leaving no gaps in access control.

**Recall throttling**

Large numbers of simultaneous recalls are queued automatically to protect memory and keep services running.

**Snapshot and re-link recovery**

Each tier has its own snapshots and HBS backups, and re-linking restores tiering within minutes after a disaster.

**The right data, on the right tier, at the right cost.**

Automatic tiering keeps performance high and storage costs down, with no change to the user experience.

**Built into QNAP NAS — no additional license required**



# MEGA Scale-out NAS Storage

AI training, video content, medical data, and long-term archiving cause data volumes to pile up fast. Once the scale reaches hundreds of terabytes or even petabytes, the expansion ceiling, maintenance downtime, and fragmented management of a single-system architecture translate directly into higher operating costs and lower service quality.



### Data Growing Fast

AI training data, video content, and backup files keep accumulating, shortening capacity planning cycles.



### Why Enterprises Are Moving to Scale-out Architecture

Operations depend heavily on data services, and both planned maintenance and hardware failures can halt the business.



### Rising Management Complexity

Data is scattered across multiple systems and devices, so management, monitoring, and maintenance costs rise along with scale.

## Why Enterprises Are Moving to Scale-out Architecture

Scale-up buys capacity by upgrading a single system; scale-out adds nodes to expand capacity, performance, and availability at the same time — ideal for data-intensive applications that need flexible growth and zero service downtime.

| Category             | Traditional scale-up NAS                         | Scale-out NAS                                                |
|----------------------|--------------------------------------------------|--------------------------------------------------------------|
| Expansion method     | Add drives and JBOD enclosures                   | Add cluster nodes                                            |
| Capacity ceiling     | Limited by the specifications of a single system | Scales linearly with nodes to petabyte level                 |
| Performance          | Prone to single-system bottlenecks               | Performance increases with the number of nodes               |
| Service availability | A single device failure affects service          | A distributed multi-node architecture keeps services running |

## QuTS MEGA

### A Scale-out NAS Platform Built for Petabyte-Scale Storage

QuTS MEGA is QNAP's scale-out NAS platform, consolidating multiple storage nodes into a single cluster with one unified storage space. Organizations can keep expanding capacity and performance by adding nodes while retaining centralized management and high availability.

#### Petabyte-Scale Expansion

Start with 3 nodes and scale up to 96. Capacity and performance grow linearly as nodes are added.

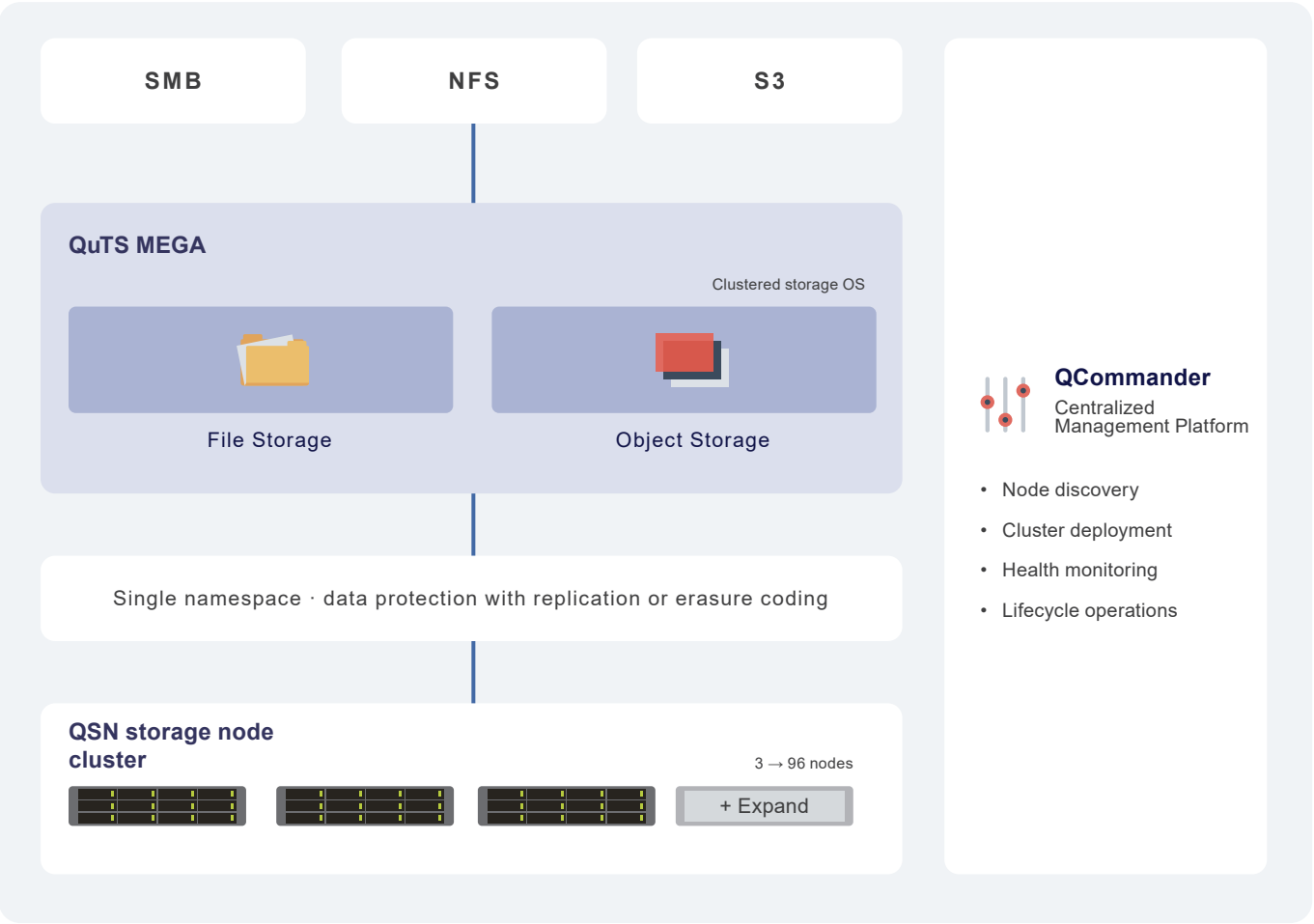
#### Continuous Operation

Avoids single points of failure so data access services stay available.

#### Centralized Management

Pools the resources of every node to provide a unified storage space and management experience.

#### Platform Architecture



# From planning to production

## One-Stop Deployment Services

QNAP provides complete support from architecture planning and system deployment through long-term operations, helping organizations shorten build time, reduce deployment risk, and keep room to scale later.

01

**Requirements assessment and architecture planning**  
  
Cluster size and network configuration are planned around your capacity, performance, and availability requirements.

02

**Complete hardware and software solution**  
  
QSN nodes, QuTS MEGA, switches, and certified drives are integrated and delivered together.

03

**Professional implementation and deployment**  
  
A professional team handles installation, configuration, and validation to bring the system online faster.

04

**Operations and technical support**  
  
Warranty, remote diagnostics, and on-site support keep the system stable over the long term.

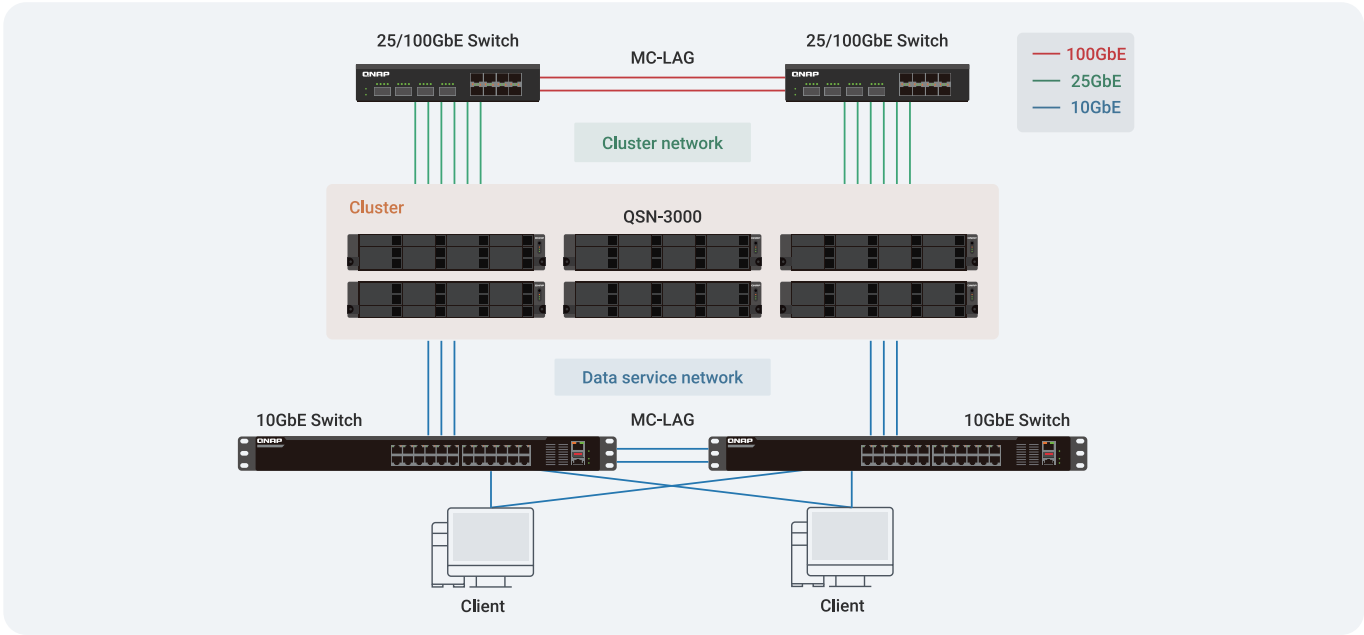
5-year hardware warranty

One-time software purchase with no additional subscription fees

8x5xNBD technical support

RMA replacement service

## Reference Deployment Architecture



## MEGA Scale-out Node Lineup

| Node               | QSN-3000                               | QSN-3050                               | QSN-7530                                   |
|--------------------|----------------------------------------|----------------------------------------|--------------------------------------------|
| Processor          | Intel Xeon E-2336<br>6C / 12T · 2.9GHz | Intel Xeon E-2378<br>8C / 16T · 2.6GHz | AMD Ryzen 9 PRO 7945<br>12C / 24T · 3.7GHz |
| System memory      | 128GB DDR4 ECC UDIMM                   | 128GB DDR4 ECC UDIMM                   | 192GB DDR5 ECC RDIMM                       |
| Network interfaces | 2 x 10GbE BASE-T<br>2 x 2.5GbE BASE-T  | 2 x 10GbE BASE-T<br>2 x 2.5GbE BASE-T  | 2 x 10GbE BASE-T<br>2 x 2.5GbE BASE-T      |
| Drive bays         | 18 (12 x 3.5" + 6 x 2.5" SATA)         | 30 (24 x 3.5" + 6 x 2.5" SATA)         | 30 (30 x 2.5" SATA)                        |
| Form factor        | 2U rackmount                           | 4U rackmount                           | 2U rackmount                               |

Note: final configurations may be adjusted to actual requirements.

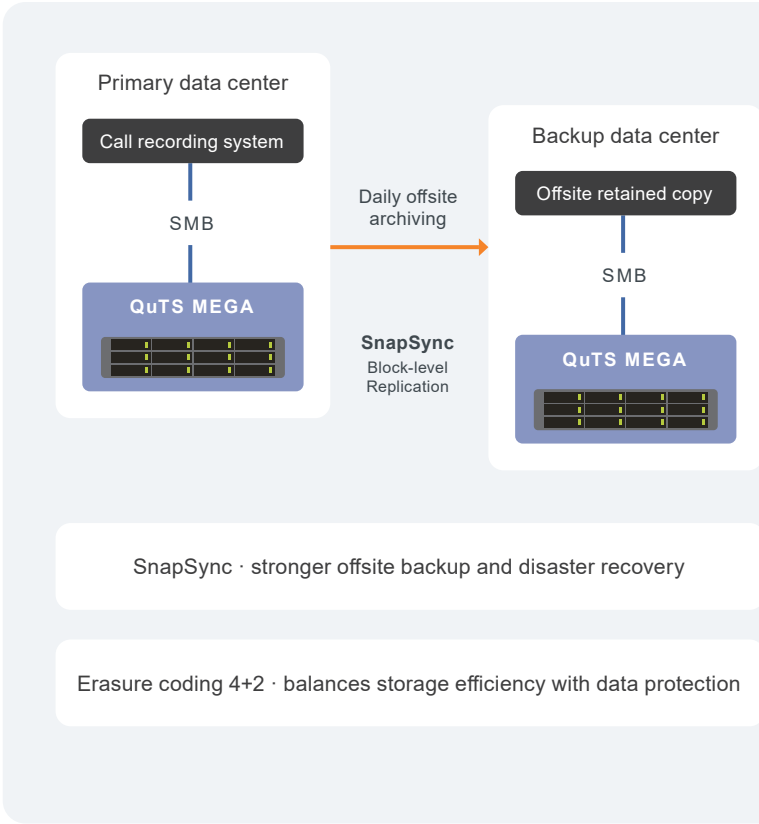
# Putting Scale-out Storage to Work in Real Business Scenarios

## Financial services

### Long-Term Retention and Offsite Backup That Meet Compliance Requirements

Customer service and transaction call recordings must be retained for years under regulation, with a usable copy kept in a second data center.

- Regulations require long-term retention of customer service and business call records
- High-quality recordings keep accumulating, making capacity growth hard to predict
- Offsite backup is needed to ensure data security and business continuity



### Petabyte scale

Supports long-term retention  
Large data volumes

### Automatic archiving

Daily offsite archiving  
Runs automatically

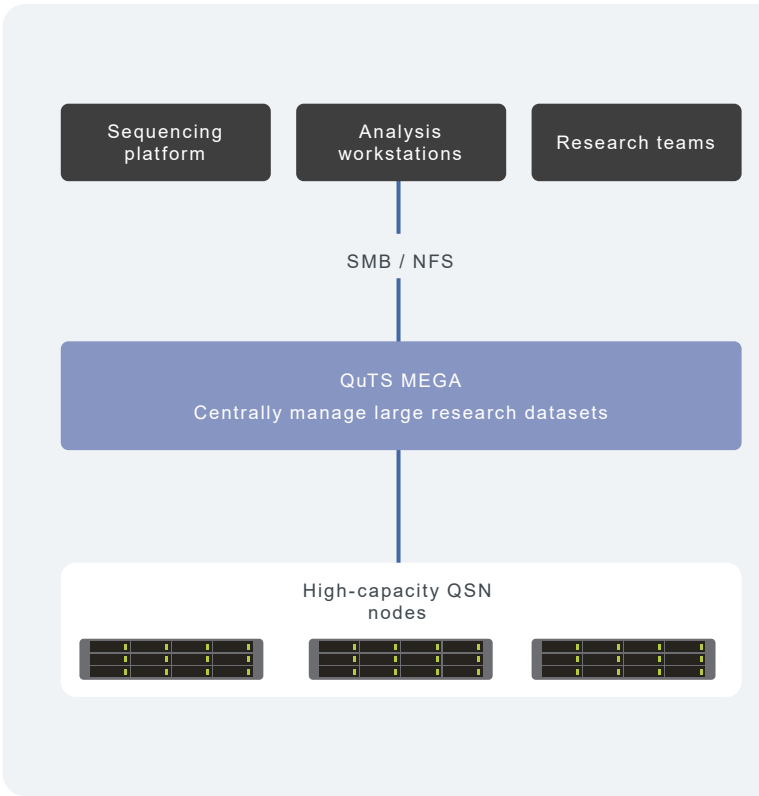
Meets business continuity and compliance audit requirements while reducing the risk of data loss.

## Healthcare and life sciences

### Long-Term Storage and Sharing of Research Data

Sequencing and image analysis data must be retained long term and accessed simultaneously across teams and platforms.

- Sequencing and research data grow fast, continually expanding storage needs
- A single sample generates large volumes of data, creating sustained capacity pressure
- Data security and cross-team access must both be addressed



### Flexible expansion

Supports continually growing data volumes

### Unified access

Cross-team sharing

Establishes a foundation for long-term retention and data governance while simplifying operational staffing.



# Expansion from Desktop to Petabyte Scale

When your NAS runs out of capacity, add drives directly with a JBOD expansion enclosure — all managed from Storage & Snapshots, with no data migration required.

## Multiple Connection Interfaces

- 

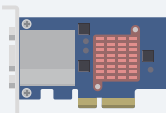
**USB**  
Most affordable and easiest to set up; ideal for desktop expansion
- 

**SAS 12Gb/s**  
Enterprise-grade bandwidth with multipath and daisy-chain support
- 

**PCIe**  
Extremely high bandwidth, scalable to several petabytes
- 

**SATA**  
Cost-effective, with universal compatibility

## Host Expansion Cards



Install a SAS or PCIe expansion card in the NAS or server to connect the matching JBOD units — one card can fan out to multiple enclosures.

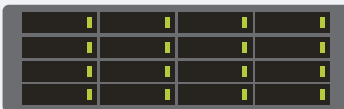
## JBOD Model Lineup



**Tower (desktop)**  
USB / SAS for small environments



**Rackmount**  
SAS / PCIe for data center deployment



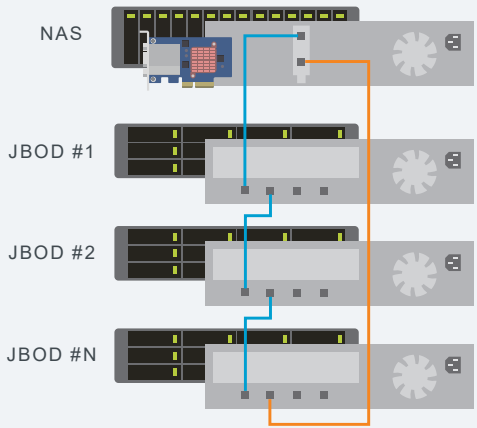
**4U 60-bay high density**  
Large-scale expansion of over 1 PB in a single unit

# Support for Petabyte-Scale Storage

QNAP delivers petabyte-scale storage solutions. Organizations can flexibly combine flagship all-flash arrays with HDD-based rackmount NAS to achieve both expansive capacity and outstanding performance.

## Suited to a Wide Range of Environments

- Large enterprises
- Multimedia production
- Data science and AI
- Large-scale surveillance recording

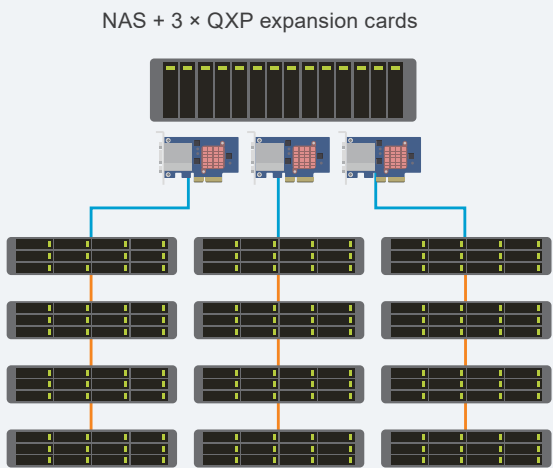


### SAS daisy-chain + dual path

The NAS daisy-chains multiple JBOD units over SAS to expand one enclosure at a time, with a redundant dual-path (Path A / Path B) design.

If either link fails, the system keeps running over the other path without interruption.

SAS 12Gb/s · high-bandwidth daisy-chain



### High-density PCIe fan-out

Install multiple QXP PCIe expansion cards in the NAS to fan out to as many as 12 PCIe JBOD units, stacking a single NAS up to petabyte scale (several petabytes).

×12 JBOD · up to ~4.1 PB

# Complete Backup Solutions

QNAP helps businesses fully back up their data, streamline data management, and recover quickly and effectively from disasters — keeping your organization's critical data, services, and systems secure and available.

## Backup, Recovery, and Data Protection

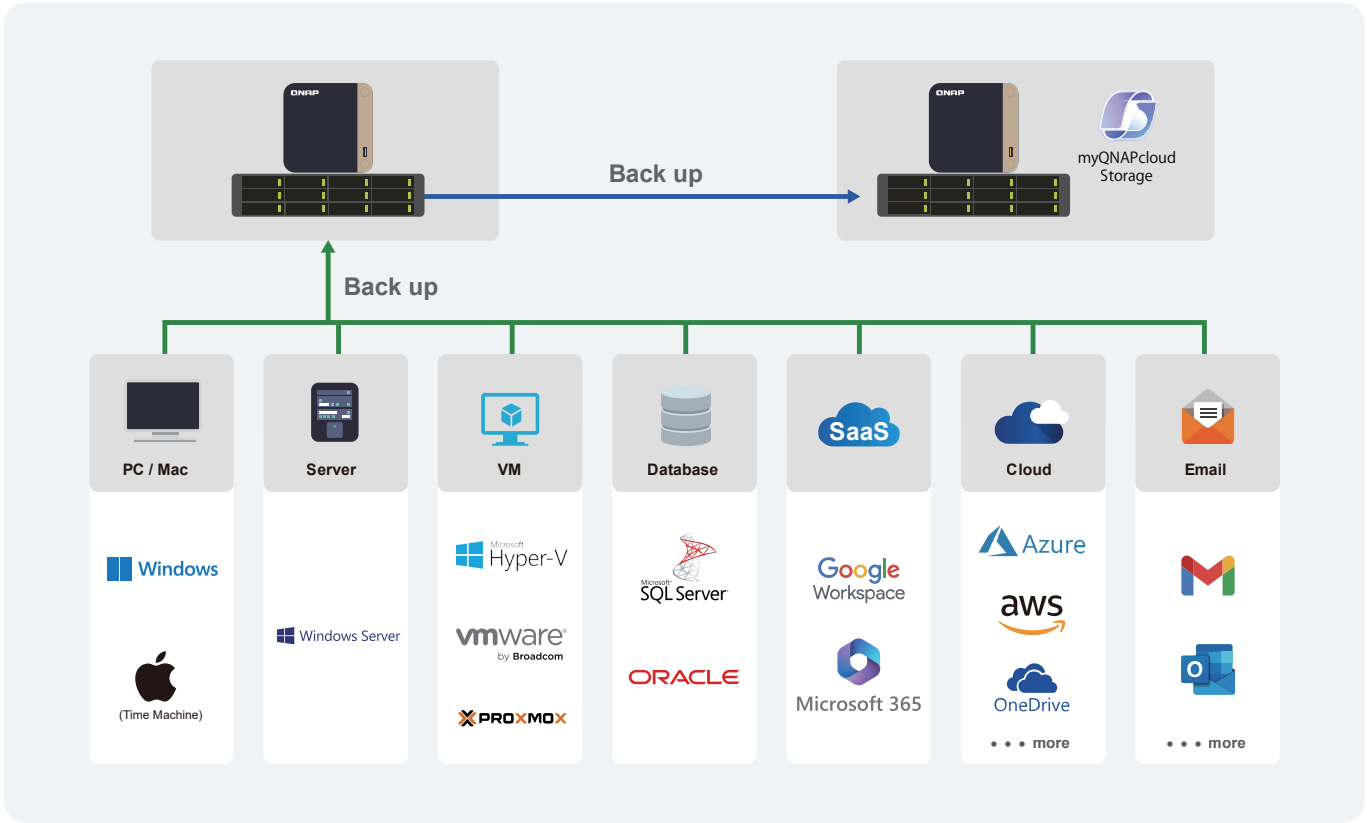
QNAP NAS helps ensure business continuity by rapidly backing up and restoring critical business data, services, and systems.

### Why Is QNAP the First Choice for Enterprise Data Backup?

- Reliability**  
High-performance hardware and software solutions ensure data integrity and availability.
- Easy Management**  
Intuitive interfaces and management tools simplify data backup and recovery.
- Security**  
Multilayer security protects data from unauthorized access and cyberthreats.
- Cost Efficiency**  
A complete hybrid cloud backup architecture with no traffic fees cuts deployment and management costs.
- Scalability**  
Grows with your business, meeting storage needs from small businesses to large enterprises.
- High Compatibility**  
Supports third-party drives and backup software for flexible, efficient backup management.

### Back Up All Types of Data

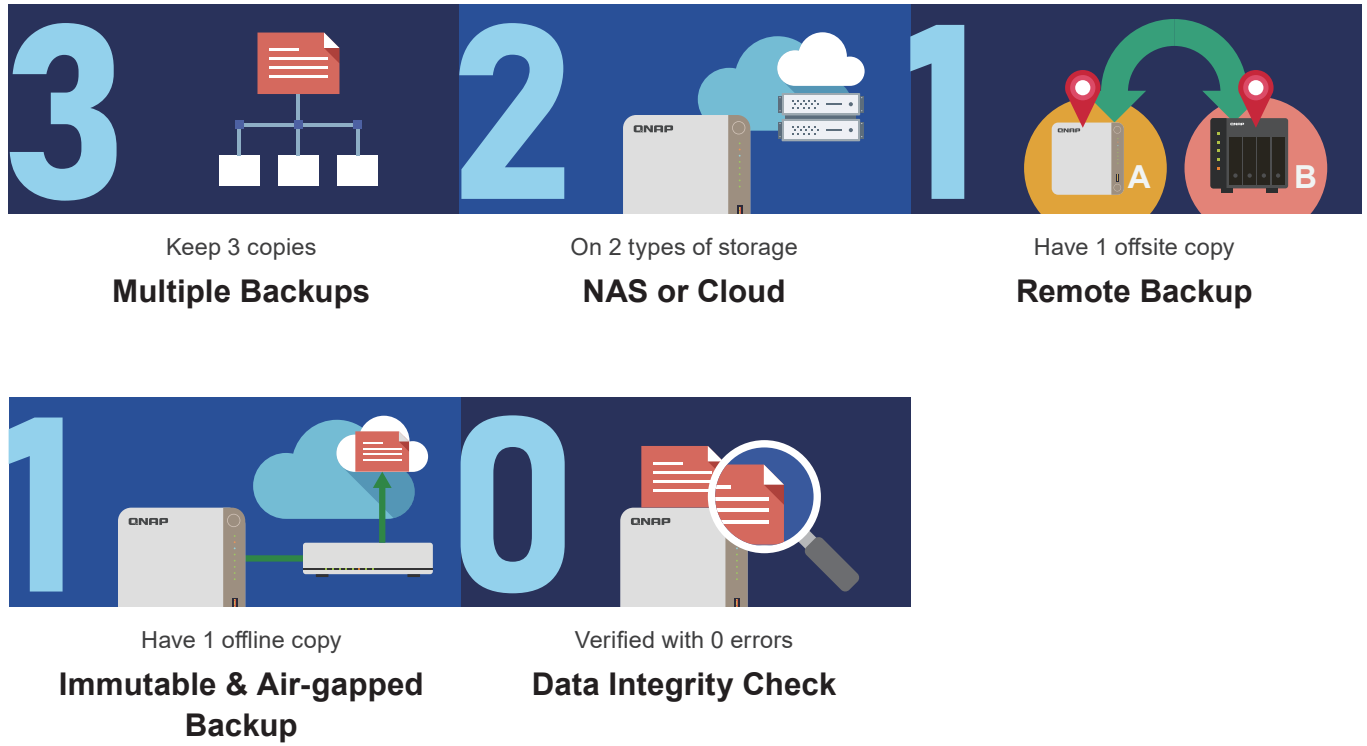
Stay prepared for any incident — nothing left to chance.





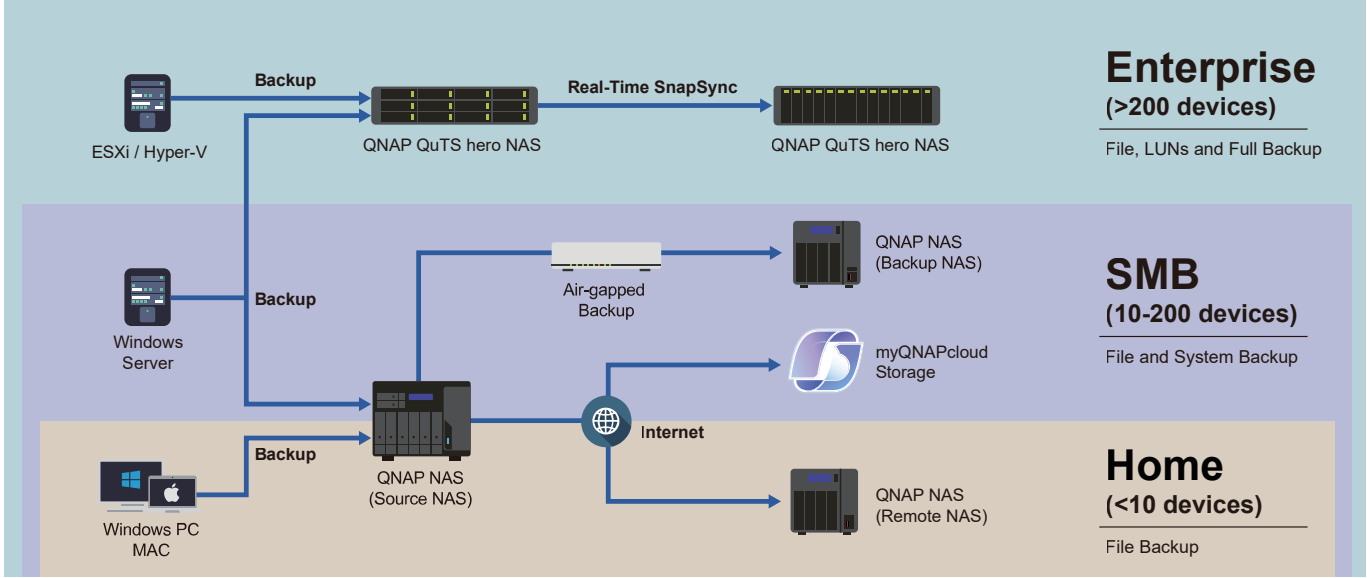
## 3-2-1-1-0 Backup Rule

Fully prepare against data losses due to hardware failures, natural disasters, or ransomware attacks. QNAP offers hybrid cloud solutions that integrate both hardware and software. Following the 3-2-1-1-0 backup rule, these solutions protect your digital assets.



## Cover All-sized Business Needs

QNAP provides flexible, scalable backup solutions for businesses of all sizes, from small start-ups to large multinationals, ensuring robust data security and uninterrupted business continuity.



## Back Up Centrally, Protect Offsite

Improved backup efficiency, system stability, and network performance enable highly efficient and flexible offsite protection — saving both time and space.

**Source-side Deduplication**  
Deduplicates data at the source to streamline backup files, saving up to 75% of storage space.

**Auto-select the Best Network Port**  
Automatically detects and selects the best network port to minimize latency and maximize transfer speed, delivering optimal backup performance in any network environment.

**Failover**  
Fully synchronizes data in real time between the primary and standby NAS for an RPO=0 disaster recovery plan. (Supported on QuTS hero)

**Air-gapped Backup**  
Supports the Airgap+ isolated network architecture: a QNAP switch or router connects and disconnects the network link, isolating the backup NAS from the intranet while the link is down to block ransomware and unauthorized access.

## Disaster Recovery

Speed, simplicity, and efficiency are key to enterprise disaster recovery. The intuitive interfaces of QNAP recovery solutions quickly restore systems and data to normal, shortening recovery time.

**Fast Recovery**

Synthetic incremental backup speeds up recovery, minimizing downtime and business loss.

**Full System Recovery**

Quickly rebuild the entire work environment after a disaster while ensuring the integrity and consistency of both data and systems.

**Granular Recovery**

Partially restore specific folders or individual files, saving significant time and resources.



## Data Availability and Security

QNAP provides all-around protection for critical corporate data against malicious tampering, deletion, and ransomware.



### Access Control

Only authorized users can access and modify data, preventing unauthorized changes from inside or outside.



### Versioning & Retention

Retain backup versions by count or by days, ensuring data integrity and space efficiency.



### Data Encryption

Supports AES-256 and Self-Encrypting Drives (SED) to encrypt entire storage pools or individual folders, keeping data secure at rest.



### Connection Security

VPN support, firewall settings, and other network security features keep connections safe from external threats.



### Snapshot Recovery

Record the system state and data (including metadata) at any point in time, and restore it whenever needed.



### RAID Redundancy

If a drive fails, a hot spare rebuilds data from the healthy drives, keeping the system running.

## Data Backup, Sync, and Recovery Solution

One NAS manages multi-version backups across local, remote, and cloud — fully functional with no license required. Data is reduced at the source, while smart network port scheduling keeps jobs running without interruption.



### Hybrid Backup Sync

#### License-Free and Built In

Built into QNAP NAS — run full backup, sync, and recovery without buying extra licenses, lowering adoption costs.

#### Multi-Version Hybrid Cloud Backup on One NAS

One NAS backs up to local, remote, and cloud destinations at once, keeping multiple versions and restore points to sharply reduce the risk of data loss.

#### Auto-select the Best Network Port

Smart analysis picks the best physical network port, automatically switches to another port on disconnection, and switches back once the port recovers, so jobs keep running.

#### Source-side Deduplication

QuDedup performs block-level deduplication and encryption at the source, reducing backup data by up to 75% — faster transfers, less bandwidth.

## Centralize Multi-Device Backup Tasks in the Cloud

Manage large-scale, cross-site backup/restore tasks across 10+ NAS devices from a single interface.



### Hybrid Backup Center

#### Easy Management

You can manage all NAS backup, schedule multiple tasks, and restore data centrally.

#### Topology Visualization

A topology diagram provides overviews of all backup paths, targets, and statuses.

#### Real-time Monitoring

All task statuses, NAS devices, target devices, and backup logs are controlled through a dashboard.



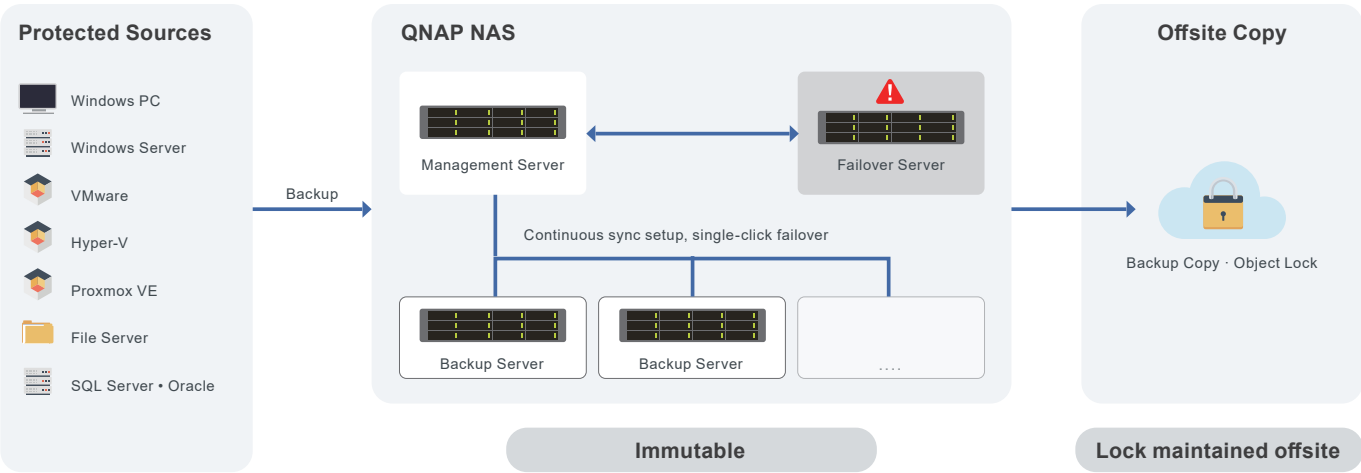


# Backup is your defense line, and restoration is the proof



## HDP for Business

HDP for Business is directly deployed on existing QNAP NAS, requiring no dedicated backup appliances. Protection, verification, and restoration are integrated into a single control plane, lowering the entry barrier and reducing maintenance complexity.



### Protected Sources

Computers, servers, virtual machines, file servers, and databases within the server room are all protected by the same system.

### Site Management & Failover Mechanism

Site Management centrally manages all backup servers. The Failover Server continuously synchronizes settings and takes over with a single click if the primary console fails, ensuring uninterrupted backup operations.

### Backup Copy

Backup Copy sends backup copies offsite—supporting QuObjects, QuTS MEGA, myQNAPcloud Object, Amazon S3, Wasabi, and other S3-compatible destinations. Offsite copies remain locked just like the source.



### Immutable Backup (WORM)

HDP for Business uses WORM technology to lock backups. Data cannot be modified or deleted by any user—including administrators—until the retention period expires.



### Airgap+ Offline Isolation

Schedules backup servers to power down and disconnect from the network. This physical isolation fully shields backup data from cyberattacks between scheduled tasks.



### Backup Verification

Automates boot verification for protected machines and records the startup process. This video evidence guarantees full restorability, providing stronger proof than standard text logs.

## Disaster Recovery: Traditional Restore vs. Instant Restore

When a host fails, Instant Restore directly boots the backup as a virtual machine in QNAP Virtualization Station (QVS) to take over services, eliminating the need to wait for a full data recovery, as shown in the file

| Traditional Restore                 |                                        | Instant Restore                                       |
|-------------------------------------|----------------------------------------|-------------------------------------------------------|
| Preparation                         | Rebuild or provision a target host     | Select a recovery point                               |
| Restore                             | Wait for full bit-by-bit data recovery | Directly boot as a VM in QVS to take over             |
| Go-Live                             | Bring online after verification        | Migrate back once the production environment is ready |
| Business downtime measured in hours |                                        | Service recovery measured in minutes                  |

# WORM · Immutable Storage

## Locked on write, compliance-ready

WORM (Write Once, Read Many) makes data impossible to modify or delete during the retention period — defending against tampering and ransomware, and providing provable data integrity at audit time.

## Why it matters

Once a critical record can be rewritten or deleted, it loses its legal and audit standing. WORM enforces retention in the technology itself — not even an administrator can bypass it — making it the last line of defense for ransomware resilience and regulatory compliance.

W O R M  
(Write Once, Read Many)



### Enterprise Mode

Flexible retention

- Files cannot be modified or deleted during the retention period
- Folder-level management allowed with authorization

### Compliance Mode

Strictest enforcement

- No modification, deletion or rollback at all
- Not even administrators can delete
- Meets the strictest compliance retention requirements

No modification or deletion during the retention period — not even administrators can bypass it. Ransomware-resistant, tamper-proof, and ready to prove compliance at audit.

## Who needs it · applicable regulations

|                    |                                                                  |
|--------------------|------------------------------------------------------------------|
| Finance / banking  | SEC 17a-4, FINRA 4511, CFTC transaction record retention         |
| Healthcare         | HIPAA medical record integrity and privacy                       |
| Legal / government | Evidence preservation, official document retention, audit trails |
| Cross-industry     | GDPR, SOX, ISO data retention and integrity                      |

Regulators impose penalties running into billions of dollars for record-keeping failures — WORM enforces retention technically, as the last line of defense.



# Building Stable Operations

Helping organizations maintain business continuity and recover quickly when challenges or incidents arise.

# High Availability and Uninterrupted Operations

QNAP builds comprehensive high availability solutions for enterprises, keeping critical services running 24/7.

## QNAP ES NAS · Dual Active-Active Controllers

Both controllers serve concurrently in Active-Active mode; if either fails, the other takes over with zero delay — a foundation for second-level RTO in database and virtualization workloads.



ES2486AFdc

All-flash 24-bay with support for dual-port U.2/U.3 SSDs



ES1686Adc

16-bay with support for SAS and dual-port U.3 SSDs

### Hardware Built for Zero Downtime

- 

**Dual Active-Active controllers**  
Serve concurrently and back each other up, with zero-delay failover
- 

**BBU battery backup**  
Protects the write cache during a power outage so data is safely committed to disk
- 

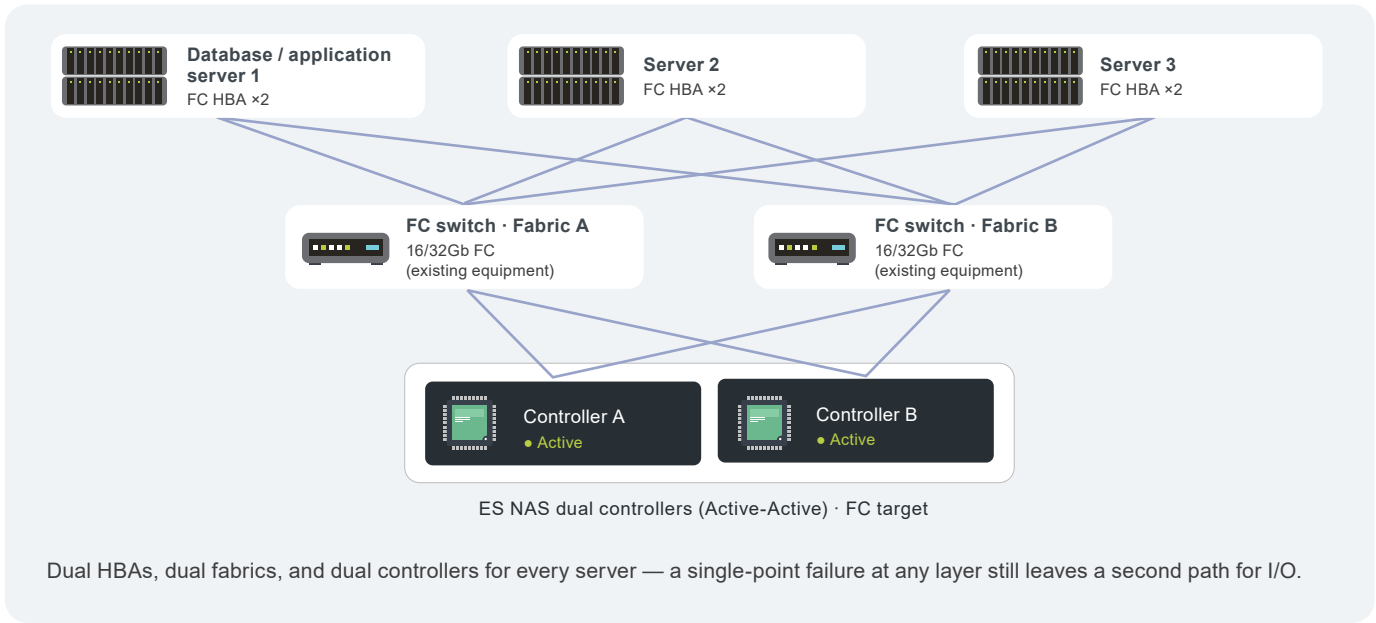
**25GbE network card expansion**  
High-speed front end; multi-protocol FC target, iSCSI, and SMB
- 

**SAS JBOD expansion**  
Dual-path daisy-chaining of expansion enclosures for both capacity and redundancy



## Plug Straight into Your FC Environment

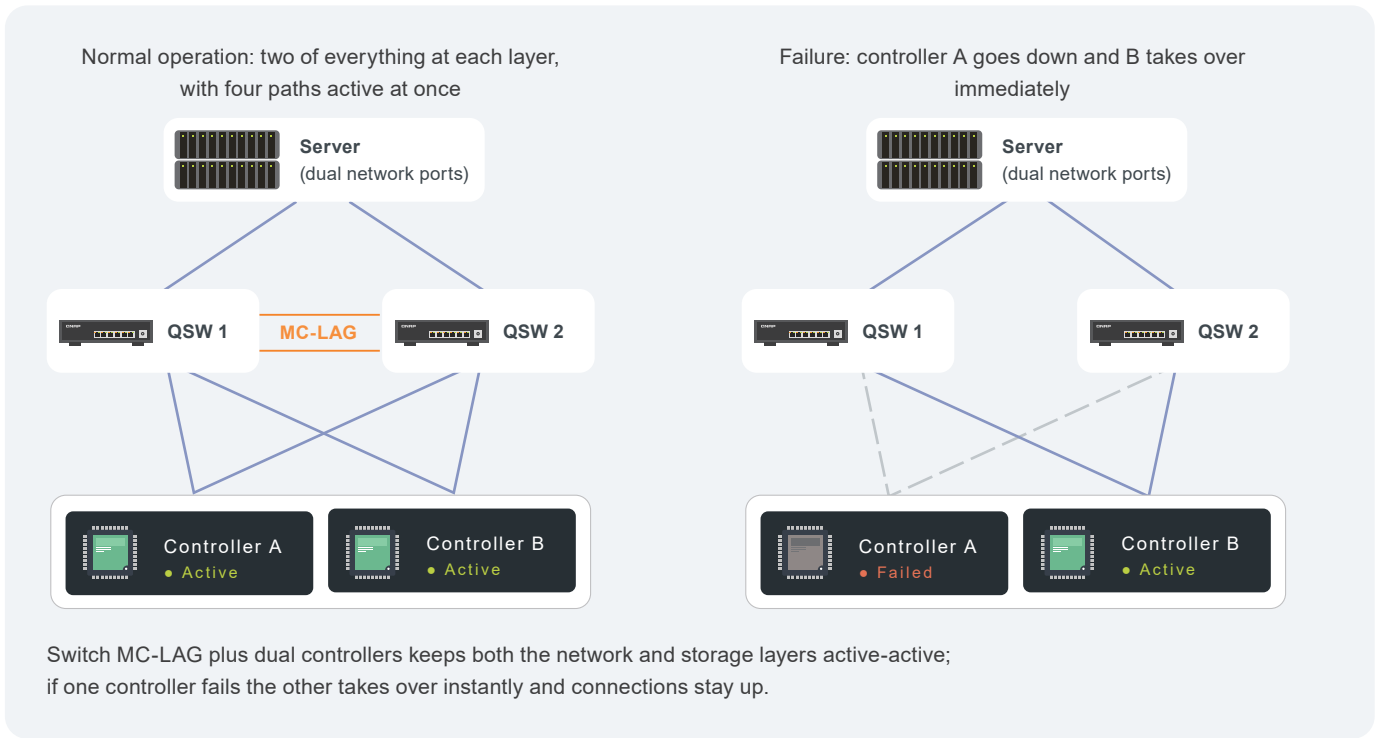
The ES dual controllers act as an FC target and form dual fabrics with your existing 16/32Gb FC switches — every path from server to storage is doubled.



### Ethernet works too

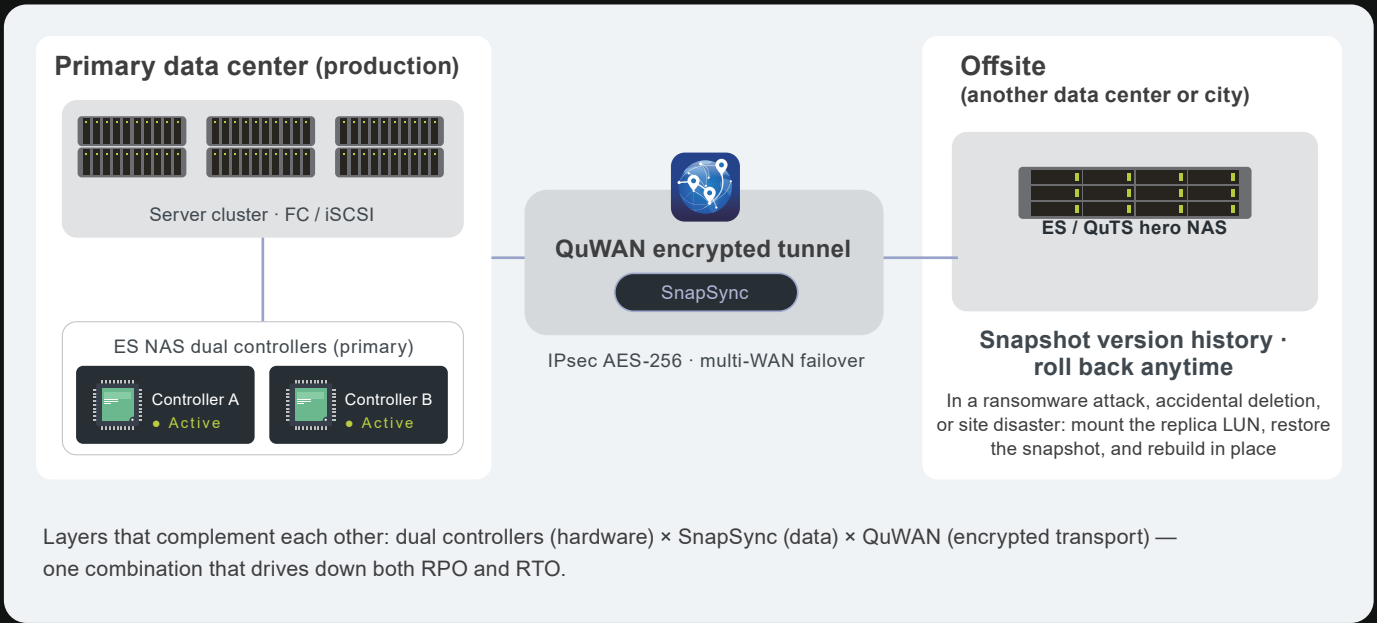
The front end can also serve iSCSI or SMB over 25GbE with two QSW switches in MC-LAG — see the topology on the next spread.

## Four Paths Active in Normal Operation, Instant Takeover on Failure



## Lose the Data Center, Keep the Data

Dual controllers cover hardware failure; SnapSync ships incremental snapshots offsite to cover whole-system loss, logical errors, and site disasters.





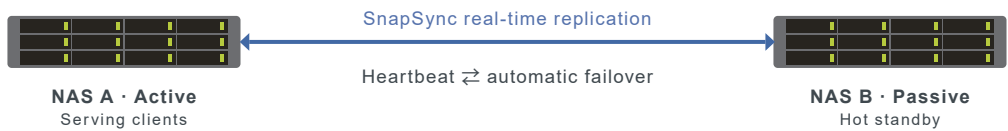
# More Layers of High Availability, Full Protection for Critical Services

From storage and networking to virtualized environments, QNAP offers high availability at multiple layers — dual-system HA, MC-LAG, and VM HA — building thorough redundancy and fault tolerance for every kind of service.



## Dual-System HA Architecture Keeps Critical Business Running

Group QNAP NAS servers into a High Availability (HA) cluster so critical data is always under real-time redundant protection.



The service IP stays the same and SMB and iSCSI connections resume automatically — at the moment of failover, user transfers and VM disks never drop.

### RealTime · SnapSync instant

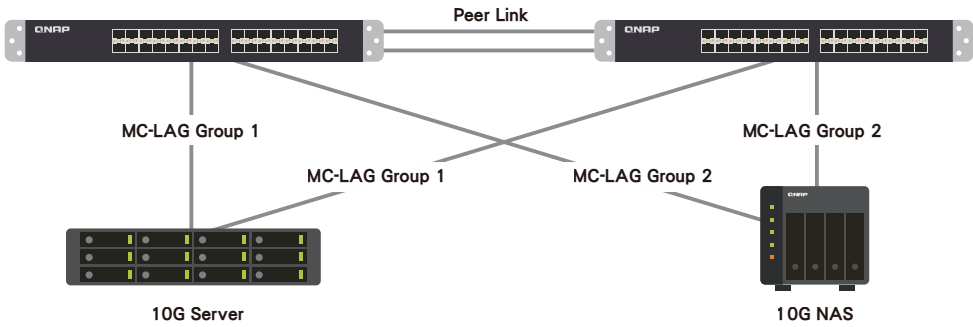
- Critical business · RPO ≈ 0, zero data loss
- Every write is replicated to the standby in real time
  - Zero loss on failover — ideal for databases, VMs, and ERP

### Schedule Sync (new)

- Performance first · works across sites
- Batch scheduled sync puts less load on the host
  - Bandwidth- and distance-friendly — enables offsite DR

## MC-LAG Network Redundancy Keeps Critical Equipment Online

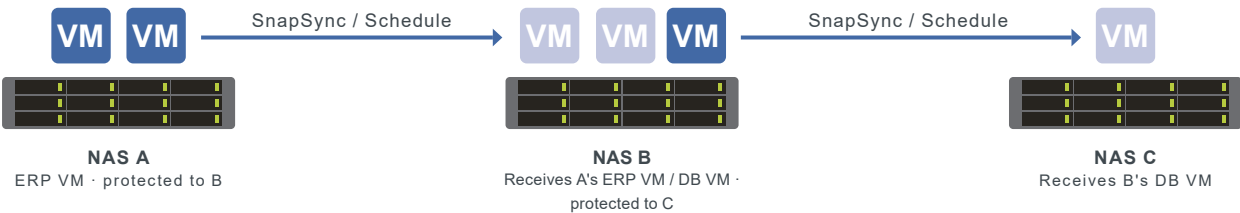
QNAP Network HA uses an MC-LAG dual-switch redundancy architecture to keep the backbone network free of interruption so critical applications keep running.



- Configure MC-LAG across two QNAP L3 Lite switches to build a redundant backbone network
- Paired with the NAS, data keeps flowing through the other switch even if one fails
- Fast traffic path switching reduces network latency and the risk of interruption
- Keeps data flows and network services unaffected, avoiding potential business losses from network outages

## VMs Watched Over by Multiple Nodes

VM HA in Virtualization Station lets multiple NAS units back each other up in any direction and any topology — A protects B, B protects A, and A can also protect C.



Multiple failure detection mechanisms hand off to the standby, which boots quickly; ERP, databases, AD, and web services can all be protected.

## Why It Costs Less and Flexes More Than Traditional VM HA

- |                                                                                                                                                                                                                          |                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>No extra shared storage</b><br>No separate SAN purchase — the NAS is both storage and compute                                   |  <b>Substantially lower cost</b><br>No hypervisor license fees; two NAS units make an HA pair |
|  <b>Topology freedom</b><br>Bidirectional, one-way, or cross-protection across multiple nodes — lay it out to suit your data center |  <b>Two sync cadences</b><br>SnapSync real-time (RPO ≈ 0) or Schedule Sync                    |

Switch MC-LAG completes the network layer — from drives and controllers to whole systems, VMs, and the network, no layer has a single point of failure.



# Management, Operations and Cloud Services

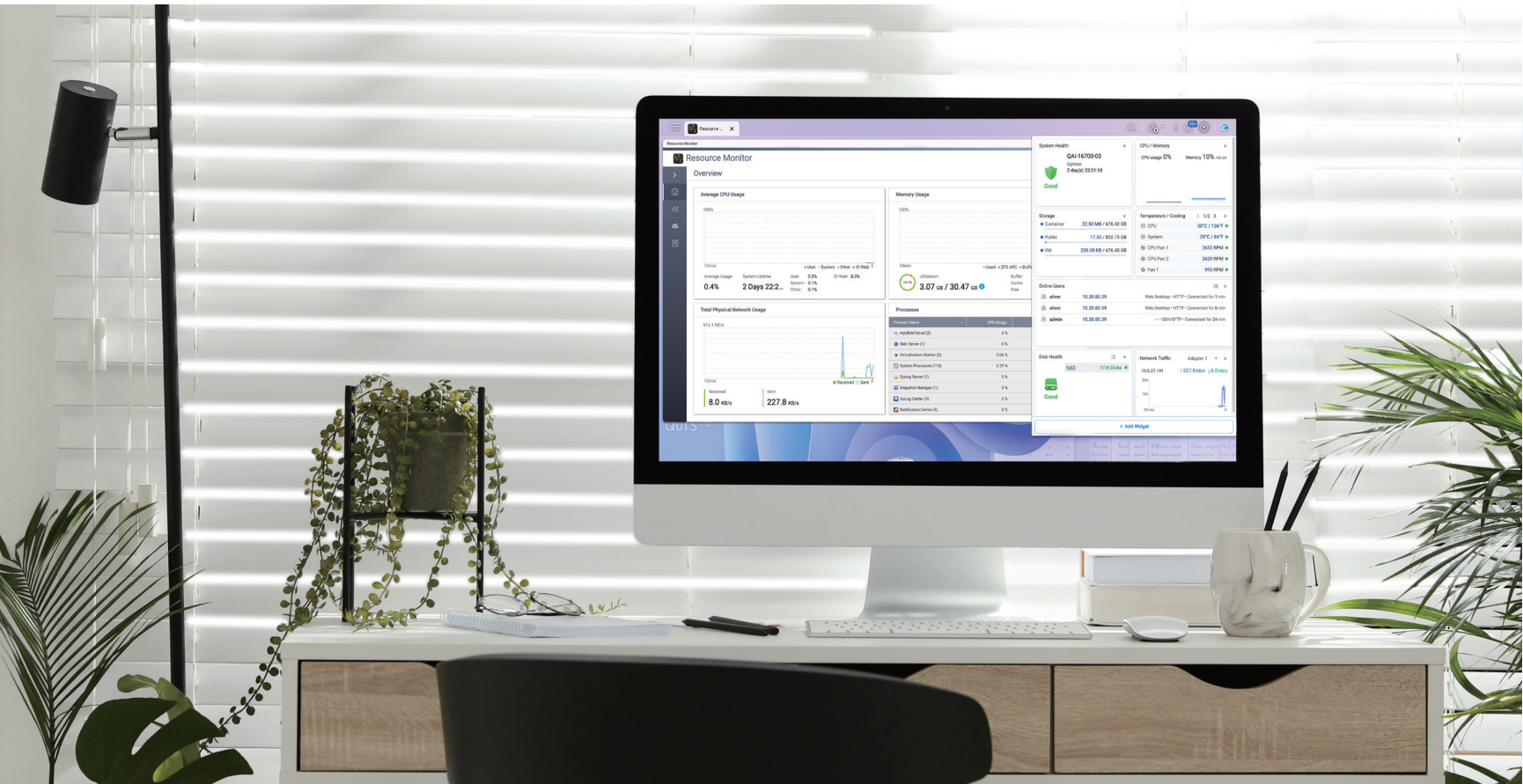
From a single NAS to the global cloud — a seamless upgrade for management and operations





# Allocate system resources on demand

Data visualization lets you grasp system status at a glance and adjust resource allocation flexibly.



## System

### Dashboard

Shows overall system status, including OS version, CPU/RAM utilization, system health and the number of online users.

### Notifications

Custom rules enable push notifications via email, mobile devices and messaging apps, so important events are never missed.

### Logs

Records access and events from both local and remote devices.

## Storage and disks

### Storage status

Get an instant status summary for every volume, LUN, storage pool and shared folder.

### AI-driven failure prediction

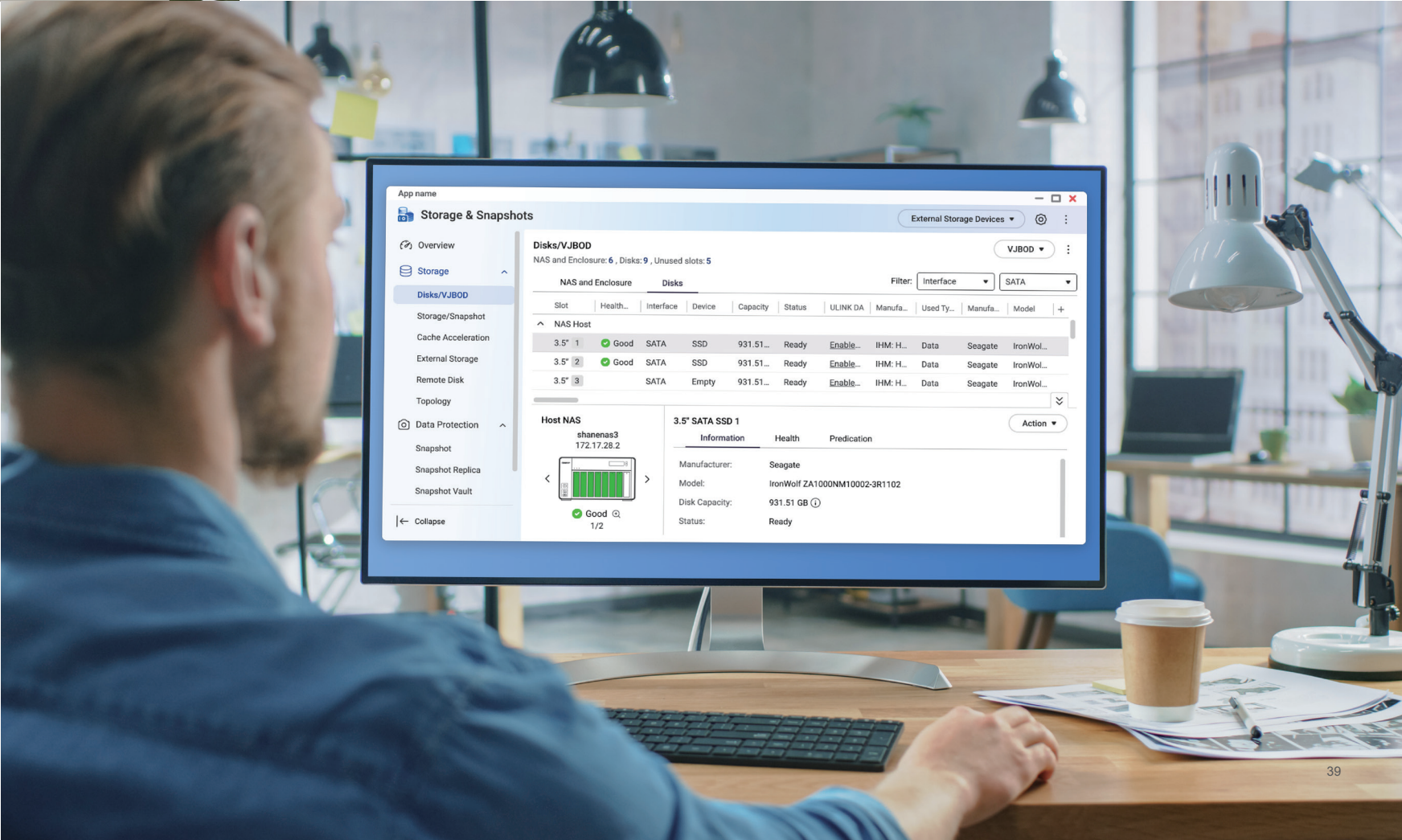
Collects historical disk usage data and predicts each disk's risk of failure over the next 6 months.

### Disk information

Quickly view visualized indicators such as disk self-test, S.M.A.R.T., temperature and disk scan results.

### Alert notifications

Get alerted before a disk actually fails, so you can plan replacements in advance and avoid data loss.



# Centralized management makes IT unstoppable

QNAP multi-site device management lets you monitor NAS units and switches at every location from the cloud, and divide responsibilities through organization-level permissions — improving management efficiency and disaster response.



## AMIZcloud Cloud Management Platform

Manage multiple devices and services centrally from a single interface, cut repetitive work, and run a range of tasks remotely, including:

Update the operating system instantly

Restart or shut down systems

Custom notification rules

Batch application installation



## Organization Center

A three-tier organization / site / administrator structure centrally manages devices and staff permissions across locations, keeping even large-scale deployments orderly, including:

Organization / site / administrator structure

Role separation and permission management

Cross-site device overview

One-stop cloud configuration management



## QNAP Switch System

Manage every QNAP switch centrally through an intuitive web interface, tracking network status in real time and running advanced functions, including:

Centralized dashboard monitoring

Unified management across devices

Centralized smart PoE power

One-click centralized maintenance and updates



## QuRouter

Manage cross-site routers and network topology centrally from the cloud to strengthen connection stability and information security, including:

WAN / LAN topology configuration

Cross-site mesh VPN

QoS and load balancing

L3 / L7 firewall management



## Hybrid Backup Center

Create, monitor and restore cross-site NAS backup jobs from one cloud platform, greatly reducing the maintenance burden, including:

Centralized backup job creation

Cross-site health monitoring

Unified restore and auditing

Backup report overview



## QuAgent

Issue commands in natural language and let AI understand your intent and carry out NAS operations tasks, including:

Natural language commands

Scheduling and automation

Automated operations tasks

Lower learning curve

### Especially suited to

#### Retailers

Retail, logistics or banking organizations that need to manage large numbers of systems across many sites.

#### Multinational enterprises

Multinational enterprises that need tiered management permissions by role or by country/region.

#### MSP (managed service provider)

Service providers that manage many devices for different customers.



# QNAP Cloud Services

Combining on-premises with cloud makes data storage more resilient, and gives multi-site or multinational enterprises instant service and ease of use.



## myQNAPcloud

One dedicated QNAP ID makes accessing the data on your NAS at home or in the office as simple and secure as carrying it with you.

### Remote NAS access

Open a browser, sign in to myQNAPcloud, and connect to your NAS remotely to access data at any time.

### Secure file sharing

Select a file or folder to generate a link, then set a password and expiry date for greater peace of mind.

### Centralized device management

One QNAP ID and one interface to manage every QNAP device.

# myQNAPcloud Link

## The secret behind QNAP's secure remote connections

Access your NAS over the internet using your own domain name, with no complicated DDNS setup.

### Easy to remember

Connect to your QNAP NAS with a dedicated SmartURL.

### Highly secure

Establishes an encrypted connection through a relay server or peer-to-peer (P2P) technology.

### Automatic connection optimization

Automatically selects the best connection method for your network environment.



# myQNAPcloud One two-in-one cloud plan

Secure, scalable and cost-effective cloud storage. Enterprises can freely configure two types of data storage as needed, subscribing to and allocating capacity flexibly to improve data management efficiency and optimize cloud resources.

## myQNAPcloud Storage



Cloud file storage

## myQNAPcloud Object



S3-compatible cloud object storage



myQNAPcloud One



Winner of a 2025 Cloud Computing Backup and Disaster Recovery Award

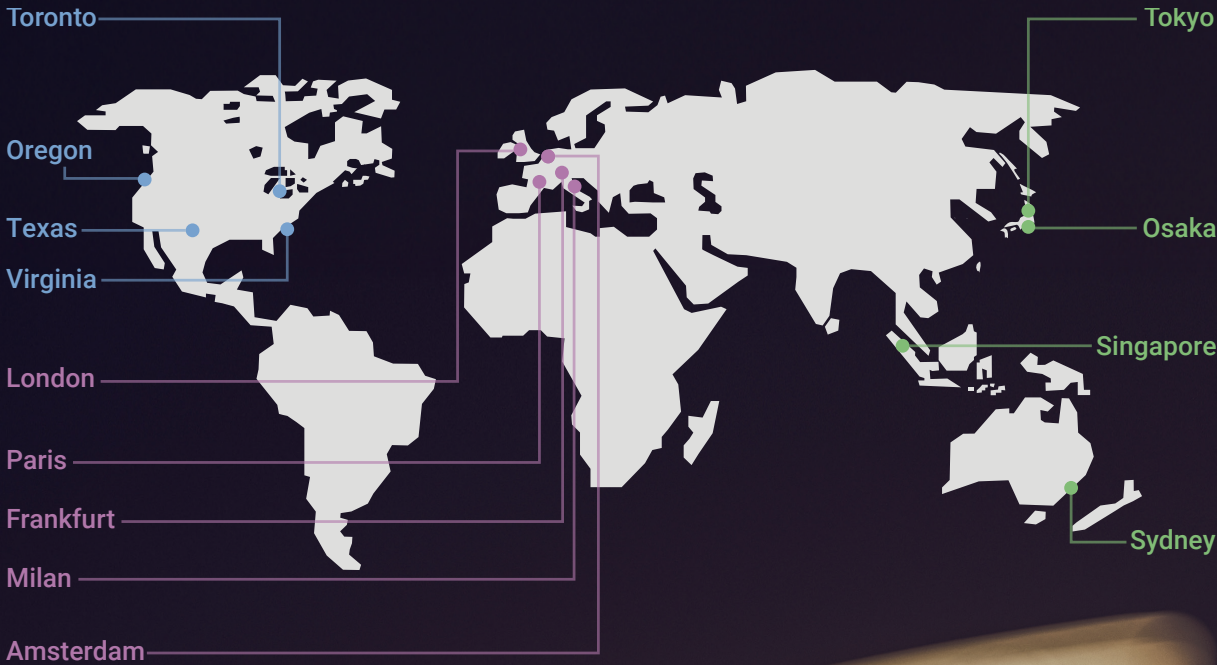


# High durability × immutability — data protection with no blind spots

myQNAPcloud One spans data centers worldwide, with a high-durability architecture and immutability protection, so your data stands the test of time and distance.

## 13 data centers worldwide

So multinational enterprises can also enjoy fast, secure data transfer and use.



### Durability

A high-durability architecture makes long-term data retention more reliable, effectively reducing the risk of data loss from hardware or system faults.

### Immutability

Supports WORM, object lock/unlock and bucket logging to counter ransomware threats while meeting long-term regulatory retention requirements.

# Backed by international certifications for a secure cloud experience

myQNAPcloud One adheres strictly to multiple international standards, giving enterprises and individuals a highly trustworthy cloud platform for storing, managing and sharing data with confidence.

Privacy and top-tier compliance: compliant with GDPR (EU personal data) and HIPAA (healthcare data) to fully protect sensitive information and data sovereignty.

Advanced security and reliability: audited under SOC 2 and the PCI-DSS financial security standard, ensuring absolute security for system operations and transaction data.

Comprehensive ISO certification: ISO 27001 (information security management), ISO 27017 (cloud operations security) and ISO 27018 (personal data privacy protection), preventing data leaks and strengthening access control.





# On-Premises AI and GPU Computing

As AI adoption accelerates, enterprises need both computing performance and data privacy. QNAP combines storage with GPU computing to help build an efficient, secure, and flexible on-premises AI infrastructure.

## Keep AI Inside Your Organization

Run LLMs, build knowledge bases, and let AI manage your systems on your own NAS — inference stays entirely on-premises and data never leaves; invest in compute once instead of paying per token.

>90%

Enterprises rank data security as the biggest concern in adopting AI

100%

In on-premises mode, 100% of inference happens inside the organization

>100

tokens/sec  
On-premises LLM inference performance

Once deployed, your team can

Find any file with a single sentence

Qsirch AI semantic search

Ask your enterprise knowledge base directly

RAG answers with citations

Manage the NAS in natural language

QuAgent AI assistant

## One NAS Is a Complete AI Platform

The diagram illustrates the QNAP NAS architecture as a multi-layered platform. At the top, it states "QNAP NAS · data never leaves" with a server rack icon. The architecture is divided into four main layers:

- Application layer:** Includes Qsirch, RAG knowledge base, QuAgent, and QPKG...
- Service layer:** Includes AI Service Center (with sub-functions: deploy / manage / monitor) and LLM API.
- Compute layer:** Includes NVIDIA GPU, Intel dGPU, and CPU / iGPU / NPU.
- Storage foundation:** QuTS hero (ZFS) — integrity and snapshot protection for AI datasets.

External components and their connections:

- Employees (PCs / mobile devices):** Connects to the Application layer.
- Departmental systems (Internal services):** Connects to the Compute layer.
- External AI applications:** Connect via standard APIs to the LLM API in the Service layer.
- Cloud LLM endpoint:** Optional · hybrid, connects to the LLM API in the Service layer.

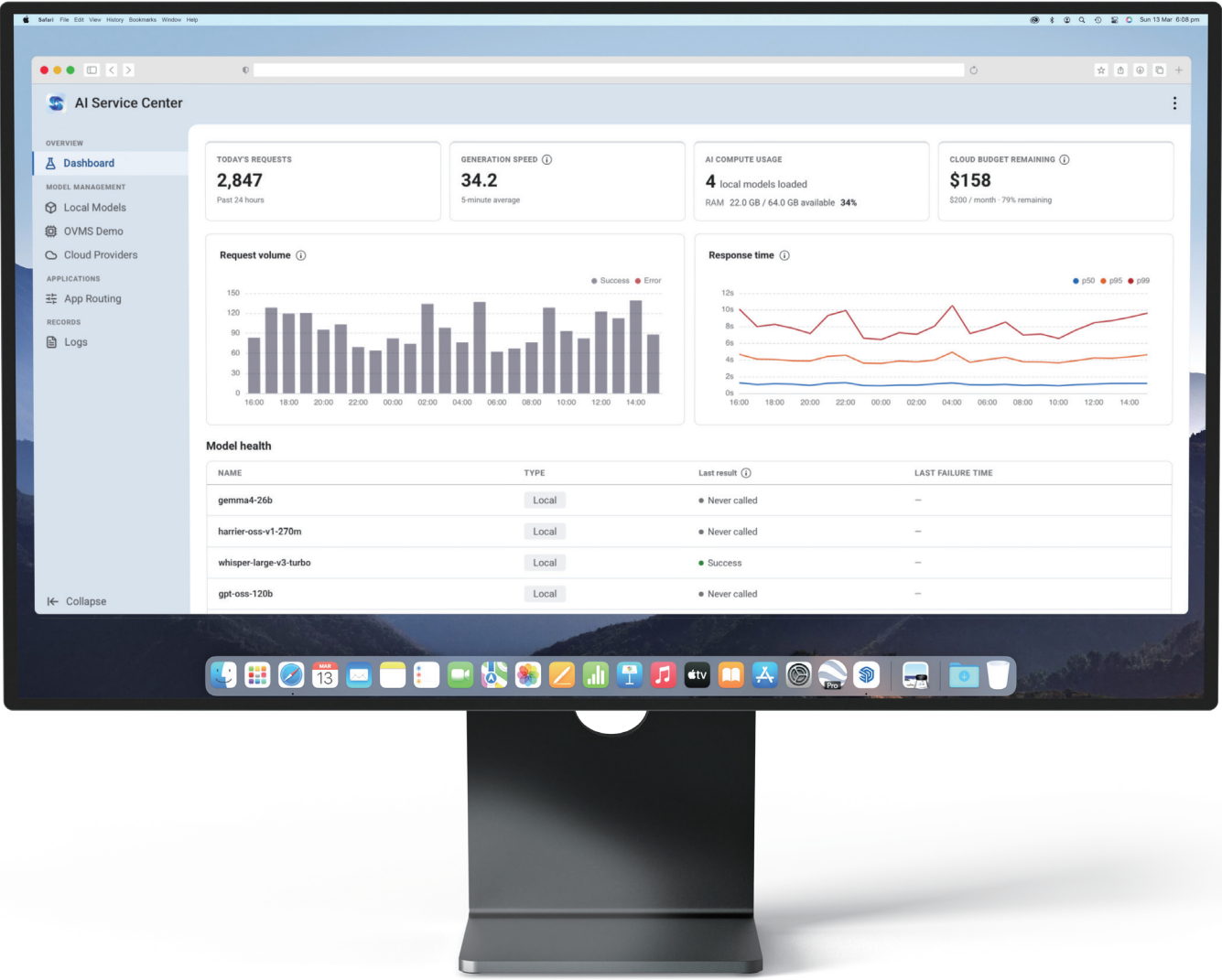
47

# AI Service Center



The unified control center for enterprise AI — manage, deploy and safeguard on-premises and cloud AI from a single interface

Built for QNAP NAS, it brings management, deployment, cost control and data protection for on-premises and cloud AI into one console. The four core capabilities below are its key highlights.

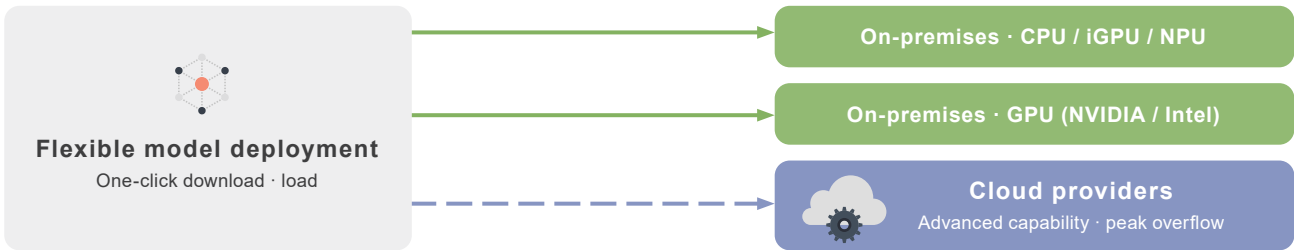


## Unified model management portal & dashboard

One portal to manage every model, with usage and health at a glance. From the same console you can browse the model catalog, download and load on-premises models, connect cloud providers, and assign a model to each application (App Routing). The dashboard shows request volume, generation speed, compute resources, cloud budget, response time and model health in real time.

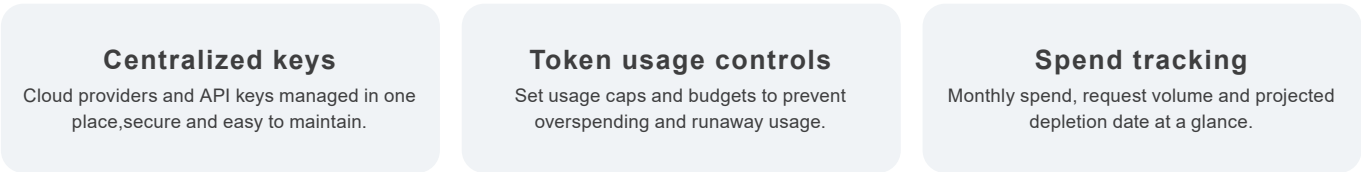
## Flexible model deployment

On-premises first, cloud when you need it — allocate compute your way. On-premises models can run on CPU / iGPU / NPU, or on a discrete GPU for high-performance inference. GPU support covers both NVIDIA and Intel, so you are never locked into a single vendor.



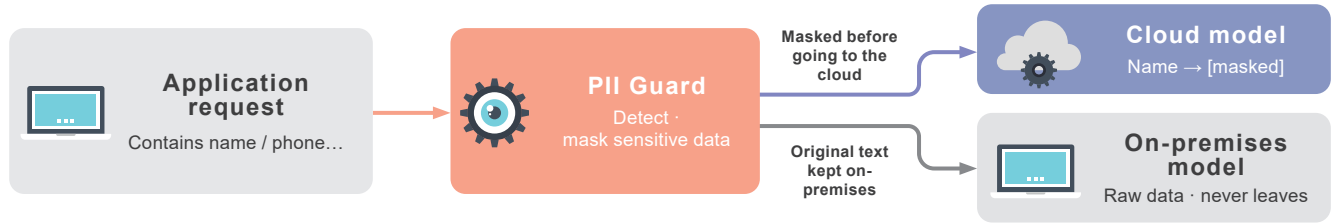
## Cloud model integration · token usage controls

Higher-end capability with costs under control. Connect cloud AI providers (OpenAI-compatible and others), manage API keys centrally, and set token usage caps and budgets for cloud models while tracking spend and request volume.



## PII Guard — mask sensitive data before it reaches the cloud

Use cloud AI while keeping sensitive data protected. Before a request is sent to a cloud model, PII Guard automatically detects and masks sensitive personal data (names, phone numbers, ID numbers and more), so sensitive data never leaves the corporate boundary — helping you meet personal data protection and GDPR requirements.



**One portal to manage on-premises and cloud AI.**  
**Sensitive data is masked before it goes to the cloud.**

AI Service Center — unified management & dashboard · flexible deployment (NVIDIA / Intel GPU) · cloud integration · PII masking.

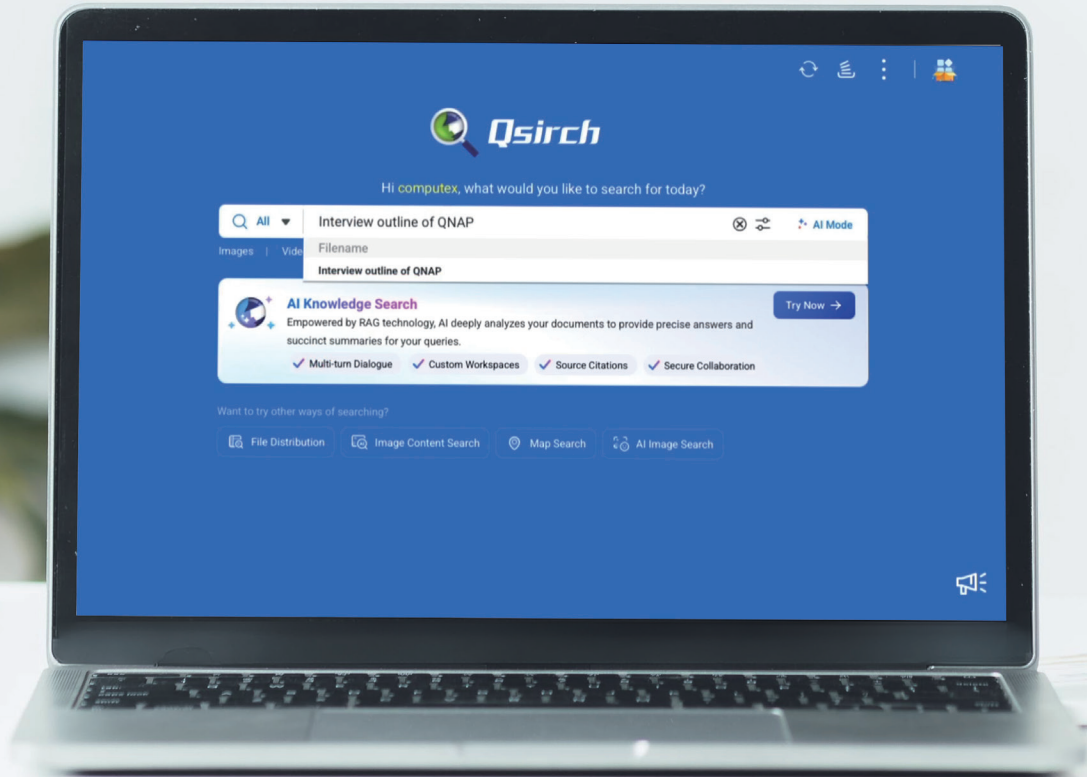


## Qsirch



### The AI-powered search engine built for your NAS

With powerful AI semantic search and RAG technology, your NAS becomes an intelligent file hub where teams can access and manage corporate documents effortlessly.



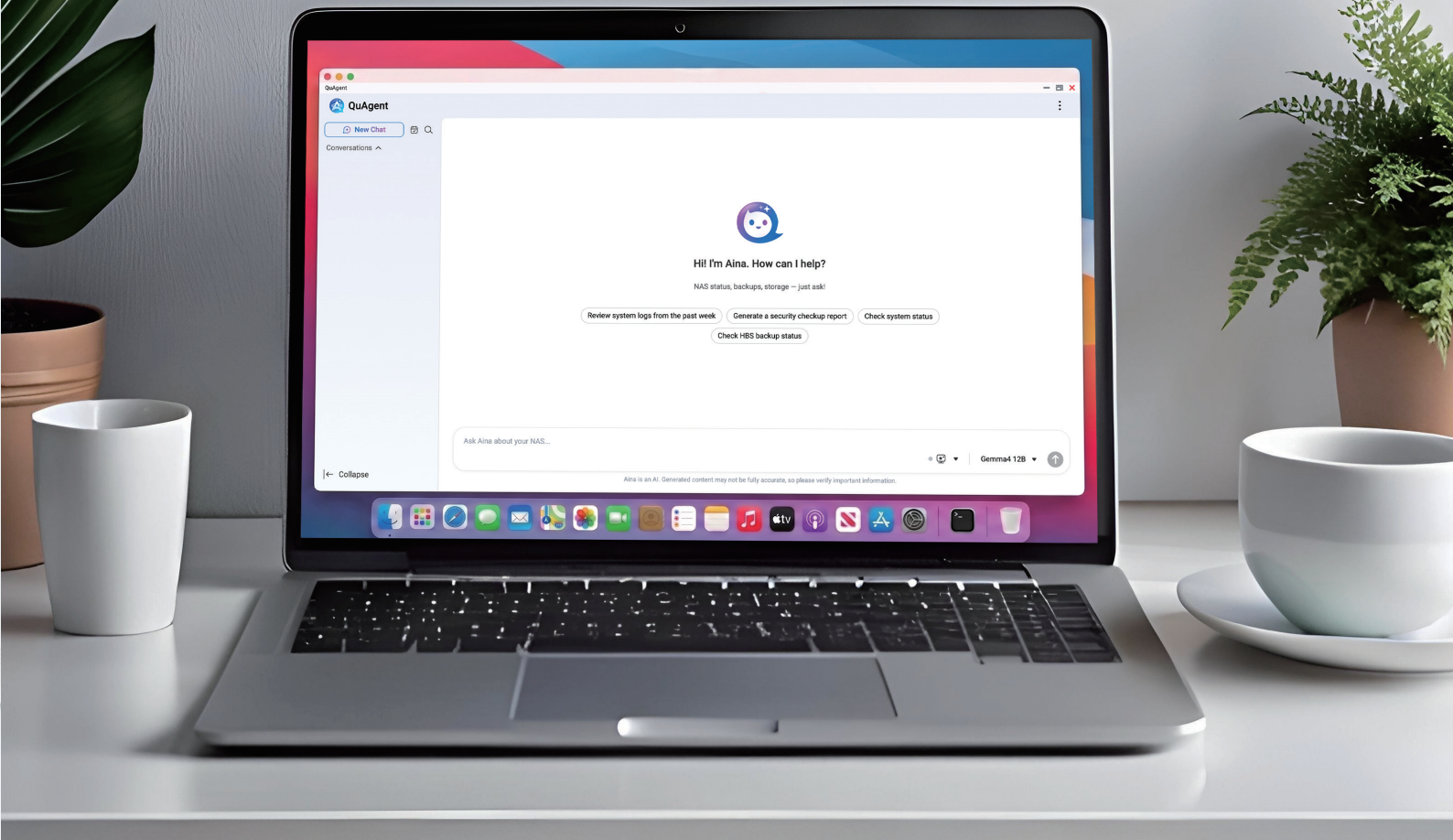
- **AI semantic search:** describe what you need in everyday language (for example, "a dog on the grass") and find the exact file.
- **RAG conversational search:** combined with large language models (LLMs) to build an efficient on-premises enterprise AI knowledge base that keeps data private.
- **Image-to-image search and OCR:** find visually similar assets from a picture, and search the text inside images directly.
- **Instant preview and recommendations:** preview key passages without downloading or opening the file, and get related files recommended automatically.
- **Automated filing:** search results connect seamlessly to Qfiling for one-click or fully automated filing.
- **All advanced features free:** no Premium license required — every advanced search capability is open to all users at no cost.

## QuAgent



### The AI brain of your NAS

Issue commands in natural language and set smart schedules, letting the AI assistant carry out routine system maintenance securely and efficiently.



- **Natural language control:** simply give a command in everyday conversation and the Aina AI assistant uses the QuAgent core engine to break down the task, execute system functions and report results in real time.
- **Instant status checks:** keep track of NAS system status and logs (such as health or SMART checks) without hunting through complex menu paths.
- **Turn a conversation into a schedule:** promote a one-off conversational task into a repeatable, time-triggered routine schedule right inside the conversation.
- **Complete schedule management:** a built-in My Schedules interface lets users create and manage tasks in one place and review execution results at any time.
- **Secure permission-based collaboration:** working with the NAS's strict account permission model, members at every level can maintain the system safely with AI assistance — smart collaboration that never oversteps.

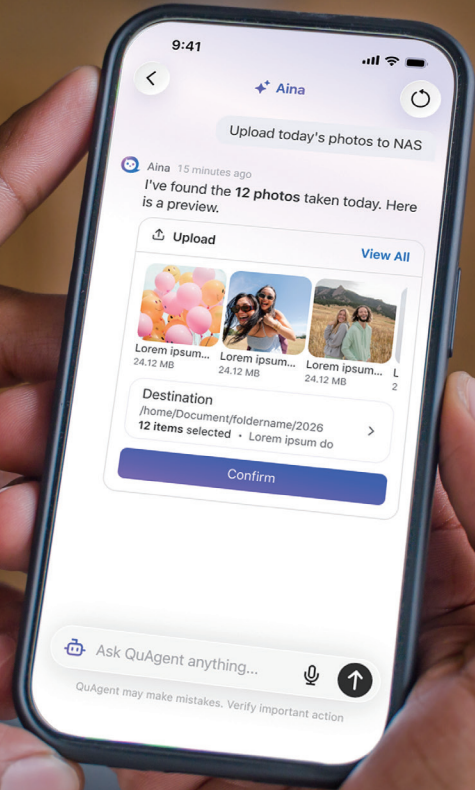


QuONE



Smart, integrated and entirely in your control — the next-generation mobile gateway to your NAS

AI intelligence, file management, photo backup and cross-device control in a single app, making mobile management far more efficient.



- **Control your NAS in natural language:** just talk to Aina to create users, check system status or find photos in plain language — all handled behind the scenes by the QuAgent core engine. (Note: QuAgent must be installed on the NAS first.)
- **AI photo organization:** Timeline, Map View and AI smart albums let AI organize every photo for you.
- **Device health at a glance:** with Qmanager monitoring built in, you can check CPU, memory and system temperature in real time.
- **Mobile + AI first:** deep integration of the mobile experience with AI creates the most intuitive and convenient way in.
- **Unified management experience:** scattered functions converge into a single interface for an all-round upgrade to the NAS experience.
- **Lower barrier to entry:** a carefully designed UI/UX greatly lowers the learning curve, so even first-time users can get started effortlessly.

AI Assistant

Control your NAS with everyday commands

QNAP mobile apps now include an AI assistant, supporting the three most popular apps — Qfile Pro, QuMagie and Qmanager — for highly efficient file management and system configuration.



Qfile Pro

An all-round mobile file management app that lets you access, back up and manage every file on your NAS while you are out and about.

Find files by keyword command

Background backup in sleep mode

Free up phone storage in one tap



QuMagie

A dedicated smart photo management app that uses AI to help you organize and browse the precious memories on your NAS, and share them with family and friends.

Search photos with spoken commands

On-device AI recognition

Create share links by command



Qmanager

A mobile app designed for system administrators, letting you remotely monitor NAS system health and manage settings with ease, anytime and anywhere.

Shortcut command actions

Check system status by voice

On-premises processing protects privacy



## Useful across every industry

One on-premises AI platform supporting scenarios from knowledge management to intelligent surveillance.



### Sales and marketing

"Summarize last quarter's revenue by region?" — instant answers from reports, with sources cited



### Engineering and R&D

to search surveillance events jumping straight to the passage



### Legal and government

Clause comparison and case file search, with data never leaving the agency



### Content creation

Automatic audio and video transcription — one sentence in the media library pulls up the clip



### Intelligent surveillance

VLM understands the footage — use natural language to search surveillance events



### AI customer service / internal assistant

A chatbot built on your enterprise knowledge base, serving users 24/7

## Hardware built for AI

A range of Edge AI NAS models and GPU options for freely configurable compute power

### QAI-h1290FX

- Edge AI storage server · 12-bay U.2 NVMe all-flash
- AMD EPYC 16-core / 128GB DDR4 ECC
- Optional NVIDIA RTX PRO Blackwell GPU
- Container Station AI curated templates
- Built-in 25GbE, expandable to 100GbE / FC / SAS



**>100** tokens/sec on-premises LLM inference · official QNAP benchmark with QAI + RTX PRO Blackwell

|                 |             |             |
|-----------------|-------------|-------------|
| Gemma-4-26B     | <div></div> | 145 token/s |
| gpt-oss-120B    | <div></div> | 100 token/s |
| Qwen3.5-35B-A3B | <div></div> | 96 token/s  |

Data from the official QNAP Edge AI page · models are freely interchangeable (Llama / Gemma / gpt-oss / DeepSeek / Qwen)



More Edge AI NAS models





# Virtualization and Containers

Virtualization significantly improves enterprise IT management efficiency and resource availability.

## Virtualization

Supports unified storage for virtualization, virtual machines, and containers.

### Trusted Virtualization Storage

With scalable capacity and high-speed networking, QNAP provides an optimal solution for virtual environments, remote backup, long-term data retention, and disaster recovery.

- Compatible with VMware® vSphere™, Microsoft® Hyper-V®, and Citrix® XenServer™.
- Includes CSI Plugin for Kubernetes® to support containerized workloads.
- iSER acceleration improves transfer performance with VM servers while reducing CPU usage.
- Compatible with Veeam® and NAKIVO® for reliable virtual machine backups.



### Virtual Machines and Containers

QNAP NAS supports virtual machines and containers, enabling flexible multi-tenant deployments and applications to enhance management efficiency and reduce hardware costs.

#### Virtual Machines (VMs)

Supports Windows®, Linux®, and QuTScloud— hypervisor services for VMs across these operating systems.



#### Containers

Run Docker®, LXD, and Kata Containers, and search for container applications from around the world.



### Fast, Reliable Storage Built for Virtualization

A high-performance storage architecture that lowers VM deployment and storage costs

#### iSCSI / FC + iSER(RDMA)

High-speed storage protocols substantially improve access performance in virtualized environments — up to more than 50% in lab testing.

#### ZFS inline deduplication + real-time compression

Fit more VM data into the same capacity, effectively reducing storage footprint and cost.

#### QuTS hero × ZFS architecture

Combining QuTS hero with the ZFS storage architecture removes the need to buy expensive shared storage.

#### Flexible expansion that balances performance and cost

Expand capacity flexibly as the business grows, balancing performance with return on storage investment.





# Security and Zero Trust

QNAP defines the new cybersecurity standard for NAS network storage, networking, and cloud products through action

## Cybersecurity

Resilience is the key for modern cybersecurity – keeping your system secure and agile.

### Security Control

#### Connection Protection

A host-based micro segmentation firewall with mesh VPN service creates the ultimate secure connection network.

#### Permissions Control

Secure access with MFA, centralized management, and delegated administration.

#### Security Assessment

Analyze and monitor system status, abnormal file activity, and potential cyber threats with real-time alerts.

### Network Detection & Response (NDR)

QNAP's ADRA NDR solution detects and analyzes abnormal traffic to detect malicious activity on the Intranet, and automatically isolates infected devices.

#### Cost Effective

Better choice than traditional EDR.

#### Network Performance

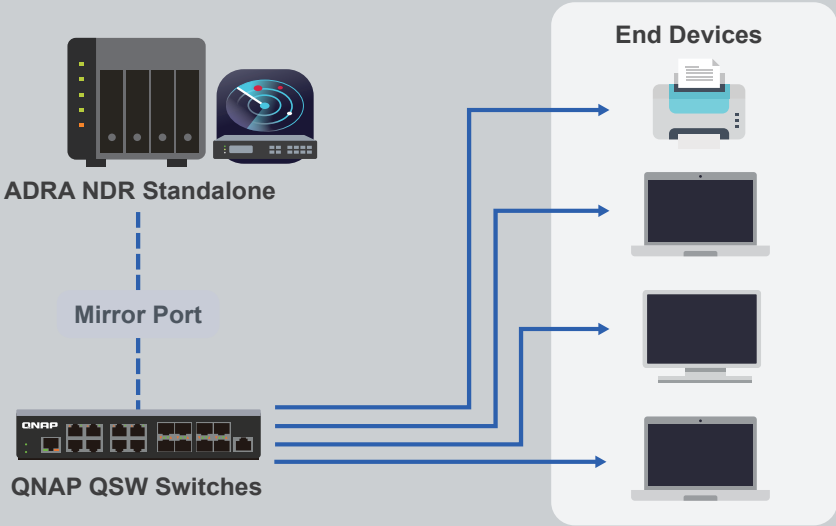
Simply install the A DR A NDR software on the access switch (Access-level Switch).

#### Deployment

Simply install the ADRA NDR on the access-level switch.

#### Easy

Visualize the network risks and send alerts.



ADRA detects, analyzes, and isolates suspicious packets.

## | Disaster response

### Backup solutions

A complete enterprise backup solution that backs up device, SaaS and virtual machine data comprehensively while simplifying management.

### Snapshot protection

QNAP's block-level snapshots and file system isolation mean that even if files on the NAS are encrypted by ransomware, the snapshots remain unaffected.

### Rapid restore

Restore systems and files on demand to minimize RPO and RTO and reduce losses.



## | Perimeter protection

### QuFirewall

Build a host-level firewall on your NAS and other QNAP devices to automatically block brute-force attempts and malicious connections by IP, region and connection threshold.

### IPS (Intrusion Prevention System)

Available on QHora routers at no license cost, it proactively detects and blocks known attack signatures to strengthen ransomware defense.

### L3/L7 Firewall + DPI

Goes beyond IP addresses and port numbers to inspect packet contents at the application layer, accurately identifying disguised traffic and abnormal application behavior.

### GeoIP region blocking

Automatically blocks high-risk traffic by source region and, combined with web content filtering, reduces the risk of cross-border attacks and abnormal access.

## | Identity and encryption

As enterprise IT architectures keep expanding, a layered security mechanism safeguards information security at every level.

### Authentication that gets stricter at every step

Starting from the Zero Trust principle of trusting no connection, the SASE architecture extends that spirit across the entire network access layer. At login, SAML SSO integrates with your enterprise identity provider, adding MFA two-step verification and FIDO2 passkey passwordless sign-in — verifying identity layer by layer and minimizing the risk of stolen or phished passwords.

### Data encryption, unified control from disk to key

Volumes, folders and entire SED self-encrypting drives all encrypt data at rest to the AES-256 standard. Keys are no longer managed in isolation: KMIP integration with an enterprise centralized key management server brings unified control and remote management, reducing the risk of human key loss.

### System firmware, monitored from boot to runtime

Secure Boot verifies the firmware signature and system integrity at startup, so every boot begins from a trusted state. At runtime, Ransomware Guard strengthens behavioral detection and isolation, actively intercepting abnormal behavior before damage is done.



### QVPN Service NAS as a VPN server

Provides secure virtual private network (VPN) connections between QNAP devices and user devices, protecting network traffic from interception.

- Supports the WireGuard®, PPTP and OpenVPN protocols (including ExpressVPN™, NordVPN®, Surfshark® and Astrill®), as well as L2TP/IPSec and QBelt.
- Supports Windows/Mac utilities and mobile apps to ensure secure connections to the NAS.

### QNAP's Commitment

QNAP is deeply committed to the security of enterprise data and continuously works to enhance product security. Our Product Security Incident Response Team (PSIRT) actively responds to security incidents, effectively mitigating ransomware and other malicious activities to ensure the safety of your data.

9<sub>hours</sub>

Security issues  
investigated

+

14<sub>hours</sub>

Security issues fixed

<

24<sub>hours</sub>

Rapid response



# Team Collaboration

Optimized data management enables seamless team collaboration, enhancing operational efficiency and maximizing productivity across the workplace.

## Data Management

Boost productivity with a smart file center on QNAP NAS, enabling seamless file access and management for teams.

### Fast Access

Achieve low-latency data access with powerful processors and high-speed configuration (2.5/5/10/25/100GbE).

### Smart Search

Supports full-text search and AI semantic search for fast retrieval of all file types.

### Version Control

Allows record edits and prevents accidental data loss.

### Automatic Archiving

Customizable file filters and rules for automated organization.

## File Sharing and Collaboration

Enables secure, efficient teamwork across distances, devices, and platforms, fostering collaboration across departments and borders, regardless of location.

### Zero-latency Sync

Multi-device sync and version control keep files current and prevents use of outdated data.

### Centralized Management

Access all files through a single interface, with cloud storage mounted for LAN-like speeds.

### Permissions Control

Granular permissions limit access and edits to authorized users, preventing data breaches or deletions.

### Integrated Collaboration

Integrates with a variety of collaboration tools to support a wide range of tasks and projects.



"Simple and safe. QNAP NAS gives the ability to access files from anywhere."

Adam Decor Center (Interior design company in Bangkok)

QNAP's easy-to-operate NAS and switches increased the productivity of multi-point team collaboration for Adam Decor Center.



## | Data Security and Protection

Facilitates simultaneous file access with no data loss, ensuring continuous collaboration.

### Automatic / Manual Backup

Data protection is simplified with flexible scheduled or manual backups.

For more information on data backup, see Page 22.

### Multi-device Management

Centralized backup and restore ensures seamless protection.

### Remote Device Wipe

Remotely delete settings on lost devices to secure data.





# Video Surveillance

A one-stop surveillance solution with integrated software and hardware, ensuring the safety of premises and personnel through AI tools and event notification.

Simple Architecture

Easy Maintenance

Cost-effective

## Supported Surveillance Systems

### QNAP QVR System

Offers subscriptions or one-time purchase plans for building a professional video surveillance system.

- Manage surveillance through both PC and mobile device.
- Supports backup and fault tolerance.
- Provides a CMS platform centralized surveillance management.
- Open API allows custom development and integration.

### Compatible with Milestone® XProtect and Nx Witness™ VMS platforms.

- Certified storage devices.
- Protect large volumes of high-definition image files.
- Quick and simple deployment to existing architecture.
- Provides elastic scaling up to PB level.



## As Surveillance Storage Server

- Compatible with 95% of the IP cameras on the market (supports the ONVIF® standard).
- Large-capacity and highly scalable storage space.

### Surveillance NAS

Equipped with a NAS OS, it supports surveillance applications and additional versatile functionality.

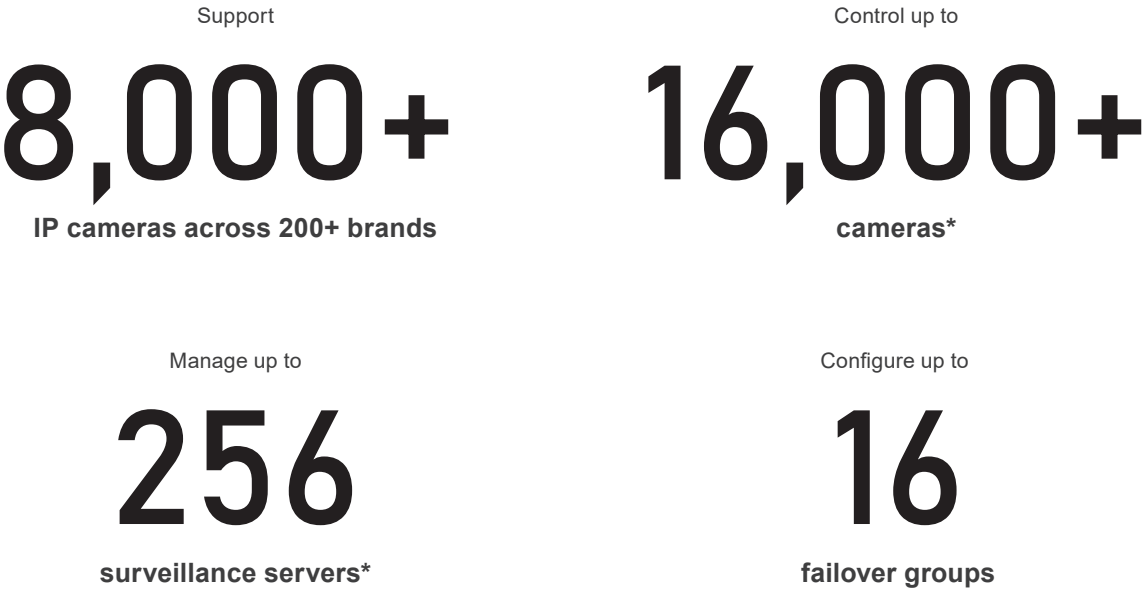
### QVR Appliance

Fully allocates system resources to recording, ensuring efficient, professional surveillance.



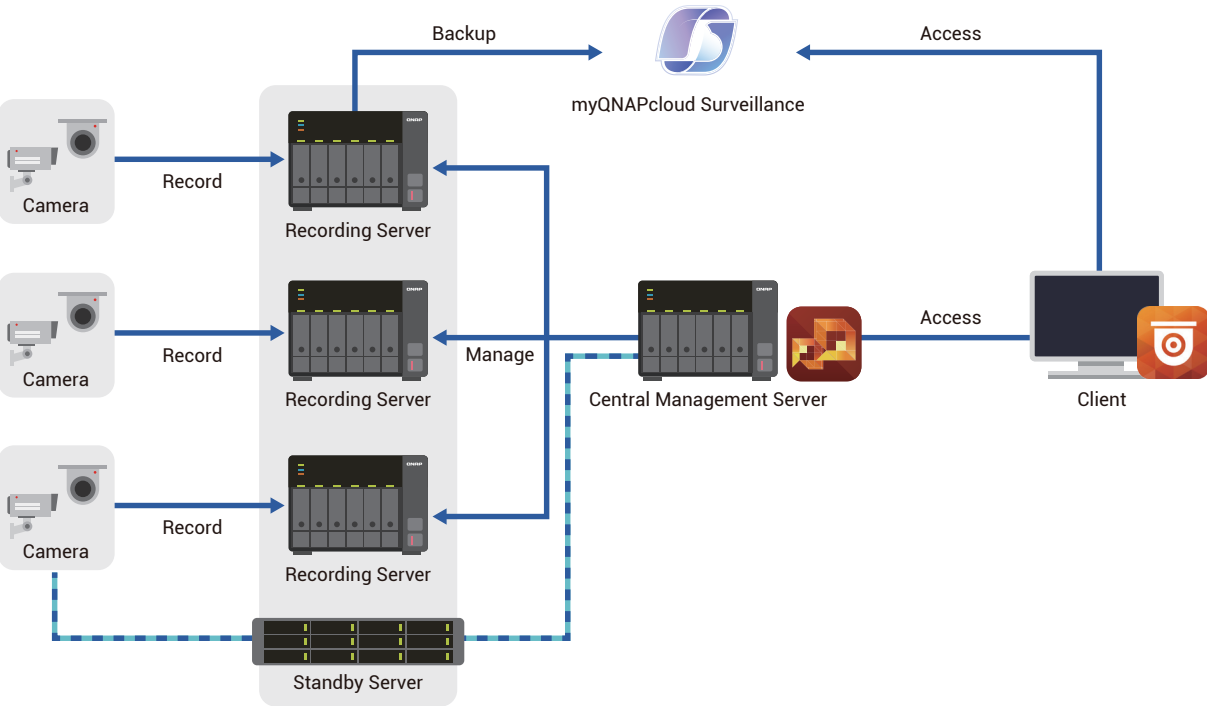
# Configuration and Management

Excels in large-area surveillance, supporting distributed setups. With QVR Center, enterprises can deploy servers across locations and centrally manage surveillance for comprehensive coverage.



\*The maximum supported server count varies based on NAS processor grade and installed memory.

- Efficient Recording Storage: Supports multi-channel, high-resolution recording, and flexible storage expansion solutions for long-term storage needs.
- Instant Warning Notification: Real-time event alerts for quick response, enhancing security.
- Centralized Management: Central Management System (CMS) enables centralized surveillance across multiple locations.



# Active Recording Backup

Quickly deploy a dedicated backup server to proactively back up recording files from surveillance servers without using surveillance resources.

## Ideal for Multi-Point Surveillance and Long-term Storage

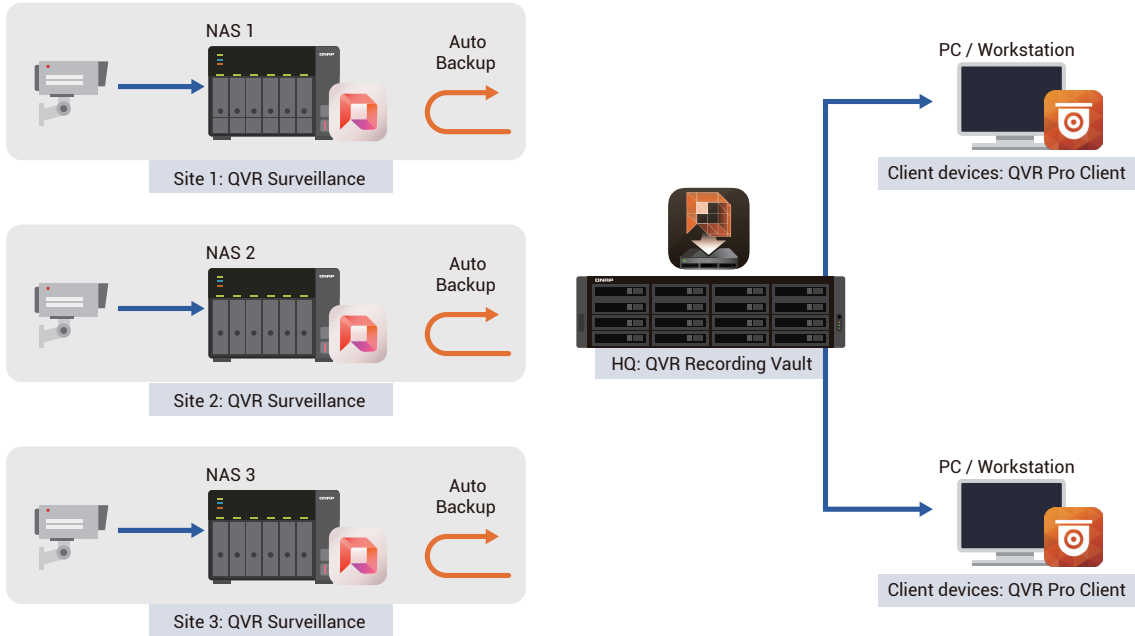
Integrates seamlessly with existing surveillance systems, prioritizing backups and supporting large-scale video storage.

## Flexible Configuration of Backup Rules

Set the maximum storage duration for footage and backup capacity per camera, or choose between general and event-triggered backups.

## Playback and Search Anytime

Backup files include metadata, enabling users to browse, play back, and search footage via PC or mobile apps anytime.





# Smart Surveillance

Integrated AI image analysis technologies are capable of advanced event search, face recognition, and people flow analysis.

## Monitor Personnel Entry and Exit to Ensure Safety

### Dynamic Facial Recognition

- **Recognizes up to 5 faces at once**  
Enables quick and accurate identification of multiple faces in motion.
- **Supports face mask detection**  
Facial recognition identifies individuals wearing masks and maps them to personnel profiles.

### Access Control Management

- **Flexible access rules**  
Create access schedules to control who can enter and exit at specific times.
- **Blacklist/whitelist**  
Maintain lists of key clients and unknown individuals, with automatic notifications to administrators for prompt action.



## Event Search

Search large volumes of recordings in just 90 seconds per hour of video, greatly reducing review time.

### Motion Search



Detect any movement within specified areas.

### Missing Objects



Detect any missing object within specified areas.

### Foreign Object



Detect foreign objects within specified areas.

### Camera Occlusion



Detect if the camera view is blocked.

### Human Search



Detect by face or clothing color within specified areas.

### Vehicle Search



Search by color or vehicle type within specified areas.

## Analyze Foot Traffic for Customer Insights

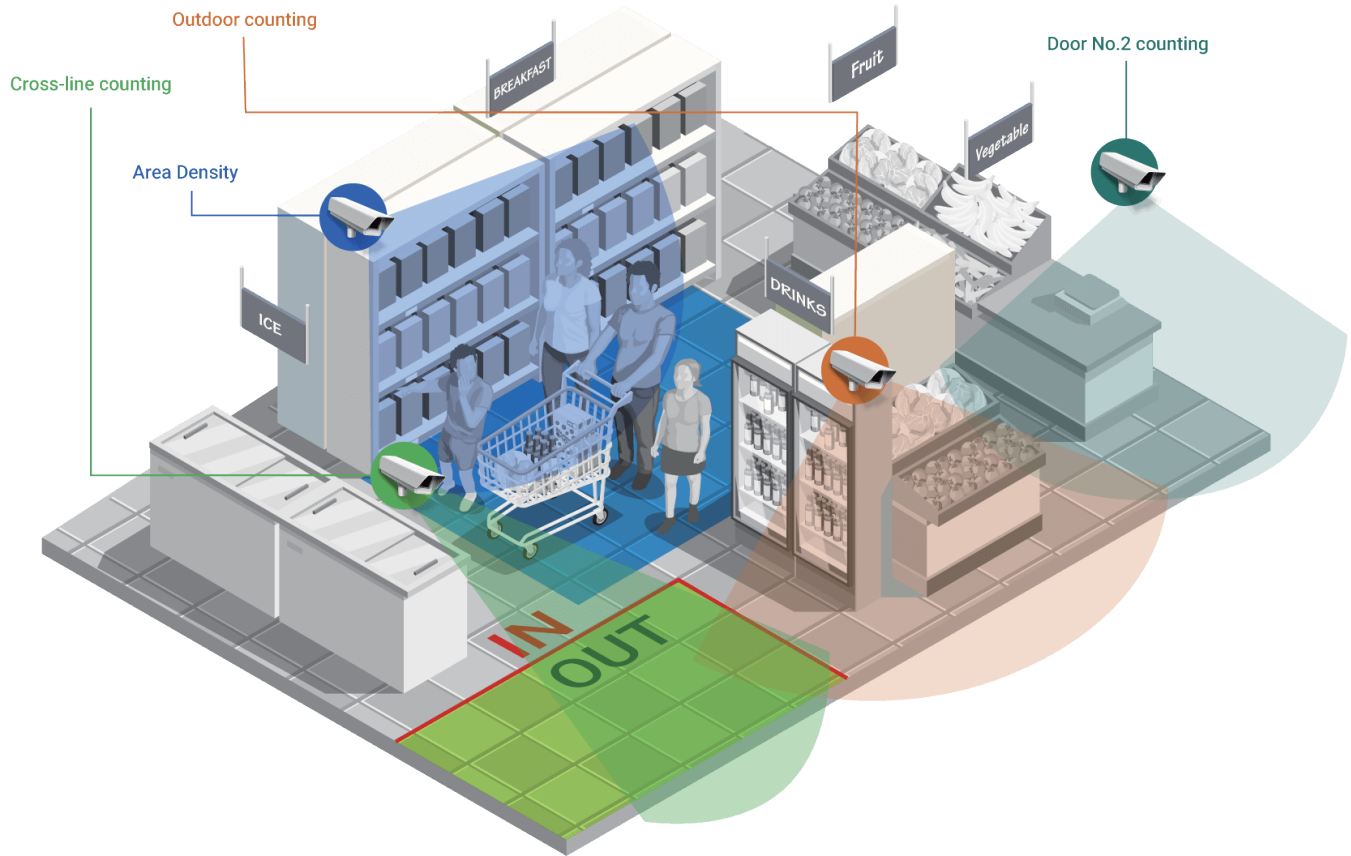
Optimize workforce, operations, and space planning by evaluating traffic patterns, peak periods, and hotspots.

### Cross-line Counting

Define up to 4 boundary lines (straight or polyline) per channel to track individuals crossing them.

### Area Density

Set a maximum occupancy limit to calculate area density.





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