NETGEAR®

Data Protection with NETGEAR® Storage

Smart Solutions for Disk-to-Disk
Backup and Disaster Recovery for
SMB's and Multi-Office Environments

State-of-the-Art Data Protection for Small and Medium Sized Businesses

## Today's challenges and requirements:

- Backup takes too long and negatively impacts production time.
- Existing systems do not provide the capacity and performance required to keep pace with modern data growth.
- Many companies are not sufficiently protected against device failure or a catastrophic event such as fire, flooding or burglary.
- Existing solutions do not adequately protect against data corruption or accidental deletion through human error.
- Remote access for administrators or field staff is impossible, inflexible, insecure or slow.
- Physical and virtual servers require powerful, yet cost-effective network attached storage.
- Employee productivity suffers when slow recovery policies are called into effect.

NETGEAR® offers a variety of solutions to basic backup and recovery issues:

- NETGEAR® is the only SMB vendor using advanced BTRFS and ZFS as the storage file system.
- Only with copy-on-write file systems such as these can customers benefit from features like local backup with hourly snapshots or block-based replication.
- Copy-on-write file systems eliminate the problem of data corruption.
- NETGEAR® is the only SMB vendor offering an easy-to-use replication solution for disaster recovery and branch office backup that is centrally initialised and managed via a web interface.
- Only NETGEAR® offers all of this at an SMB-friendly cost.

STORAGE SOLUTIONS COMPARED

Traditional NAS for SMB	NETGEAR® ReadyNAS® and ReadyDATA™	Typical Enterprise Storage
Simple and affordable, but level of data protection is weak	Enterprise-class features that are affordable and easy to use	Maximum data protection but too complex and too expensive for most SMBs

First SMB storage system with "true" snapshot capability for the quick restoration of data from any previous point in time:

pointer-/block-based snapshots

current backup data
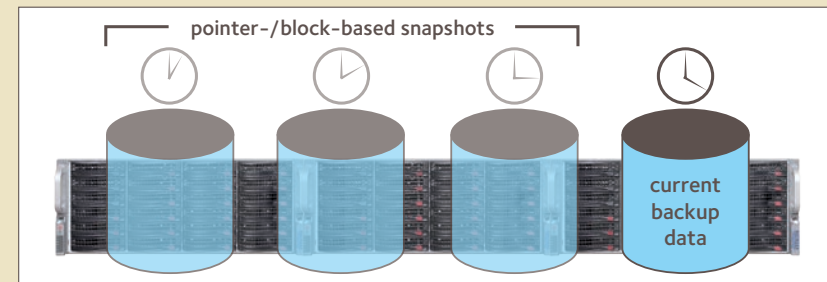
- Customers can automatically create snapshots, up to once an hour
- Manual snapshots can be created at any time
- Data can be restored from any previous point in time with just a few clicks
- Snapshots are pointer/block-based meaning:
  - There is no performance impact
  - Required physical capacity is minimised
  - Snapshots solve the backup window problem
- ▶ **Only when these criteria are met, snapshots can be used for continuous data protection**

DID YOU KNOW?

magazin für computer technik

"Equipped with BTRFS for Snapshots [...] this NAS offers a level of data protection that until now could only be realised with much more expensive servers."
Source: c't 16/2013, S. 134-141, Boi Feddern

Solution: Client and Server Backup

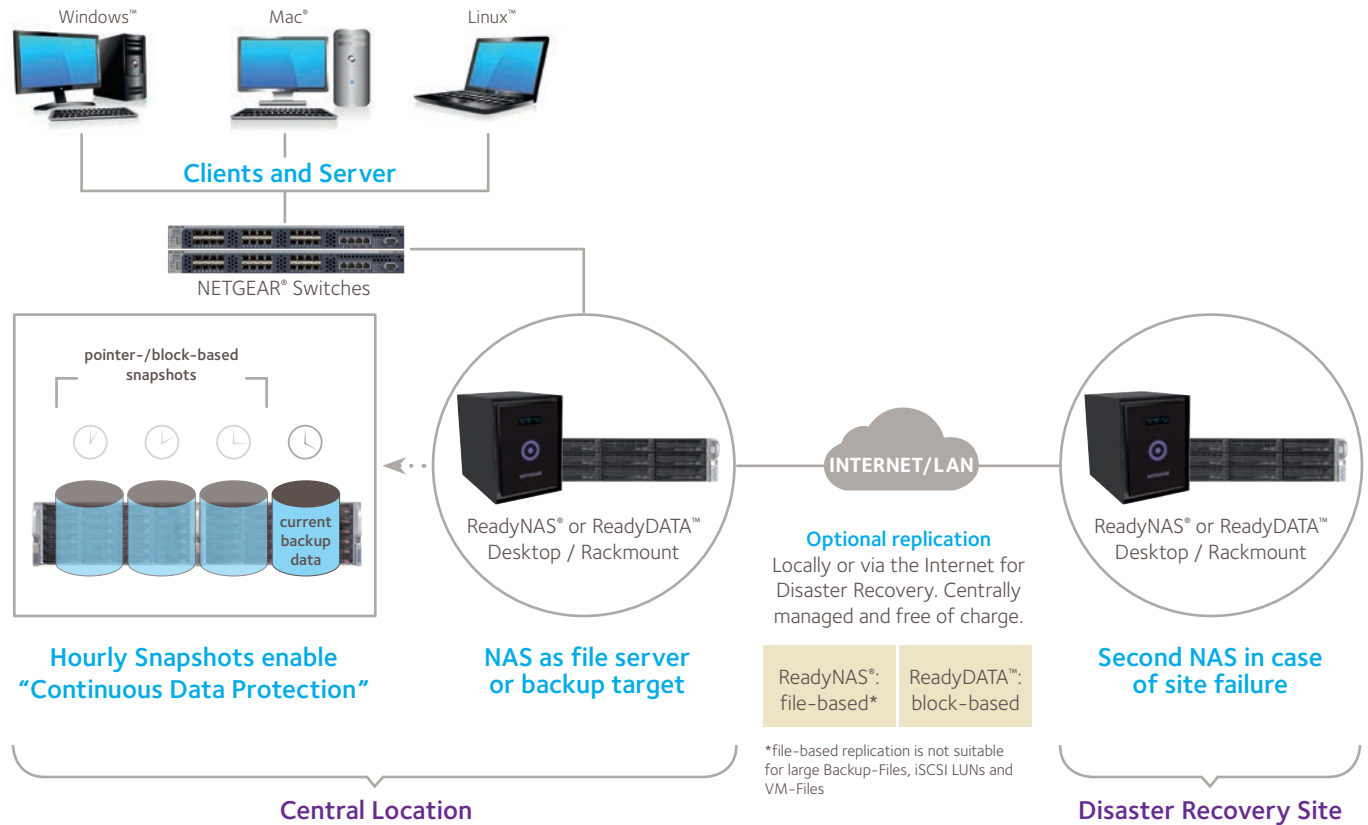## Considerations for local backup of clients and servers:

- Do you need a network storage target to backup data from Windows™ PC, Mac® and Linux™ computers in a secure way?
- Is the backup time window insufficient for backing up your servers in your existing system?
- Do you plan to replace existing tape backup systems with an automated disk-based system?
- Do you like the idea of having an houly or daily "snapshot" of the data so that file versions can be restored from any point in time?
- Would you would like to restore previous files, LUNs or shares in just a few clicks?

NETGEAR® ReadyNAS® and ReadyDATA™ Storage offers:

- Support all file sharing protocols – CIFS / SMB, NFS and AFP.
- Offer capacities of up to 84TB (ReadyNAS®) or 240TB (ReadyDATA™).
- Can be used as a "stand alone" backup solution or fully integrated with all major backup software solutions,
- Is the only NAS solution that can be used as a remote target for Apple® Time Machine®.
- Provides storage space optimisation through deduplication (ReadyDATA™-only).
- Integrate a disaster recovery solution based on file (ReadyNAS®) – or block (ReadyDATA™)-based replication that can be established and managed with just a few clicks from any web browser.

Unlimited snapshots thanks to ZFS or BTRFS based operating system

File-Sharing and Disk-to-Disk Backup

Windows™   Mac®   Linux™

Clients and Server

NETGEAR® Switches

pointer-/block-based snapshots

current backup data

Hourly Snapshots enable "Continuous Data Protection"

NAS as file server or backup target

ReadyNAS® or ReadyDATA™ Desktop / Rackmount

INTERNET/LAN

Optional replication
Locally or via the Internet for Disaster Recovery. Centrally managed and free of charge.

ReadyNAS®: file-based*	ReadyDATA™: block-based

*file-based replication is not suitable for large Backup-Files, iSCSI LUNs and VM-Files

ReadyNAS® or ReadyDATA™ Desktop / Rackmount

Second NAS in case of site failure

Central Location

Disaster Recovery Site

SAMPLE CONFIGURATION READYNAS®

Backup of file data or local servers, minimum requirements
- *ReadyNAS® 300 or 500, 2120, 3220 or 4220*
- *Desktop systems can be expanded with expansion units*
- *Client and servers connectivity via NETGEAR® ProSAFE® Gigabit Switches*
- *Backup target using software from vendors such as Robocopy, Acronis®, Apple®, Symantec® and others*

SAMPLE CONFIGURATION READYDATA™

Ideal for backup of large files or block data or when deduplication is needed for storage efficiency
- *ReadyDATA™ 516 (up to 24TB) or 5200 (up to 240TB)*
- *Client or server connectivity via ProSAFE® Gigabit 10GB XSM switches*
- *Deduplication for maximum storage efficiency*
- *Backup target for clients or servers using software from vendors such as Robocopy, Acronis®, Apple®, Symantec® and others*
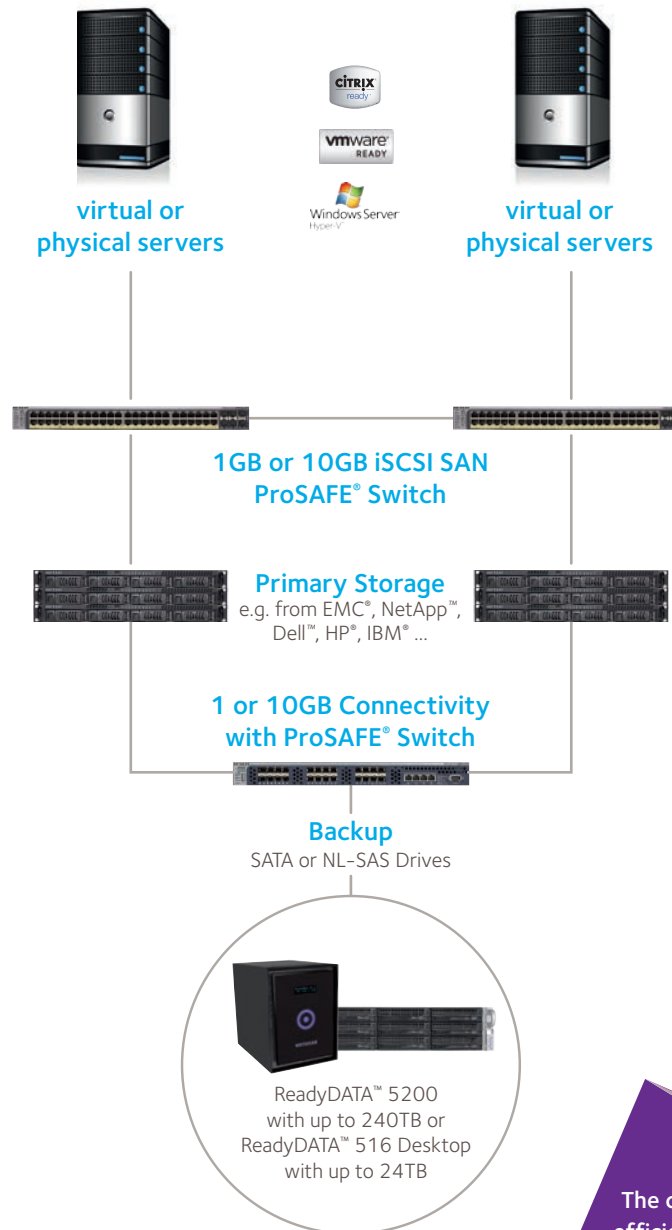
Solution: Backup of Tier-1 Storage

Considerations for local backup for primary storage or virtual servers:

- Do you already have or plan to implement Tier-1 storage?
- Do you want to backup this Tier-1 storage with a solution that is significantly more affordable than comparable offerings from the Tier-1 vendor?
- Do you need a backup system with advanced features and high capacity storage?
- Do you want block-level replication to an offsite location for disaster recovery to be included in the package?

NETGEAR® ReadyDATA™ storage offers:

- Easiest iSCSI management in its class.
- Block-level operations based on the ZFS file system.
- For lower capacity or branch office environments: world's first and only ZFS-based desktop storage system.
- Integration with all leading backup software solutions.
- Block-level deduplication.
- Integrated and free disaster recovery solution with block-based replication.
- 10GbE connectivity included (ReadyData™ Rackmount).
- Up to 240TB capacity (ReadyDATA™ Rackmount).
- 16GB of RAM and high-performance processors.

virtual or physical servers

virtual or physical servers

1GB or 10GB iSCSI SAN ProSAFE® Switch

Primary Storage
e.g. from EMC®, NetApp™, Dell™, HP®, IBM® ...

1 or 10GB Connectivity with ProSAFE® Switch

Backup
SATA or NL-SAS Drives

ReadyDATA™ 5200 with up to 240TB or ReadyDATA™ 516 Desktop with up to 24TB

The cost-efficient alternative for Tier-1 backup

Solution: Disaster Recovery Through Replication

Considerations for disaster recovery with file- and block-based replication based on NETGEAR® ReadyNAS® and ReadyDATA™ storage systems:

- Do you need to protect centralised or local data against loss due to catastrophic events such as flood, fire or burglary?
- Do you need a reliable, affordable and simple solution for file data replication?
- Are you seeking a solution that enables enterprise-class, block-based replication that is easy to manage from any web browser?
- Do you want to implement this system without purchasing additional software or extensive customisation?
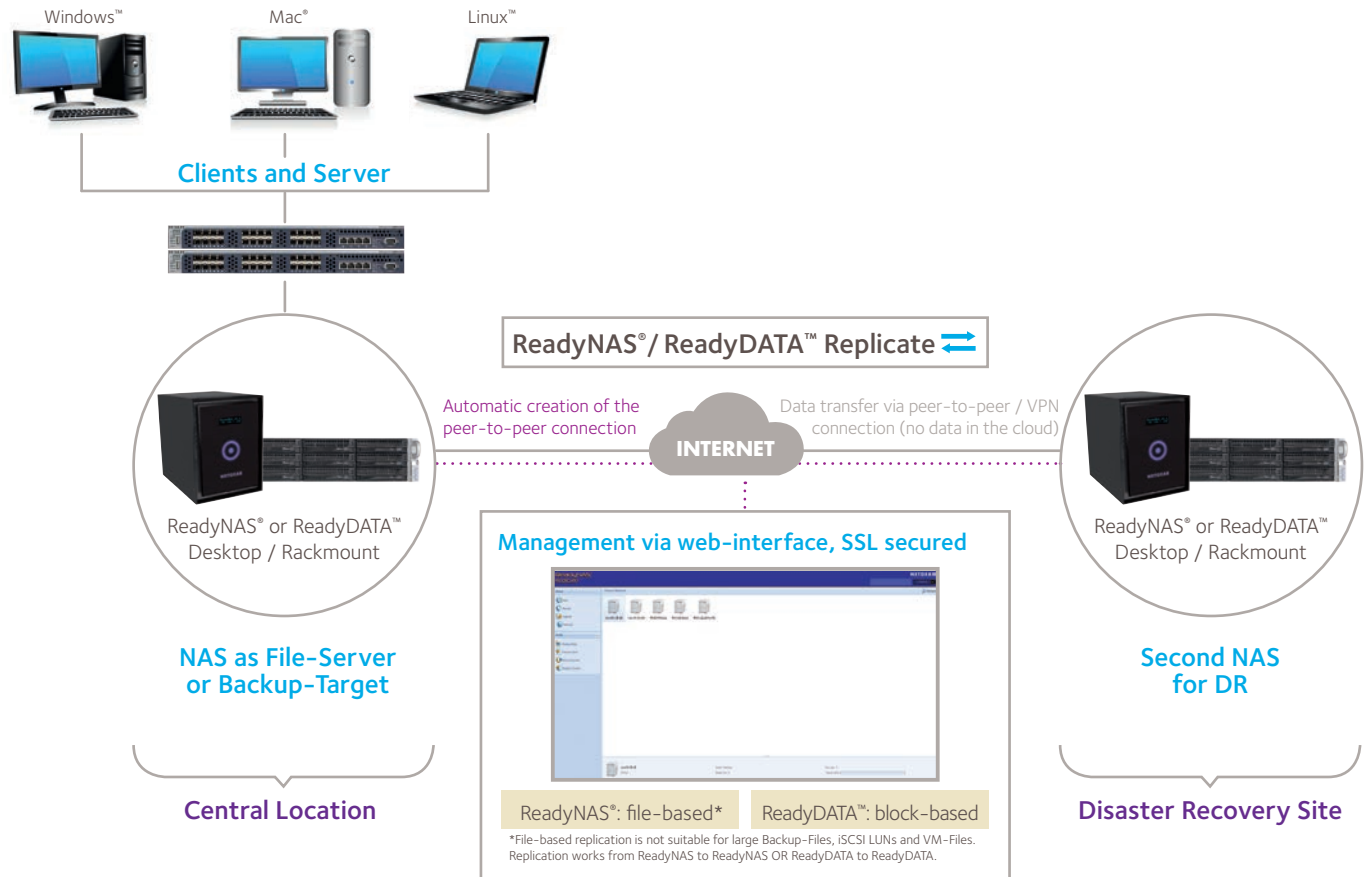
NETGEAR® ReadyNAS® and ReadyDATA™ storage offers:

- Enterprise-class block-level replication of all data types (very large files, VM data, iSCSI LUNs) with ReadyDATA™.
- File-based replication with ReadyNAS® for all file-based environments.
- No additional license fees.
- Web-based management - setup and manage replication jobs from anywhere, anytime and any PC/Mac®.
- Simple deployment with automatic establishment of VPN connection, no firewall configuration and no port forwarding required.

No need for additional software!

File-Sharing and Replication

Windows™   Mac®   Linux™

Clients and Server

ReadyNAS® / ReadyDATA™ Replicate

Automatic creation of the peer-to-peer connection

INTERNET

Data transfer via peer-to-peer / VPN connection (no data in the cloud)

ReadyNAS® or ReadyDATA™
Desktop / Rackmount

ReadyNAS® or ReadyDATA™
Desktop / Rackmount

NAS as File-Server or Backup-Target

Management via web-interface, SSL secured

Second NAS for DR

Central Location

ReadyNAS®: file-based*	ReadyDATA™: block-based

*File-based replication is not suitable for large Backup-Files, iSCSI LUNs and VM-Files. Replication works from ReadyNAS to ReadyNAS OR ReadyDATA to ReadyDATA.

Disaster Recovery Site

SAMPLE CONFIGURATION

Replication environment for file-based replication
- Primary Location: ReadyNAS® 2120/3220/4220 or ReadyNAS® 300/500 file storage with SATA drives, 1, 2, 3 or 4TB
- Second ReadyNAS® system at disaster recovery site
- Setup and management of the replication with ReadyNAS® Replicate

SAMPLE CONFIGURATION

Replication environment for block-based replication
- Primary Location: ReadyDATA™ 5200 or ReadyDATA™ 516 for large-scale file storage or primary storage for servers (iSCSI or NFS)
- SATA, NL-SAS / SAS or SSD cache operation depending on the individual requirements
- Second ReadyDATA™ system with SATA disks in failover / disaster recovery site
- Setup and management of replication jobs with ReadyDATA™ Replicate

Web-managed replication included in the system price

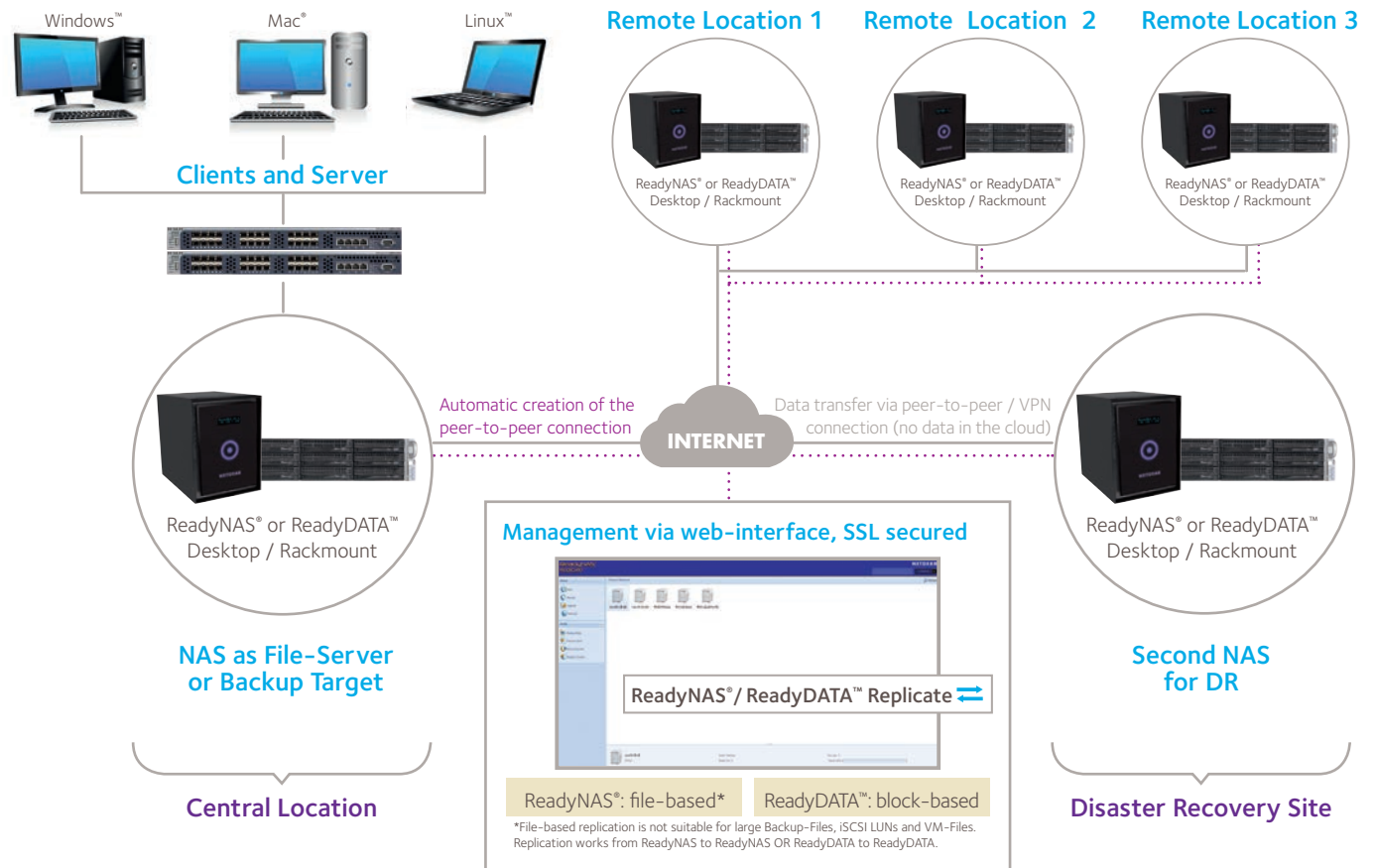# Solution: Branch Office Protection with Replication

Considerations for the protection of branch office / distributed environments with NETGEAR® ReadyNAS® and ReadyDATA™ storage systems:

- Do you want to protect your branch or remote offices against data loss due to accidental deletion, flood, fire or burglary?
- Should the solution allow for central setup and management when no trained IT staff are available at branch locations?
- Should file-data must be backed-up to a central location?
- Are you seeking a solution for backing up block data from remote locations, e.g. SQL databases or Exchange servers in the branch offices without additional software or programming?

NETGEAR® ReadyNAS® and ReadyDATA™ storage offers:

- With ReadyDATA™ Replicate the most affordable and easiest-to-use solution for replicating block-data from branch offices to a central location.
- With ReadyDATA™ 516 the world's most powerful Desktop NAS that allows block-level replication in branch offices without server cabinets.
- Scalability from 2TB to 240TB with ReadyDATA™ and up to 84TB with ReadyNAS®.
- With ReadyNAS® Replicate, a highly flexible solution for backing-up file-sharing environments in branch offices.

The innovative management GUI ensures that all important administration tasks can be managed by trained staff from a central location.

Windows™   Mac®   Linux™

Clients and Server

Remote Location 1 | Remote Location 2 | Remote Location 3

ReadyNAS® or ReadyDATA™ Desktop / Rackmount

ReadyNAS® or ReadyDATA™ Desktop / Rackmount

Automatic creation of the peer-to-peer connection

INTERNET

Data transfer via peer-to-peer / VPN connection (no data in the cloud)

ReadyNAS® or ReadyDATA™ Desktop / Rackmount

NAS as File-Server or Backup Target

Management via web-interface, SSL secured

ReadyNAS® / ReadyDATA™ Replicate

ReadyNAS®: file-based*   ReadyDATA™: block-based

*File-based replication is not suitable for large Backup-Files, iSCSI LUNs and VM-Files. Replication works from ReadyNAS to ReadyNAS OR ReadyDATA to ReadyDATA.

Central Location

ReadyNAS® or ReadyDATA™ Desktop / Rackmount

Second NAS for DR

Disaster Recovery Site

SAMPLE CONFIGURATION

Branch office environment with file data
- Central location: ReadyNAS® 2120/3220/4220
- Remote offices depending on the requirements 2, 4 or 6-bay ReadyNAS® 300 or 500 with SATA drives, 1, 2, 3 or 4 TB
- Setup and management of the branch-office replication into the central location with ReadyNAS® Replicate

SAMPLE CONFIGURATION

Branch office environment with block data or high performance requirements
- Central location: ReadyDATA™ 5200 Rackmount
- Depending on performance requirements, SATA or NL-SAS drives for capacity and SAS drives for i SSD-Caching
- Branch offices with ReadyDATA™ 516 2, 3 or 4TB SATA and SSD caching as needed
- Setup and management of the branch-office replication into the central location with ReadyDATA™ Replicate

Key specifications at a glance

	Typical EXT4 NAS	ReadyNAS® OS 6.x	ReadyDATA™ OS 1.x
Hard Drives	SATA, SSD	SATA, SSD	SATA, SSD, and NL-SAS, SAS (5200)
Versions	populated and diskless	populated and diskless	populated – only NETGEAR® HDDs
SSD Caching	no	no	read & write caching for additional performance
Scalability	mostly no	eSATA, up to 84TB	6 Gbit SAS up to 240TB
Snapshots	no / limited with performance impact	yes, block- / pointer based, performance-neutral	yes, block- / pointer based, performance-neutral
Storage Provisioning	instantaneously, but without protection of the data during RAID-Setup	instantaneously, data are protected from the beginning	instantaneously, data is protected from the beginning, RAID setup is also instantaneous
Volume Expansion	no	incrementally (disk per disk)	yes, instantaneously, across multiple drives
Dedupe	no	no	yes, inline, block-based
Real-Time Antivirus	no	yes	no
Encryption without "backdoor"	no	yes	no
Replication	File-based, Rsync, complex to set up and manage, extra license	File-based, license included, easy and intuitively to set up and manage	Block-based for shares and LUNs, highest performance
Snapshot Replication	no	no	yes
Protection against silent data corruption	no. EXT 4 file-system does not offer protection	optimised - Copy-on-write with BTRFS reduces the risk caused by file-system inconsistency (additional protection by ECC RAM in higher end ReadyNAS®)	ZFS writes data always to non-volatile media before deleting them on the sender side. Copy-on-write with self-healing and check-sums guarantees 100% file-system-consistency

ReadyNAS®	ReadyDATA™
File-Sharing in office environments and branches up to 84TB	**File-Sharing** with high traffic and capacity requirements (SSD-caching, RAM, 240TB)
Disaster Recovery for HQ / centralised backup, file-based **Backup multiple locations**, file-based	**Disaster Recovery** for HQ / centralised backup, block-based **Backup multiple locations for** virtual environments / iSCSI applications, very large files, block-level replication
Primary storage (iSCSI or NFS) for non-mission critical server applications / VM environments	**Primary storage (iSCSI or NFS)** for non-mission critical applications / VM environments with higher requirements, and replication over WAN

Hardware platforms ReadyNAS® and ReadyDATA®

Product	ReadyNAS® 102	ReadyNAS® 104	ReadyNAS® 312	ReadyNAS® 314	ReadyNAS® 316	ReadyNAS® 516	ReadyNAS® EDA 500	ReadyNAS® 2120	ReadyNAS® 3220	ReadyNAS® 4220S	ReadyNAS® 4220X	ReadyDATA® 516	ReadyDATA® 5200
CPU	Marvell® Armada 370 1.2GHz	Marvell® Armada 370 1.2GHz	Intel® Atom Dual Core 2.1GHZ	Intel® Atom Dual Core 2.1GHZ	Intel® Atom Dual Core 2.1GHZ	Intel® i3 Dual Core 3.3GHz	NA	Marvell® Armada XP (78230) 1.2GHz Core	Intel® Ivy Bridge i3-3220v2 Dual Core 3.3GHz	Intel® Ivy Bridge Xeon E3-1225v2 Quad Core 3.2GHz	Intel® Ivy Bridge Xeon E3-1225v2 Quad Core 3.2GHz	Intel® Core i3 Ivy Bridge 3.3GHz	Intel® Xeon Quad Core 2.66GHz
Memory	512MB	512MB	2GB	2GB	2GB	4GB ECC	NA	2GB	4GB ECC	8GB ECC	8GB ECC	16GB ECC	16GB ECC
File-System	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	BTRFS	ZFS	ZFS
Number of Bays	2	4	2	4	6	6	5	4	12	12	12	6	12 - 60
User	1 - 4	1 - 4	5 - 25	5 - 25	5 - 25	26 - 250	NA	5 - 25	26-250	50-500	50-500	more than 250	more than 250
1 GE Ports	1	2	2	2	2	2	NA	2	4	4	4	2	2
10 GE Ports	0	0	0	0	0	0	na	0	0	2 (SFP+)	2 (10GBase-T)	0	2
Power	Single	Single	Single	Single	Single	Single	Single	Single	Dual hot swappable	Dual hot swappable	Dual hot swappable	Single	Dual hot swappable
USB (3 / 2)	2 / 1	2 / 1	2 / 1	2 / 1	2/1	2 / 1	NA	2 / 1	2 / 1	2 / 1	2 / 1	0	2
eSATA Ports	1	1	2	2	2	3	1	2	2	2	2	0	2
Capacity	8TB	16TB	28TB	56TB	64TB	84TB	20TB	16TB	48TB	48TB	48TB	24TB	240TB
HDD types	2.5" SSD / SATA oder 3.5" SSD / SATA											SSD, SATA, SSD Caching	SSD, SAS, NL-SAS, SATA, SSD Caching