



TTL-NAS RR3312/RR4312X

**State-of-the-art Performance and Data Protection**

TTL-NAS 3312 and 4312 are best-in-class high performance network attached storage systems. The RR4312X has two built-in **10 Gigabit Ethernet** interfaces to further meet the storage demands of next generation business networks. Featuring an architecture powered by blazing fast quad-core 5th generation Intel Xeon processors along with DDR4 ECC memory that is expandable up to 64GB, the RR3312 and RR4312 are the no compromise, high performing data storage systems of choice for businesses that need the very best in capacity, performance and security.

TTL-NAS brings state-of-the-art data storage and protection technologies in an affordable and easy-to-use system to the SMB. All TTL-NAS are built on the revolutionary TTL-NAS OS 6 operating system and next-gen BTRFS file system. A best-in-class 5 levels of data protection - X-RAID, Unlimited Snapshots, Bit rot protection, real-time anti-virus and easy offsite replication work in concert to securely protect your data from common risks.

All TTL-NAS systems utilize proprietary ReadyCLOUD technology. With ReadyCLOUD, remotely accessing and sharing files in your own secure private cloud has never been easier. No VPN setup, no port forwarding, no dynamic DNS required.

Designed specifically for the unique needs of business users, RR3312 and RR4312X are virtualization-ready with iSCSI support, thin provisioning capability and VMware certified.

**Key Business Features**



• **Automatic Backup & Sync:** Using the ReadyCLOUD app for PC, scheduled protection is easier than ever before



• **Bit Rot Protection:** A proprietary technology protecting your files from unplanned degradation



• **Unlimited Snapshots:** Unlimited data snapshot capability for on-box protection and flexible data recovery



• **X-RAID & Instant Provisioning:** Easily expand capacity and feel confident knowing that data is always protected



• **Cloud-managed Replication:** Maintain data sets in multiple locations or ensure protection of data from remote or branch office locations



• **iSCSI and Thin Provisioning:** Powerful tools for a businesses taking advantage of virtual infrastructures



• **Anti-virus & Encryption:** Keep data protected from outside threats and safe from prying eyes



• **Modern GUI and ReadyCLOUD Management:** Sleek, modern interface that puts the tools you need, where and when you need them

**Key Business Solutions**



• **File Server:** Unified storage platform for sharing files between Windows, Mac and Linux-based computers



• **Backup:** RAID redundancy with automatic expansion and unlimited data snapshots for point-in-time restore



• **Disaster Recovery:** Cloud-managed replication for maintaining multiple sets of data and performing easy restores in case of disaster



• **Virtualization:** Thin provisioning, iSCSI support and certified with VMware

## NAS Model Comparison - Rackmount



Hardware	TTL-NAS 3312	TTL-NAS 4312S	TTL-NAS 4312X
<b>CPU</b>	Intel Xeon E3-1225v5 3.3GHz Quad Core Processor, Max Turbo Speed 3.7GHz	Intel® Xeon E3-1245v5 3.5GHz Quad Core, Hyper Threaded Processor, Max Turbo Speed 3.9GHz	Intel® Xeon E3-1245v5 3.5GHz Quad Core, Hyper Threaded Processor, Max Turbo Speed 3.9GHz
<b>Memory</b>	8GB DDR4 ECC	16GB DDR4 ECC	16GB DDR4 ECC
<b>Memory Expansion</b>	64GB DDR4	64GB DDR4	64GB DDR4
<b>Drive Bays</b>	12	12	12
<b>Drive Types Supported</b>	SATA/SSD 2.5" or 3.5"	SATA/SSD 2.5" or 3.5"	SATA/SSD 2.5" or 3.5"
<b>Hot Swappable Drives</b>	Yes	Yes	Yes
<b>eSATA Ports</b>	2	2	2
<b>SAS Ports for Expansion Chassis (sold separately)</b>	2	2	2
<b>Gigabit LAN Ports</b>	4	4	4
<b>10Gbps LAN Optical SFP+</b>	0	2	0
<b>10Gbps LAN Copper 10GBase-T</b>	0	0	2
<b>USB Ports</b>	2x USB3.0	2x USB3.0	2x USB3.0
<b>Power Supply</b>	Dual Redundant Internal 550 W; input 100-240V AC, 50-60Hz	Dual Redundant Internal 550 W; input 100-240V AC, 50-60Hz	Dual Redundant Internal 550 W; input 100-240V AC, 50-60Hz
<b>Chassis Warranty</b>	5 years including 5 years Next Business Day hardware	5 years including 5 years Next Business Day hardware	5 years including 5 years Next Business Day hardware
<b>Fan (mm)</b>	3 x 80	3 x 80	3 x 80
<b>Dimensions DxWxH (mm)</b>	707 x 445 x 88	707 x 445 x 88	707 x 445 x 88
<b>Weight (diskless) (kg)</b>	11.96	11.96	11.96
Software and Functionality	TTL-NAS 3312	TTL-NAS 4312S	TTL-NAS 4312X
<b>Certification and Compatibility</b>	VMware vSphere ESXi 6.0	VMware vSphere ESXi 6.0	VMware vSphere ESXi 6.0
<b>Cloud-discovery, Setup and Management</b>	Yes	Yes	Yes
<b>Data Protection with Unlimited Snapshots</b>	Yes	Yes	Yes
<b>Web-managed Replication for Disaster Recovery</b>	Yes	Yes	Yes
<b>Real-time Antivirus</b>	Yes	Yes	Yes
<b>iSCSI and Thin Provisioning</b>	Yes	Yes	Yes

## Technical Specifications

### Data Protection (Backup & Replication)

- Unlimited block-based snapshots for continuous data protection
- Restore Snapshots to any point in time
- Restore Snapshot data from local admin GUI, ReadyCLOUD, or native Windows File Explorer
- Scheduled and manual snapshots
- File Synchronization (rsync)
- Encrypted Remote Replication
- Data compression
- Cloud managed Remote Replication (TTL-NAS to TTL-NAS). No licenses required for TTL-NAS OS 6 devices.
- AES 256-bit volume based encryption
- X-RAID (automatic single volume online expansion)
- Single Disk, JBOD
- RAID Levels: 0, 1, 5, 6, 10
- RAID Global Hot Spare
- Backup to external storage (USB/eSATA)
- Apple Time Machine support
- Amazon Cloud Drive synchronization (requires Amazon account)
- TTL-NAS Vault™ Cloud backup (optional service)
- Dropbox™ file synchronization (requires Dropbox account)
- Real-time Anti-Virus scanning using signature and heuristic algorithms. (No end-user licenses required) Protection for viruses, malware, worms, and Trojans.
- Bitrot automatic detection & correction for degraded media

### Storage Area Networks (SAN), Virtualization

- Unlimited iSCSI LUN Snapshot
- Thin or thick provision LUNs
- Multi-LUN per target
- LUN mapping and masking
- SPC-3 Persistent Reservation (iSCSI)
- MPIO and MC/S (iSCSI)
- Max # iSCSI Target: 256
- Max # iSCSI LUN: 256
- VMware vSphere 6
- Citrix XenServer 6
- Windows Server 2008 Hyper-V
- Windows Server 2008 Failover Clustering
- Windows Server 2012 R2

### ReadyCLOUD (cloud access to TTL-NAS)

- ReadyCLOUD portal based data access and management
- Upgrade firmware remotely
- VPN quality remote data transfer and management
- Share data with friends & co-workers directly from portal
- Share file via email link

### ReadyCLOUD Client Applications

- ReadyCLOUD client applications for Apple OS X, Microsoft Windows, Android, and Apple iOS
- VPN quality remote data transfer and management
- Simple remote access through ReadyCLOUD client (no firewall or router configuration needed)
- Sync files/folders between PC (Mac/Windows) & TTL-NAS
- Sync files/folders between multiple PCs and TTL-NAS
- Sync files/folders between multiple users and TTL-NAS
- Backup files/folders from PC to TTL-NAS

### File System & Transfer Protocols

- ReadyNAS OS 6.5 or later
- Linux 4.x
- Internal File System: BTRFS
- External File System: EXT3, EXT4, NTFS, FAT32, HFS+
- Copy-on-write file system
- Microsoft Network (CIFS/SMB 3)
- Apple OS X (AFP 3.3)
- Linux/Unix (NFS v4)
- Internet (HTTP)
- Secure Internet (HTTPS)
- File Transfer Protocol (FTP)
- FTP over SSL / TLS (explicit)
- FTP Passive mode with port range setup
- FTP Bandwidth control
- FTP Anonymous
- FTP Transfer Log
- Secure Shell (SSH)
- Web Authoring (WebDAV)
- Storage Array Network (iSCSI)
- File Synchronization (rsync)
- Local web file manager

### Users/Groups:

- Max # Users: 8192
- Max # User Groups: 8192
- Max # Share Folder: 1024
- Max # Concurrent Connections: 1024
- Share Folder Level ACL Support
- Advanced Folder Permissions with Subfolder ACL support for CIFS/SMB, AFP, FTP
- Microsoft Active Directory (AD) Domain Controller Authentication
- Local access list
- ReadyCLOUD based ACL
- Domain user login via CIFS/SMB, AFP, FTP

### Management

- ReadyCLOUD cloud based discovery and management
- RAIDar local discovery agent (Windows/Mac)
- Save and restore system configuration (clone devices)
- Local event log
- Local Graphical User Interface (GUI) Languages: English, German, French, Japanese, Chinese (Traditional & Simplified), Russian, Swedish, Portuguese, Italian, Spanish, Polish, Czech, Dutch, Korean
- Unicode support
- Volume Management
- Thin provision Shares and LUNs
- Instant Provisioning/Expansion with data protection
- Restore to factory default
- Operating Systems supported: Microsoft Windows 7, 8/8.1, 10, Microsoft Windows Server 2008 R2/2012, Apple OS X, Linux/Unix, Solaris, Apple iOS, Google Android
- Supported Web Browsers (Microsoft Internet Explorer 9+, Microsoft Edge, Mozilla Firefox 14+, Google Chrome 50+, Apple Safari 5+)

### System Monitoring

- Device capacity, performance, resource and health monitoring
- Bad block scan
- Hard Drive S.M.A.R.T.
- File System Check
- Disk Scrubbing
- Disk Defragment
- Volume balance
- Alerts (SMTP email, SNMP, local log)
- Auto-shutdown (hard drive, fan, UPS)
- Auto-restart on power recovery

## Technical Specifications

### Networking Protocols

- TCP/IP
- IPv4
- IPv6
- Static IP Address
- Dynamic IP Address
- Multiple IP Settings
- DHCP Client
- UPnP Discovery
- Bonjour Discovery
- Link Aggregation IEEE 802.3ad
- Port Trunking (balanced round robin, active backup, balance xor, broadcast, 802.3ad link aggregation LACP, transmit load balancing, adaptive load balancing)
- Hash Types IEEE 802.3ad LACP or XOR (Layer 2, Layer3, Layer 4)
- Jumbo Frames
- Static routes
- Secure Shell (SSH)
- Simple Network Management Protocol v2, v3
- Network Time Protocol (NTP)

### Media

- ReadyDLNA (UPnP DLNA Media Server)
- ReadyDLNA streams to any compliant device including Playstation and Xbox
- ReadyDLNA mobile clients for remote media streaming (iOS, Android)
- ReadyDLNA supported music formats (wav, wma, pcm, ogg, mp3, m4a, flac, aac)
- ReadyDLNA supported photo formats (jpg, jpeg)
- ReadyDLNA supported video formats (3gp, mp4, wmv, xvid, vob, ts, tivo, mts, mpeg, mpg, mp4, mov, mkv, m4v, m4p, m2t, m2ts, flv, flc, fla, divx, avi, asf)
- ReadyDLNA supported playlist formats (pls, m3u)
- TTL-NAS Surveillance (free trial, license required) supports over 70 brands and 1600 models of IP cameras
- iTunes Server
- iTunes supported audio formats (mp3, m4a, m4p, wav, aif)
- iTunes supported video formats (m4v, mov, mp4)
- iTunes supported playlist formats (m3u, wpl)
- TiVo Archiving
- Plex Media Server streams to DLNA and Plex clients (mobile, desktop, Android TV, Roku, Samsung & LG TVs)

### Hardware

- CPU
  - TTL-NAS 3312: Intel® Xeon E3-1225v5 3.3GHz Quad Core Processor, Max Turbo Speed 3.7GHz
  - TTL-NAS 4312S: Intel® Xeon E3-1245v5 3.5GHz Quad Core, Hyper Threaded Processor, Max Turbo Speed 3.9GHz
  - TTL-NAS 4312X: Intel® Xeon E3-1245v5 3.5GHz Quad Core, Hyper Threaded Processor, Max Turbo Speed 3.9GHz
- Memory
  - TTL-NAS 3312: 8GB DDR4 ECC
  - TTL-NAS 4312S: 16GB DDR4 ECC
  - TTL-NAS 4312X: 16GB DDR4 ECC
- Memory Expansion: 64GB DDR4
- Flash: 256MB for OS
- 12 Hot Swappable Drive Bays
- Drive Types Supported: SATA/SSD 2.5" or 3.5"
- Two eSATA ports
- Two USB3.0 ports
- Total solution capacity: 120TB w/o expansion 600TB w/ 2 x EDA4000
- RR4312X: dual 10GbE copper ports
- RR4312S: dual 10GbE SFP+ ports
- Quad Gigabit Ethernet ports with link aggregation and failover
- LEDs: Power, System, 4 x LAN
- Three 80mm fans
- Dimensions (DxWxH): 707mm x 445mm x 88mm
- Weight (diskless): 11.96 kg
- Dual 550 watt redundant power supplies
- Power cord localized to country of sale
- Rackmount sliding rail included

### Compliance

- ENGR 10049 EST Environmental Stress Test Guideline
- ENGR 10045 EVT Engineering Validation Test Guideline
- ENGR 10048 CVT Compliance Validation Test Guideline
- ENGR 10046 System Validation Test Guideline
- ENGR 10023 HALT Accelerated Life Test Guideline
- ENGR 10036 CDG Component Derating Guideline

### Environment

- Noise levels: <49dBA @ 25C
- Operating Temperature: 0-45C
- Operating Humidity: 20-80% relative humidity, non-condensing
- Smart Fan
- Scheduled Power on/off
- UPS Support
- Network UPS with SNMP Management
- Wake on LAN
- Hard drive disk spin down
- Auto-power on (after shutdown)
- AC Input Power Voltage 100V to 240V
- Power Frequency: 50Hz to 60Hz, Single Phase
- Power Consumption (Max/Wake on LAN) RR3312: 210/9.2 watts
- Power Consumption (Max/Wake on LAN) RR4312S: 210/9.2 watts
- Power Consumption (Max/Wake on LAN) RR4312X: 210/9.2 watts
- Certification: FCC Class A, CE Class A, RoHS, VCCI Class A
- MTBF: 70,723 hours

### Accessories

- RTRAY04-10000S: Replacement/additional 3.5" or 2.5" hard drive tray
- RFAN04-10000S: Replacement 80mm fan
- RRAIL03-10000S: Replacement/additional sliding rack mount rail
- RPSU03-10000S: Replacement/additional 550W power supply unit
- RMEM04-10000S: Replacement 8GB memory module for RR3312 and RR4312X
- RRSASEXP-10000S: SAS Expansion card

### Add-on Applications

- One click installation of add-on applications directly through local GUI
- Application available for productivity, media, backup, surveillance, and many others
- NETGEAR applications include Surveillance, Photo Sharing, Advanced configuration tools
- Partner applications include BitTorrent Sync, Plex, Memeo, DVblink
- Community applications include Transmission, ownCloud, qBittorrent, MySQL, VPN server, Syslog, Wordpress, Joomla, Media Wiki, and others
- Application availability subject to change
- Applications may impact overall performance
- Software Development Kit (SDK) available for 3rd party developers