# TrueNAS® X-Series

## Enterprise Storage for every budget.

The most affordable TrueNAS unified storage arrays are designed with enterprise features, high-availability, and reliability at an entry-level cost.  Available in two models, the TrueNAS X10 and X20 provide unified file, block, and object storage, and are available in single or dual-controller, hybrid or all-flash configurations.  The TrueNAS X-Series offers excellent reliability and affordability for small and medium IT environments.

The TrueNAS X-Series arrays combine the flexibility of unified storage, the performance of solid state flash drives, the capacity of hard disks, the simplified management of a powerful web-based user interface, and white-glove enterprise support.  TrueNAS inherits the rich functionality and Open Source economics of FreeNAS® and adds Enterprise-class capabilities.
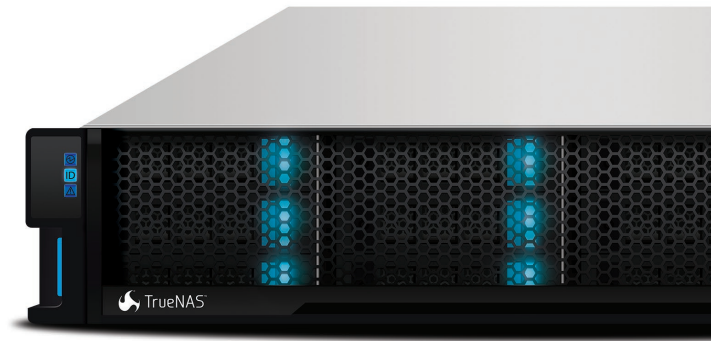
Every TrueNAS enterprise storage array supports unified block, file, and S3-compliant object storage protocols.  Its modular hardware architecture conserves power, space, and cooling while supporting multiple applications with its hybrid flash and disk storage pools.  Optional High Availability ensures storage services are not disrupted, while Intelligent Storage Optimization maximizes storage efficiency with typical data reduction ratios of greater than 2.5x.

The TrueNAS X-Series fits a wide range of applications from file and media storage to business continuity, video surveillance, and many others.  The TrueNAS X-Series provides data integrity, reliability, and ease-of-management for business that never sleeps.

### FLASH-ASSISTED PERFORMANCE

Solid-state performance at spinning-disk capacity and cost. TrueNAS leverages ZFS to merge multi-layer DRAM and flash cache with high-density spinning disks: system RAM and SSDs are used to cache reads and writes while HDDs store the data.

The performance of RAM and SSDs are orders of magnitude faster than HDDs, while their power requirements are much lower.  TrueNAS lets you increase performance and scale capacity while conserving power and saving money.

### SELF-HEALING DATA PROTECTION

Data integrity is the name of the game, and TrueNAS leaves nothing about your data to chance.  In-flight data corruption is automatically detected and repaired before it ever reaches disk, and bit rot and data decay are identified and scrubbed clean.  This ensures data is always pristine. Simply put, what you store on a TrueNAS storage solution today will remain intact for as long as it's in service.

### INTELLIGENT STORAGE OPTIMIZATION

TrueNAS maximizes storage efficiency by offering compression, deduplication, and thin provisioning at no extra cost.  The TrueNAS Adaptive Compression (TAC) algorithm efficiently boosts storage performance while maximizing storage capacity.  TAC intelligently adjusts its compression ratio without wasting system resources. Before data is stored, TrueNAS dynamically detects and compresses what it can and skips over any data too inefficient to be worthwhile.

### UNLIMITED SNAPSHOTS & REPLICATION

Most storage appliances require additional licenses for advanced features – but not TrueNAS.  Unlimited file version retention, restoration, and replication are at your fingertips.  Data is automatically protected locally against unintentional alteration, such as ransomware or malware, with minimal storage consumption.  Data can be replicated locally, remotely, or to the cloud for backups or disaster recovery.  TrueNAS snapshots can also be coordinated with VMware snapshots.

With the power of TrueNAS, any data protection or disaster recovery policy is simple to implement and maintain.

# SOFTWARE SPECIFICATIONS

### FILE-BASED PROTOCOLS
- SMB
- NFSv3, v4
- AFP
- FTP
- WebDAV

### BLOCK-BASED PROTOCOLS
- iSCSI
- Fibre Channel (X20 only)
- OpenStack Cinder

### OBJECT-BASED PROTOCOLS
- S3-compatible

### DIRECTORY SERVICES
- Active Directory (AD)
- Kerberos
- Lightweight Directory Access Protocol (LDAP)
- Network Information Service (NIS)

### NETWORKING
- Port Trunking/NIC Teaming and IEEE 802.3ad link aggregation
- IEEE 802.1q VLAN support

### VIRTUALIZATION
- Supports VMware and VAAI, ESXi snapshot integration, VM Warn/Stun
- Supports KVM, Citrix XenServer, Microsoft Hyper-V, bhyve, KVM, and other common hypervisors
- VSS, ODX, and CSV

### FILE SYSTEM
- Self-healing file system
- Intelligent Storage Optimization including in-line compression and deduplication

- Snapshots and clones
- Thin and thick provisioning
- Online capacity expansion
- Virtual block devices
- In-line deduplication
- ZFS Stripe, ZFS Mirror, RAIDZ (single parity), RAIDZ2 (dual parity), RAIDZ3 (triple parity)
- Compatible with AVID® ISIS® and Nexis®[1]

### BACKUP
- Bidirectional snapshot-based OpenZFS local/remote replication
- rsync
- Supports Acronis, Veeam, Nakivo, NetBackup, and other backup products
- Backup data to public clouds

### REMOTE ADMINISTRATION
- Graphical administrative interface over HTTP/HTTPS
- Alert notifications via email, AWS-SNS, Hipchat, InfluxDB, Slack, Mattermost, OpsGenie, PagerDuty, and VictorOps
- Ability to send logs to a remote syslog server
- Automated backup of system configuration and state
- Graphical reporting
- Signed updates with the ability to return to the prior version of the operating system
- SNMP MIBs
- IPMI remote console and power management
- REST API

### SUPPORTED PUBLIC CLOUD PROVIDERS
- Amazon Simple Storage Service (S3)
- BackBlaze B2 Cloud
- Google Cloud
- Microsoft Azure

## Compact and full-featured enterprise unified storage with simple management, high-availability, and flash-based acceleration.

## Flash-powered Enterprise Storage.

The TrueNAS X-Series offers storage flexibility, performance, reliability, management simplicity, and compatibility with the entire TrueNAS product family.

**855-GREP-4-IX (US) | 408-943-4100 (non-US) | iXsystems.com/TrueNAS**

2490 Kruse Drive **|** San Jose, CA 95131

# HARDWARE SPECIFICATIONS

### AVAILABLE STORAGE MEDIA
- Enterprise Nearline Hard Drives (7200 RPM SAS3 - 12Gb/s):
  - Capacities available from 2TB to 14TB
  - (Self-Encrypting Drives (SED) Available)
- Enterprise Solid State Drives (SAS3 - 12Gb/s):
  - Capacities available from 250GB to 7.68TB
  - (Self-Encrypting Drives (SED) Available)

### POWER MANAGEMENT
- Dual redundant hot-swappable high-efficiency (90%+) power supplies
- 100-240 volt input power supported (auto-switching)
- Remote power-on/off
- UPS signal response and alerts

### DISK MANAGEMENT
- Hot spares
- Hot-swappable drives
- Bad block scan + HDD S.M.A.R.T.
- Enclosure monitoring and alert LEDs
- Hard Drive Activity/Alert LEDs
- Hardware-Accelerated Disk Encryption (AES-NI)

### PHYSICAL PARAMETERS
- 2U: 12x 3.5/2.5" hard drive bays (front-loading, hot swap)
- Dimensions (length x width x height): 21 x 19 x 3.5" | 531 x 447 x 89mm Rackmount rails: 23.5" to 29.5" standard, up to 36" with included extenders
- Enclosure monitoring and alerts
- Operating temperature: 0°C to 40°C
- Non-operating temperature: -30°C to 60°C
- Empty weight: 26 lbs | 12 kg
- Fully-loaded weight: 44 lbs | 20 kg
- Humidity: 8% to 80% non-condensing
- RoHS 6/6 compliant

## TRUENAS X10

- Hybrid storage
- Supports single or redundant storage controllers
- Second storage controller can be added for HA
- Up to 504TB capacity (with 2x ES12 expansion shelves)
- 32GB RAM
- Up to 480GB flash read cache
- Read and write caches optional
- Up to 6x1GbE or 2x10GbE interfaces per controller
- Expansion Shelves Supported: up to 2x ES12
- Maximum power draw**
  - Dual storage controller (HA): 198 Watts
  - Single storage controller: 138 Watts

## TRUENAS X20

- Hybrid or all-flash storage
- Support single or redundant storage controllers
- Second storage controller can be added later for HA
- Up to 1PB of capacity (w/ 1x ES60 Expansion Shelf)
- 64GB of RAM
- Up to 800GB flash read cache
- Read and write caches optional
- Up to 6x 1GbE, 4x 10GbE, or 2x 16Gbps Fibre Channel interfaces per controller
- Expansion shelves Supported: up to 2x ES12, up to 1x ES60
- Maximum power draw**
  - Dual storage controller (HA): 200 Watts
  - Single storage controller: 140 Watts

*"Storage this powerful should have another zero in the price tag."*

**Terry Rataiczak, CEO, Kinetic Networking**

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