

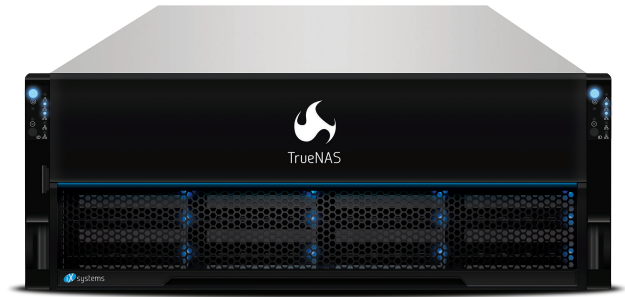
TrueNAS® M-Series TrueFlash All-Flash Unified Storage

TrueNAS combines Open Source economics, High Availability ZFS, and Enterprise Flash performance.

The TrueNAS family, including FreeNAS®, combines the #1 open source storage software with the latest flash memory technology to maximize storage performance. This makes it possible for IT departments to meet increasing demands for more powerful and flexible storage while reducing costs at the same time. The TrueNAS M-Series provides the evolutionary platform needed to manage the transition from hard disk drives (HDDs) to solid state flash drives (SSDs). It can be deployed in Hybrid mode (HDDs with SSD caching) or in TrueFlash mode with all-flash SSDs. In both cases, NVDIMMs are used as ultrafast write caches and ZFS provides the data integrity and protection needed to manage enterprise data. Snapshots, clones, replication, and data scrubbing are standard data management services.

The TrueNAS M-Series with TrueFlash offers a solution that combines the performance of SSDs with the powerful features and elegant simplicity of TrueNAS unified storage, making it ideal for latency-sensitive and business-critical virtual machines and physical workloads. Latencies of less than a millisecond are typical for most deployments. High Availability is provided through a dual controller configuration. When needed, both a TrueFlash pool and a hybrid pool can be configured on the same TrueNAS. Multi-shelf scalability of the TrueNAS M-Series enables growth from 8TB to 800TB of all-flash storage. Systems can support 10GbE, 40GbE, or even multiple 100GbE networking. The TrueNAS M50 system can be configured for over 10GB/s and 800K IOPS. Self-encrypting Drives (SEDs) provide encryption without a performance penalty.

Storage consolidation ratios of up to 10X can be achieved in heterogeneous virtual machine environments through the use of compression and high performance clones. A NAS with 100TB of flash SSDs can store up to 1PB of compressible data. The TrueNAS M-Series includes data reduction, snapshots, and replication at no extra cost. For applications like databases and metadata servers that need IOPS or lower latency, TrueFlash provides a drastic reduction in physical footprint, and has a 70% lower total cost of ownership than a hybrid solution. Performance storage no longer needs massive RAM caches or hundreds of small HDDs to increase IOPS.



SELF-HEALING FILE SYSTEM

Data integrity is the name of the game, and TrueNAS leaves nothing to chance. With ZFS, data is protected and rebuilt through multiple drive failures. Any data corruption is automatically detected and repaired. Bit rot is no longer a concern for your critical storage, where perfection is the only acceptable result.

INTELLIGENT STORAGE OPTIMIZATION

Clones provide maximum space savings when you're deploying hundreds of similar virtual machines. SSDs provide more IOPS per TB, improving the performance of space-efficient systems. TrueNAS also includes in-line compression and the option for deduplication at no additional cost. The adaptive compression algorithm is so efficient that it actually boosts storage performance while maximizing storage capacity. Compressible data is detected and compressed before being written. Incompressible data is detected and written directly. The combination of clones, compression, and deduplication let you make the most out of every byte of storage by increasing capacity up to 10x.

UNLIMITED SNAPSHOTS & REPLICATION

Most storage appliances require additional licenses for advanced features, but not TrueNAS. TrueNAS provides unlimited file version retention and restoration at no additional cost. Data is automatically protected locally against unintentional alteration with minimal storage overhead. It can be replicated for backup, disaster recovery and remote synchronization. With the power of TrueNAS, any data protection or disaster recovery policy is simple to implement and maintain. Data on an all-flash TrueNAS can be replicated to a lower-cost hybrid TrueNAS or FreeNAS system. TrueNAS supports VAAI and also seamlessly integrates with a VMware datastore by coordinating snapshot creation with VMware. When VMware snapshots are deleted, the TrueNAS snapshots can still be retained as stable resurrection points.



SOFTWARE SPECIFICATIONS

FILE-BASED PROTOCOLS

- CIFSv1, SMBv2, SMBv3
- NFSv3, NFSv4
- AFP
- FTP
- WebDAV

BLOCK-BASED PROTOCOLS

- iSCSI
- Fibre Channel

OBJECT PROTOCOLS

- S3-Compatible Host and Client

DIRECTORY SERVICES

- Active directory (AD)
- Kerberos
- Lightweight Directory Access Protocol (LDAP)
- Apple Open Directory
- Network Information Service (NIS)

NETWORKING

- 10/40/100GbE with Port Trunking/NIC Teaming
- Modes: Balance - rr, Active Backup, Balance xor, Broadcast, IEEE 802.3ad Link Aggregation
- VLAN Support, DHCP client

VIRTUALIZATION

- VMware Ready (ESXi 5.5 and ESXi 6.0), VAAI Block, ESXi Snapshot integration, VM Warn/Stun
- Citrix Ready Verified (Citrix XenServer 6.0)
- Certified for Windows Server 2012 R2 (includes Hyper-V), ODX

FILESYSTEM

- Adaptive in-line compression
- Snapshots and clones
- Thin provisioning
- Self-healing file system
- Online capacity expansion
- Virtual block devices
- In-line deduplication
- ZFS Stripe, ZFS Mirror, RAID-Z, RAID-Z2, RAID-Z3

BACKUP

- ZFS Remote Replication
- Cloudsync to AWS, Azure and other cloud providers
- rsync

REMOTE ADMINISTRATION

- HTTP/HTTPS Web Interface
- Email Alert Configuration
- Remote Syslog Client
- Backup & Restore System Settings and State
- Restore to Factory Default
- Resource Monitor
- Log and Event Collection
- Automatic Online Updates
- SNMP server/MIB
- IPMI remote console and power Management
- REST API, Websockets API

CLIENT OPERATING SYSTEMS

- Microsoft Windows XP, Vista (32/64-bit), 7 (32/64-bit), 8/8.1, 10, Server 2003/2008 R2/2012 R2/2016
- Macintosh OS X (all versions)
- Linux, UNIX, FreeBSD

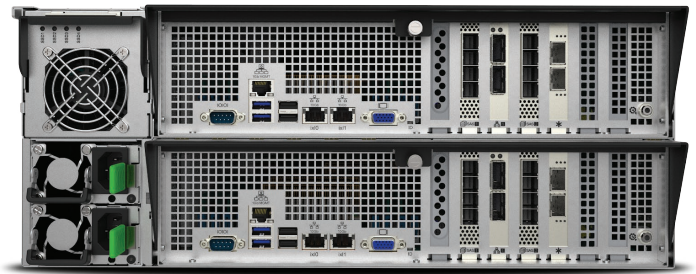
TrueNAS M-Series with TrueFlash.

All-Flash Unified Storage with Enterprise Flash Performance, Data Reduction, and ZFS Data Management

TrueFlash combines the performance and features you need with simplified management. This is only a partial list of the features found in every TrueNAS Storage Appliance.

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

2490 Kruse Drive | San Jose, CA 95131



HARDWARE SPECIFICATIONS

AVAILABLE DRIVES

- SSD: 1TB/1.9TB/3.8TB/7.6TB SSD
- All drives are SAS-3 (12Gb/s)

POWER MANAGEMENT

- Dual redundant Hot-Swappable high-efficiency (90%+) power supplies
- Remote power-on/off
- UPS Signal Response and Alerts

DRIVE MANAGEMENT

- Global Hot Spares
- Hot-Swappable drives
- Bad Block Scan + S.M.A.R.T.
- Enclosure Monitoring and Alert LEDs
- ISO Mounting Support
- Drive Activity/Alert LEDs
- Hardware-Accelerated Self-encrypting Drives

PHYSICAL PARAMETERS

- Redundant Storage Controllers
- Dimensions (LxWxH) 27x19x25 inches 686 x 483 x 178mm
- Operating Temperature: 0°C to 35°C
- Non-operating Temperature: -10°C to 70°C
- Humidity: 5% to 95% non-condensing
- RoHS 6/6 compliant, CE, FCC Class A, UL

TRUEFLASH APPLICATIONS

- Performance Virtualization (VMware, OpenStack, Hyper-V, Xen, Kubernetes)
- Virtual Desktops (VMware, Citrix)
- Databases (MySQL, Postgres, Oracle XE/SE)
- Metadata Servers (DNS, DHCP, Hadoop)
- Single Server Apps (Splunk, Elastic, Custom)

TRUENAS M50 - TRUEFLASH

- All-Flash Unified Storage
- High Availability option
- Up to 920TB SSD capacity
- Up to 1.5TB RAM for read cache
- NVDIMM for write cache
- Up to 10GB/s and 800K IOPS
- Up to 4x100GbE Interfaces per node
- Up to 4x32Gb Fibre Channel Interfaces per node
- Maximum power draw*
 - 905 Watts

TRUENAS M40 - TRUEFLASH

- All-Flash Unified Storage
- High Availability option
- Up to 270TB SSD capacity
- 128GB RAM for read cache
- NVDIMM for write cache
- Up to 5GB/s and 600K IOPS
- Up to 2x40GbE Interfaces per node
- Up to 2x16Gb Fibre Channel Interfaces per node
- Maximum Power Draw*
 - 779 Watts

* Maximum power drawer is estimated without SSDs populated. Assume an additional 11W per SSD.

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