

# FreeNAS Hardware Requirements and Recommendations.

FreeNAS is a Free and Open Source Network Attached Storage software appliance based on FreeBSD.



Like any operating system, FreeNAS has minimum hardware requirements below which it will not work or will be unstable. This document will present the absolute minimum requirements for a FreeNAS system, recommended requirements for a FreeNAS home media server, and example recommendations for a FreeNAS server meant to be used for a business.

All these recommendations should be judged with regard to your use case. For example, if you plan to use your media server for many 1080p streams at the same time, you may require a more robust processor, more RAM, or an SSD cache.

When it comes to storage, FreeNAS can cover just about every use case you can imagine. All you need to do is give it the tools. Thank you for reading, and enjoy!

## HARDWARE REQUIREMENTS

Management for any version of FreeNAS requires a modern web browser on the same network as the FreeNAS device.



### Minimum Hardware Requirements:

These specifications will suffice to get a small FreeNAS install running reliably with moderate performance for a few users.

- Multicore 64-bit\* processor (Intel® strongly recommended)
- 8GB\* Boot Drive (USB Flash Drive suffices)
- 8GB\* RAM
- At least 1 direct attached disk (Hardware RAID **strongly** discouraged)
- One physical network port

\*FreeNAS no longer supports 32-bit hardware. The last FreeNAS Release with [32-bit hardware support was FreeNAS 9.2.1.9](#). This release also supported the UFS filesystem. Deployments on 32-bit hardware using UFS had lower hardware requirements of a 4GB boot device and 4GB of RAM.

**PLEASE NOTE** that further security and stability updates to the 9.2.1.x branch are not guaranteed.

### Recommended Minimum Hardware:

These are the specifications for a hardy home media server or small office file share. At this point, your FreeNAS device will have the resources to run third party services and provide respectable performance.

[The iXsystems FreeNAS Mini Storage Device](#) fulfills these specifications.

- Multicore 64-bit processor
- 16GB Boot Drive (USB Flash Drive suffices)
- 16GB (ECC Recommended)
- At least 2 direct attached disks (Hardware RAID strongly discouraged)
- Drives designed for NAS (such as WD Red drives) are recommended.
- At least one physical network port (Intel® Recommended)





## Business-Class Hardware Recommendations:

When using FreeNAS in a business setting, the hardware requirements are much less defined by FreeNAS itself and more defined by your capacity, performance, reliability, and support needs.

To remove the guesswork from this process, iXsystems offers [FreeNAS Certified Servers](#), which are pre-configured with FreeNAS using fully qualified hardware configurations.

For critical applications where downtime can't be tolerated, iXsystems also offers the [TrueNAS Storage Appliance](#), which features full enterprise support, High Availability, tuned performance, and a much greater degree of scalability.



## Typical Requirements for Small and Medium Business:

- One to two Enterprise-class 64-bit multicore processors.
- Two mirrored 16 GB Boot Drives (USB or SATA DOM recommended).
- 32 GB ECC RAM Minimum.
- At least 4 direct attached disks (Hardware RAID strongly discouraged. It reduces the data protection and recovery features of FreeNAS considerably).
- If necessary to add disks above what the motherboard supports, do not use RAID cards. Host Bus Adapters (HBAs) are recommended instead to give FreeNAS/ZFS direct access to the individual drives. LSI HBAs are the best choice with FreeNAS.
- Enterprise quality SATA/SAS hard drives are recommended.
- High-endurance Flash/SSD-based write log device (ZIL) for synchronous writes only (Flash/SSDs with "Power Loss Protection" recommended). Two devices mirrored if uninterrupted performance is critical.
- High-performance SSDs for read acceleration if the most-requested data doesn't fit in RAM and the random read load is high.
- At least two physical network ports. Intel® recommended for 1GbE. Chelsio recommended for 10GbE.
- If Support is required, consider [iXsystems FreeNAS Certified Line of Servers](#) or [iXsystems TrueNAS Enterprise Appliances](#).



For a comprehensive guide describing these requirements along with the reasons behind each recommendation, please read the following blog posts:

- [A Complete Guide to FreeNAS Hardware Design, Part I: Purpose and Best Practices](#)
- [A Complete Guide to FreeNAS Hardware Design, Part II: Hardware Specifics](#)
- [A Complete Guide to FreeNAS Hardware Design, Part III: Pools, Performance, and Cache](#)
- [A Complete Guide to FreeNAS Hardware Design, Part IV: Network Notes & Conclusion](#)

