

Don't rush into buying an expensive NAS: A used PC is cheaper and more efficient.

Looking to build a budget-friendly NAS? An old PC can be much more powerful, versatile, and cost-effective than a dedicated NAS. These are important criteria to consider when choosing a PC for a NAS.

If you're planning on building a network attached storage (NAS) system for your home, buying a used PC or repurposing your own old computer is the most economical option. Dedicated NAS devices on the market are convenient, but their prices are always several hundred dollars higher than buying a used computer to build your own system.

In reality, a PC used as a NAS doesn't require extremely powerful specifications, but it still needs to meet a few important criteria to ensure stable and reliable operation.

Criteria for choosing a used PC to use as a NAS.

Before considering hardware, define your needs: just file storage? Streaming movies via Plex? Running Docker, virtual machines? Or Time Machine backups? Generally, the tasks are similar, but some needs will require more specific configurations. If it's just for storage, everything will be as simple as possible.



1. CPU suitable for streaming

If you need to stream video, you should look for a PC with an Intel CPU from the last 10 years because they support Quick Sync — hardware specifically for video encoding/decoding. An AMD NAS is still acceptable, but if you're doing a lot of media tasks, you might consider adding a cheaper GPU for more stable video processing.

It's not necessary to buy new components. Older, durable PCs that can run 24/7 will be the most suitable.

Regarding the operating system, you can install Linux, Windows, or specialized NAS operating systems like **TrueNAS (free)** or **Unraid (paid)** — the two most popular options currently available.

2. RAM: minimum 8GB

Right now, RAM is very expensive (the 'RAM-apocalypse' is still going strong), so it's best to buy a machine that already has at least **8GB of RAM**, or **16GB** if your NAS will be running Plex, applications, or virtual machines.

ECC RAM (memory error correction) is better for stability and data integrity. However, it's difficult to find this type of RAM in most older prebuilt computers.

If you're looking for a pre-built system, **the Dell OptiPlex** series is an extremely popular choice for those new to building NAS systems due to its high durability and design optimized for continuous operation.

Most important note: Hard drive bay and expandability

Most 3.5" SATA hard drives are compatible, but NAS devices require multiple **HDD slots** and **SATA ports**.

CMR drives are generally preferred due to their greater stability compared to **SMR drives**, but if budget is a priority, a good desktop drive will still work.

An ideal PC for a NAS needs enough space for a 3.5-inch HDD, and additional space for an SSD:

1. Use NVMe via the M.2 slot for the operating system (if available).
2. Install an additional SSD as a cache to increase speed.

Note: Many motherboards will **disable some SATA ports** if you install an M.2 NVMe SSD.

If M.2 is not available, using a 2.5-inch SATA SSD will still significantly improve speed.

The biggest issue is **the case**: compact office desktops often lack space for an HDD; newer gaming PCs also have limited HDD bays. You can switch to a different case if it fits your budget.

Cooling and power consumption: Don't choose a machine that's too powerful.



NAS devices don't need a high-performance configuration. A low-power CPU (low TDP) will save energy and generate less heat.

Choosing a power supply unit (PSU) can be difficult when buying a used computer, but it's best if you can find one that's **80 Plus Gold** or higher.

Airflow is also crucial for extending HDD lifespan, but small OEM cases can sometimes be quite noisy and not very cool.

Don't forget to check your network connection.

Most older motherboards support **1Gb LAN**, which is sufficient. However, **2.5Gb Ethernet** is a plus, as this is currently the "sweet spot" for home networks.

If your motherboard doesn't have 2.5GbE, just check if there are any empty PCIe slots — you can install a multi-gigabit network card later.

Things to note when choosing a used PC to build a NAS.

Here are some old tips to keep in mind when choosing a PC to build a NAS system:

1. Small form factor (SFF) office laptops typically lack a 3.5" bay.
2. Older gaming PCs can consume a lot of power.
3. PCs with dedicated GPUs sometimes need to be undervolted to reduce heat/power consumption.
4. Always buy from reputable sources.
5. Facebook Marketplace is a good place to find cheap devices, but you need to check carefully.

An old PC can absolutely become a great NAS platform. While it may not offer optimal power efficiency or maximum scalability like a dedicated NAS, it allows you to build a powerful storage system at a very low cost.

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