NAS (Network Attached Storage)

Network-attached Storage (Commonly known as NAS) is a file storage device which is connected to the network and enables multiple users to access data form the centralized disk capacity. The users on a LAN access the shared storage by the ethernet connection.

This storage is fast, low-cost and offers all the advantages of a public cloud on the site. It uses file access protocols such as [NFS](https://www.javatpoint.com/nfs), SMB, NCP, or AFP.

NFS is a file-based protocol which is popular on Unix systems. SMB stands for Server Message Block, which is used with the Microsoft Windows systems. AFP is also a file access protocol that is used with the Apple computers.

It is basically designed for those network systems, which may be processing millions of operations per minute. It supports the storage device for the organization, which need a reliable network system. It is more economical than the file servers and more versatile than the external disks.

Difference between NAS and SAN

The following table describes the differences between the [Storage Area Network (SAN)](https://www.javatpoint.com/san) and Network Attached Storage (NAS):

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| **NAS** | **SAN** |
| 1. NAS is an abbreviation of Network Attached Storage. | 1. SAN stands for Storage Area Network. |
| 2. It is a hardware device that connects to LAN through an ethernet connection. | 2. It uses the fibre channel for connecting the several data storage devices. |
| 3. It is typically used in homes. | 3. It is used in enterprise and professional environments. |
| 4. It is managed easily. | 4. It needs more administration for managing. |
| 5. In NAS (Network Attached Storage), both file name and byte offset are used for identifying the data. | 5. In this, data is identified by the disk block. |
| 6. Network Attached Storage is less complex than the Storage Area Network. | 6. Storage Area Network is more complex than the Network Attached Storage. |
| 7. Its cost is less than the SAN. | 7. It is more costly than the Network Attached Storage. |
| 8. It does not depend on the Local Area Network but uses the high-speed fibre channel network. | 8. It depends on the Local Area Network and requires the TCP/IP network. |
| 9. AFP, NFS, and SMB are the protocols used in NAS. | 9. ISCSI, FCoE, and SATA are the protocols used in SAN. |
| 10. Files in NAS are used for backup and recovery. | 10. In SAN, block by block technique is used for backup and recovery. |
| 11. NAS is a file storage device that does not work with the virtualization technique. | 11. It works easily with the virtualization technique. |
| 12. The file system is controlled and managed by the head unit in NAS. | 12. The file system is managed and controlled by the servers in SAN. |

Difference Between NAS and DAS

The following table describes the differences between the [Direct Attached Storage (DAS)](https://www.javatpoint.com/das) and Network Attached Storage (NAS):

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| **NAS** | **DAS** |
| 1. NAS is a short form of Network Attached Storage. | 1. DAS is a short form of Direct Attached Storage. |
| 2. It uses files for backup and recovery. | 2. It uses sectors for backup and recovery. |
| 3. This storage Device is complex than the DAS device. | 3. This storage device is simple, not complex. |
| 4. Network Attached Storage is slightly difficult to set up. | 4. Direct attached storage is easy to set up and install. |
| 5. The cost of this storage device is higher than the DAS device. | 5. Its cost is low as compared to NAS. |
| 6. The capacity of NAS is 109 to 1012 bytes. | 7. The capacity of DAS is only 109 bytes. |
| 7. This storage device allows users for sharing the files on different OS. | 7. This storage device does not allow users for sharing the files on different OS. |
| 8. It uses Ethernet and TCP/IP for the transmission of data. | 8. It uses IDE/SCSI for the transmission of data. |

Advantages of NAS

Following are the advantages or benefits of a Network Attached Storage (NAS):

* The architecture of NAS is easy to install and configure.
* Every user or client in the network can easily access to Network Attached Storage.
* A main advantage of NAS is that it is more reliable than the simple hard disks.
* Another big advantage of NAS is that it offers the consolidated storage space within the own network of an organization.
* The performance is good in serving the files.
* The devices of NAS are scalable and can be easily accessed remotely.
* NAS is managed easily. It takes less time for storing and recovering the data from any computer over the LAN.
* It also offers security.
* It offers an affordable option for both small businesses and homes for private cloud storage.

Disadvantages of NAS

Following are the disadvantages or limitations of a Network Attached Storage (NAS):

* The speed of transferring the data is not as fast as DAS.
* Users also require basic knowledge of computer networks to use the NAS efficiently.
* Those users or clients who want to back up their data, then they cannot proceed directly. They can do it by using the installed operating system only.