**Advantages and disadvantages of NTFS**

There are several advantages and disadvantages to using NTFS, which are included below.

**Advantages**

* **Control.** One of the primary features of NTFS is the use of disk quotas, which gives organizations more control over storage space. Administrators can use disk quotas to limit the amount of storage space a given user can access.
* **Performance.** NTFS uses file compression, which shrinks file sizes, increasing file transfer speeds and giving businesses more storage space to work with. It also supports very large files.
* **Security.** The access control features of NTFS let administrators place permissions on sensitive data, restricting access to certain users. It also supports encryption.
* **Easy logging.** The MFT logs and audits files on the drive, so administrators can track files that have been deleted, added or changed in any way. NTFS is a journaling file system, meaning it logs transactions in a file system journal.
* **Reliability.** Data and files can be quickly restored in the event of a system failure or error, because NTFS maintains the consistency of the file system. It is a fault tolerant system and has an MFT mirror file that the system can reference if the first MFT gets corrupted.

**Disadvantages**

* **Limited OS compatibility.** The main disadvantage of NTFS is limited OS compatibility; it is read-only with non-Windows OSes.
* **Limited device support.** Many removable devices don't support NTFS, including Android smartphones, DVD players and digital cameras. Some other devices don't support it either, such as media players, smart TVs and printers.
* **Mac OS X support.** OS X devices have [limited compatibility with NTFS drives](https://medium.com/macoclock/enabling-ntfs-write-in-macos-10-15-catalina-the-open-source-way-a5fd0d1cb32e); they can read them but not write to them.

**How NTFS, FAT32 and exFAT differ**

Microsoft developed FAT32 before NTFS, making it the oldest of the three file systems. It is generally considered less efficient than NTFS. It has a smaller 4 GB file size and 32 GB volumes in Windows.

FAT32 is easier to format than NTFS and simpler in other ways. Its file allocation table is a less complex way to organize files than the MFT in NTFS. Because it's simpler to use, FAT 32 is more compatible with non-Windows OSes and is used where NTFS generally isn't, such as smart TVs, digital cameras and other digital devices. FAT32 works with every version of Mac, Linux and Windows. As mentioned earlier, NTFS is read-only with Mac and Linux.

ExFAT was designed as an evolution of FAT32 and is the newest of the three file systems. It retains the positive characteristics of FAT32 -- a lightweight, more flexible file allocation system -- while overcoming some of its limitations. For example, FAT32 can only store files of up to 4 GB, while exFAT can handle file sizes of 16 exabytes.

ExFAT does require additional software to work with Mac and Linux systems, but it is more compatible with them than NTFS. It is ideal for when users need a larger file size than FAT32 but has more compatibility than NTFS.

The journaling file system in NTFS makes it possible to use the journal to repair data corruption, something FAT cannot do. The MFT in NTFS holds more information about the files being held than FAT's file allocation tables, making for better file indexing and cluster organization.

**The file system takeaway**

NTFS, FAT32 and exFAT each have strengths and weaknesses. However, they are also each used in a variety of computing contexts, from personal computing to the enterprise. NTFS is prominent among the three because of its connection to Windows.

What are the advantages of NTFS? NTFS is **able to write smaller files much faster than a file system like FAT32**. Moreover, the file size is not limited. By intelligently selecting the sectors to be written, the file system reduces the problem of fragmentation and minimizes the need for constant defragmentation.

1. Contiguous storage
2. Separate date stamps for file creation and last access and modification
3. Less file fragmentation
4. Smaller cluster size
5. Support for storage devices of up to 512 GB
6. Faster disk operation and file access of the root directory at the midpoint of the disk rather than the beginning

The advantages of HPFS include:

1. Requires more system memory
2. Requires disk partitions not recognized by MS-DOS, which prevents a computer from booting from a floppy disk
3. Requires a special utility (Partition Magic from PowerQuest) to access the HPFS partition

IBM agreed to collaborate with Microsoft so that both have rights to Windows and OS/2 technology. However, Microsoft still retains the rights to OS/2 technology and HPFS.

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### Disadvantages of HPFS

Because of the overhead involved in HPFS, it is not a very efficient choice for a volume of under approximately 200 MB. In addition, with volumes larger than about 400 MB, there will be some performance degradation. You cannot set security on HPFS under Windows NT.

HPFS is only supported under Windows NT versions 3.1, 3.5, and 3.51. Windows NT 4.0 cannot access HPFS partitions.

The biggest disadvantage of using the NTFS file system is compatibility: **Many removable devices, such as Android smartphones don't support NTFS**. While Mac OS X can read support for NTFS drives, but it can't write to NTFS drives without third-party software.

What are the advantages of HFS+?

HFS+ lowered the block size to 4kb and reduced the number of allocation blocks which reduced disk space for large volumes. Key benefits were: **Longer file names - 255 characters**. Unicode naming - Non-English characters and other foreign language benefits.

* **Insert a record**

To insert a new record into the table, the hash function generates an address for the new record based on the hash key, and the record is stored in that location.

When a record is requested using the hash key columns, an address is generated, and the entire record is fetched using that address. When a new record needs to be inserted, the hash key is used to generate the address, and the record is then directly placed. In the case of removing and updating, the same procedure is followed.

There is no effort involved in searching and categorising the full file using this method. Each record will be put in the RAM at random using this procedure.