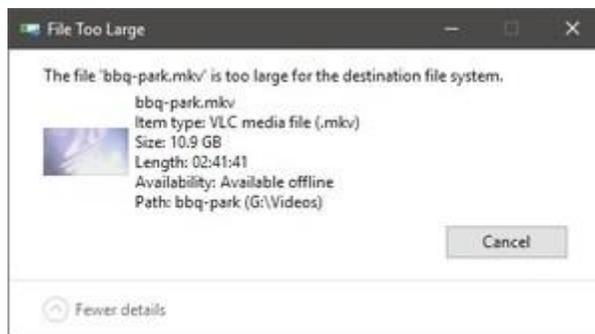


Why your USB drive's file format matters: FAT32 vs. exFAT vs. NTFS

Josh Norem | PCWorld | Aug 29, 2016 7:33 AM

The differences involve file size and transfer speed. Your USB drive isn't slow because you have too much stuff on it. It's slow because it uses a slow storage format like FAT32 or exFAT. You can re-format it to NTFS to get faster write times, but there is a catch.

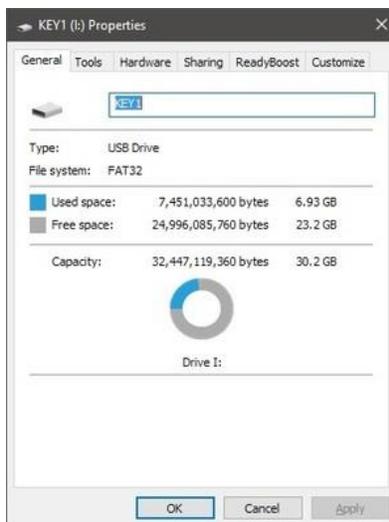
The person in the following example was unable to copy a movie from his PC to his newly acquired 32GB USB key, and wondered why. He sent me a screenshot that clearly indicated the problem, as it read "The file is too large for the destination file system." I replicated the issue quite easily by trying to move a 10GB file to a Fat32 disk, as Fat32 can't handle any file larger than 4GB.



FAT32 has a 4GB file size limitation, making it tough to copy HD or 4K video footage.

In dealing with this it occurred to me that Majid probably isn't alone, and people might not be aware of the fact that you can format a USB key in Windows using one of three available file systems, and that each system has both advantages and limitations. My colleague wrote about this previously in regards to external drives, but he was discussing high-capacity hard drives you plug into your PC. Though Windows file systems work the same regardless of drive type I wanted to expand on his piece a bit by including the system called exFAT, so in this piece I'll discuss the three file systems, their pluses and negatives, and which one to use according to your needs.

Fat32: This is the old standby, and the file system that is usually pre-installed on any USB key you buy from the store.



The reason for its ubiquity is that it will work on any PC you plug it into, including both Macs and PCs, Linux boxes, and vintage machines that use USB 2.0. The biggest limitation is that it has a file size limit of 4GB, which can be a problem with today's Blu Ray rips and 4K video files. If you're just sharing small files between computers, however, it's a fine system to use.

exFAT: This is an updated file system created by Microsoft to replace FAT32. It debuted in Windows Vista SP1, it has a maximum file size of 16 exabytes (EB) (it's going to take us a while to hit that), and it's compatible with both Mac and PC. Though it's a proprietary Microsoft technology, Apple licensed it for use in its OSes so you'll see it as an option when formatting a drive in OS X. For swapping or sharing large files, especially between OSes, exFAT is the way to go. One downside to exFAT is that it doesn't have any journaling functionality, which is a system whereby any changes to the files on the disk are noted in a log before they're actually performed. This helps data integrity by recording the changes to files before they take place. The only other downside to exFAT is it's not supported by Apple's Time Machine software.

NTFS: This is the newest file system created by Microsoft and is the *de facto* file system for almost every modern internal hard drive and SSD.



The exFAT file system was created by Microsoft as an updated version of FAT32.

Its name stands for New Technology File System (clever, no?). Windows can only be installed on an NTFS partition, so chances are your system at home is using it.

The reason it's the default file system for drives that run the OS is that it has all the technology Microsoft has on tap these days : journaling, no reasonable file size limitations; support for file compression and long file names; file access control for server administrators, and lots more. In a Windows-only household there's no reason for you *not* to use NTFS on all your drives, both removable and internal.

The catch is, NTFS can be read by Mac OSes, but not *written to* without third-party software. This means if you plug an NTFS-formatted thumbdrive into a Mac you can copy the contents from it, but you can't alter the contents or write to it, so it's not good for cross-platform sharing.

In summary, for USB drives, you should use exFAT if you're in a Windows and Mac environment, and NTFS if you're only using Windows.