

How long does it take to create a 16TB file?

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Although the theoretical maximum file size on NTFS is $2^{64}-1$ clusters, the current implementation of the NTFS driver supports files up to “only” 16TB minus 64KB. (In other words, the disk format supports files up to $2^{64}-1$ clusters, but the current drivers won't go above 16TB-64KB.) Back in 2002, in order to verify that the drivers did indeed support files as big as their design maximum, the NTFS test team sat down, created a volume slightly bigger than 16TB, and then created a file of the maximum supported size, filling it with a known pattern. After the file was successfully created, they then ran another program that read the entire file back into memory and verified that the contents were correct. (They ran other tests, too, of course, but those are the ones that are important to this story.) How long did it take to create this nearly-16TB file? Around three days. Verifying that the data was written correctly took about four days.

(Yes, it's strange that reading was slower than writing. I don't know why, but I can guess and so can you. Maybe the read test did a bunch of extra verification. Maybe the read test used random access as well as sequential access. Or maybe there was just rounding error in the reporting of the duration. I wasn't there, so I don't know for sure.)

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