

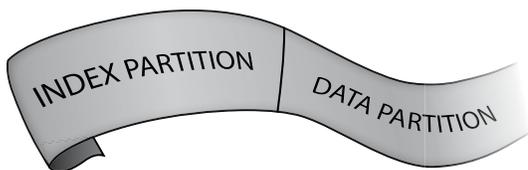
LTFS STANDS FOR LINEAR TAPE FILE SYSTEM

Yes, it is a file system. A file system that resides on a tape cartridge. What this means is that a user can take a tape cartridge written in LTFS format and can quickly see what files are on that cartridge, without having to scan the whole cartridge. And you can even read or retrieve the specific files you are looking for, without any software beyond LTFS.

LTFS IS MOSTLY SOFTWARE

LTFS has been designed into LTO-5 and LTO-6 tape formats. So if your hardware includes LTO-5 or later tape drives, then you have all the hardware you need.

LTFS defines how data is to be written on tape. The LTO-5 and LTO-6 specifications define at least two partitions on a single tape cartridge. LTFS uses the first partition to write the metadata (file location, file name, and other descriptive data), and the second partition to hold the content of those files that are described in the first partition.



So a user can find out what files are on that tape just by reading the first partition, which is much smaller and therefore much faster than reading the whole tape to see what is on the tape.

So, when we say LTFS is software, we mean that if you have software that can write data to an LTO-5 or LTO-6 tape cartridge in the way prescribed by the LTFS specification, then you are practicing LTFS.

LTFS IS AN OPEN STANDARD

As you can see from this [link](#), the LTFS specification is published openly, so anyone can write software to meet the specification. This is a key reason why users are so interested in LTFS. Users like to store data, particularly data that will be stored a long time (like archive data), in a way that leverages industry standards as much as possible. When done this way, users are hedging the risk of technology migration by relying on open standards that are likely to be around (or at least have solutions for migrating to the future) in the long run.

LTFS IS DIFFERENT THAN .TAR OR BACKUP

While .tar data is also based on an open standard, .tar does not provide the metadata indexing associated with LTFS. With an LTFS cartridge, the user can identify what is on the cartridge in seconds. With .tar data, that can take several minutes if not hours. This is because with .tar, the user must scan the entire written area of tape to know what data resides on that tape.

Most data on tape today has been written by backup applications. Users of these applications are comfortable with how those applications maintain an awareness of what data is on each tape they have written to. Backup applications are very good at telling users what data is on what tape. But what if the user backs up some data on a tape cartridge they want to share with one of their partner companies? Can the user send that cartridge to their partner company and expect the partner to have access to that data? Usually, no. The database that contains the information about what files are on that tape resides on the backup application server in the first user's enterprise. Can data written by one backup application be read by another brand backup application? Usually, no. Most of the large backup applications pack the data in a proprietary way, so you can only read that data by an instance of that backup application.

With LTFS, all the data written by one instance of an application that supports LTFS can be read by another application that supports LTFS. A user can send data on tape to another location, and that second user can retrieve that data by using any application that supports LTFS.

FREE LTFS DRIVERS ENABLE FILE SYSTEM PRESENTATION OF FILES

It's like an ultra-high-capacity "thumb drive". The LTO Technology Provider Companies (Quantum, HP, and IBM) each have free driver downloads available from their websites for LTFS for Windows, Mac, and Linux platforms. These driver downloads enable an LTO-5 or LTO-6 tape drive with a cartridge to look to the system just like a USB thumb drive. You can browse the tape, and you can drag and drop data to and from that cartridge, just as you would with external storage. Any person that downloads and installs these drivers can share data with any other person that downloads and installs these drivers, or with any place where LTFS-enabled applications are installed (keep in mind you do need LTO-5 or LTO-6 drives to read the cartridges).



Artistic rendering - not a real product

QUANTUM PRODUCTS THAT SUPPORT LTFS

As mentioned previously, the only hardware you need to have for LTFS compatibility is an LTO-5 or LTO-6 tape drive. The rest is software. With that said, Quantum's LTO-5 and LTO-6 tape drives are LTFS compatible. Quantum's Scalar® tape libraries are all compatible with LTFS as long as there are LTO-5 or LTO-6 tape drives in the library.

Quantum has LTFS stand-alone driver software available for free download here:
www.Quantum.com/LTFS.

This would allow the user to create LTO-5 or LTO-6 tapes with data in LTFS format, and share those tapes with another site or another user. Please visit www.Quantum.com for more details.

Quantum offers our Scalar LTFS Appliance to enable reading and writing LTFS data to cartridges in Quantum Scalar libraries. Please visit www.Quantum.com/ScalarLTFS.

There are also third-party solutions coming to the market all the time. Please contact the appropriate Quantum representative to get the latest information on Quantum's compatibility with these products.

To contact your local sales office, please visit www.quantum.com

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