



**Hewlett Packard
Enterprise**

**For flawless LTO
media performance,
you need a leader.**



The LTO logo specification is an important benchmark, but when it comes to the quality of data protection, HPE knows – from decades of supporting a huge installed base of tape customers – end users seek assurances of reliability that go further still.



Who owns the format?

Any LTO Ultrium solution needs a great number of different technology areas to combine successfully. Balancing all these elements is a remarkable technical achievement.

How does the LTO format benefit me?

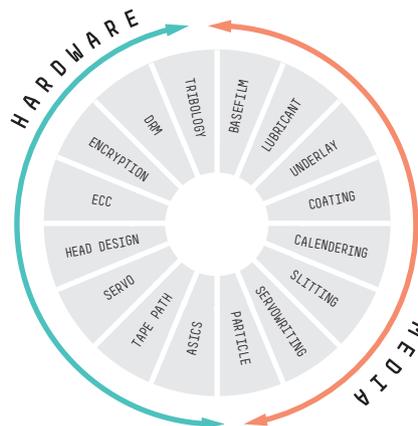
It's a simple fact that excellent media can be undone inside a poorly designed drive. And that a tape drive will perform far less well when coupled with inferior quality cartridges.

For every generation of LTO, the Technology Provider Companies (TPC) – HPE, IBM and Quantum – have defined the specifications for each individual component. Manufacturers take out licences from the TPCs to make products according to these strict definitions, most recently for LTO-7.

Any company claiming bragging rights over the entire LTO solution, just because they think they have a specialism in one of the areas, like particle formulation or head design, is like a musician playing out of sync with the orchestra. It doesn't sound right, because it's not right.

To avoid this, a lot of knowledge sharing takes place across the industry to create a technology ecosystem that delivers maximum benefit to you, the user buying cartridges to archive your company's data. This pooling of expertise is at the heart of the open standard principle. It means no single company owns all the intellectual property required for LTO Ultrium media, and it prevents you being stuck with an expensive proprietary solution, whilst still ensuring free competition.

The essential technology areas of the LTO-7 solution

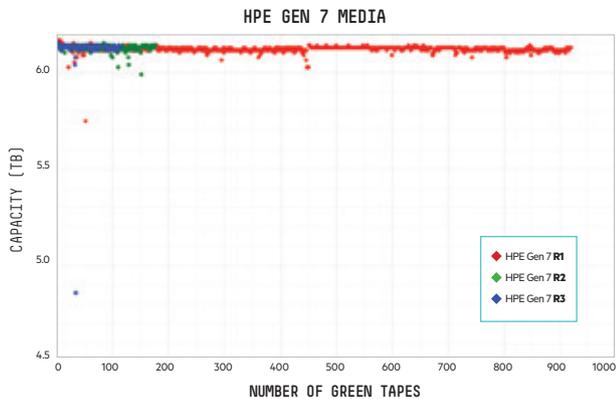


Why does an orchestra need a conductor?

Because it's the person holding the baton who inspires the players to greatness. Making LTO Ultrium media is exactly the same. Basefilm, underlay, lubricant, coating, calendaring, particle design, slitting and servowriting are indispensable technologies that need to perform together. While HPE may not play every instrument itself, nobody has a better understanding of how they combine in harmony.



Comparison of HPE and Competitor Capacity per tape during HPE Green Tape Archival Usage testing at 23° C and 50% humidity.*



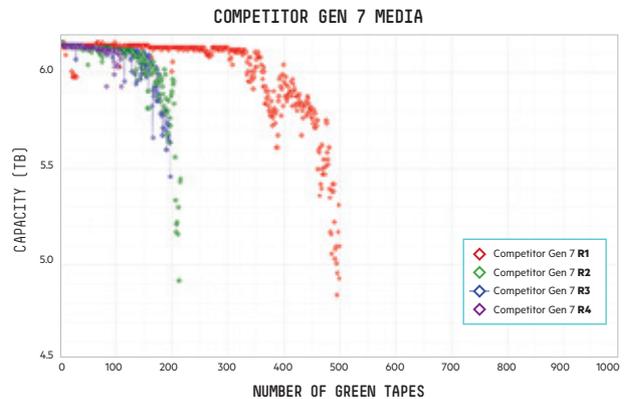
The chart shows the performance of HPE LTO-7 media over a test cycle involving 900 brand new ‘green tape’ cartridges. As you can see, the capacity achieved on each cartridge is extremely stable and consistent, with only very isolated examples of lost capacity.

The most demanding audition – HPE brand specification

Within the specific discipline of media manufacture, there are still many areas of expertise to master. No matter how outstanding a supplier might be in one aspect, its product will perform poorly if it doesn't deliver in all the others.

That's why manufacturing a data cartridge is like a symphony rather than a solo. It needs a conductor to give it direction. And it's why HPE has extra requirements, unique to its own brand of media, to complement the industry standard with a gold standard for quality and reliability. Passing the audition for HPE LTO Ultrium media brand qualification is more demanding than even the logo for two main reasons:

- HPE is the only company that forensically examines all the different parts of the media design on a continual basis. Samples from suppliers are tested against the HPE brand specification every month whereas the LTO logo is only renewed once a year.



By comparison, the same test performed on a leading competitor's media shows a dramatically different picture. The first test needed to be stopped at 500 cartridges because of sustained capacity loss – the drive could not go any further. A second test showed even worse performance, being terminated after just 250 cartridges.

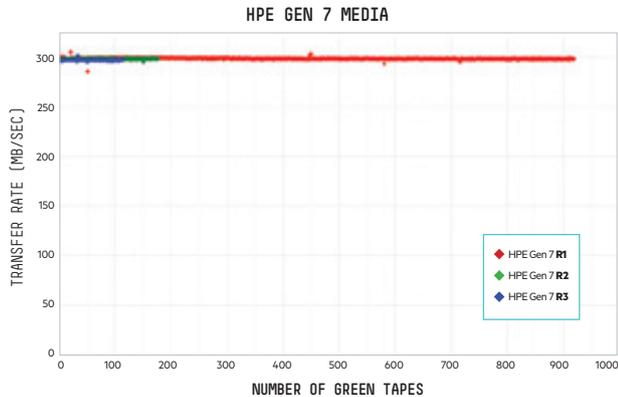
- HPE's Green Tape and Full Volume tests have far tougher thresholds and reveal even the most subtle deviations or errors. Users can see this directly in the poor results for a competitor product in the LTO-7 GTT tests above. That difference is real. The real measure of media reliability: data being kept as safe as possible.

HPE is the only company that forensically examines all the different parts of the media design on a continual basis.

Not only is HPE scrutiny more frequent, it's also a lot more rigorous than the industry standard in key areas like Green Tape testing.

* Please note: These performance snapshots are based on HPE tests carried out on HPE and non-HPE storage supplies up to May 2016.

Comparison of HPE and Competitor Transfer Rate performance during HPE Green Tape Archival Usage testing at 23° C and 50% humidity.*



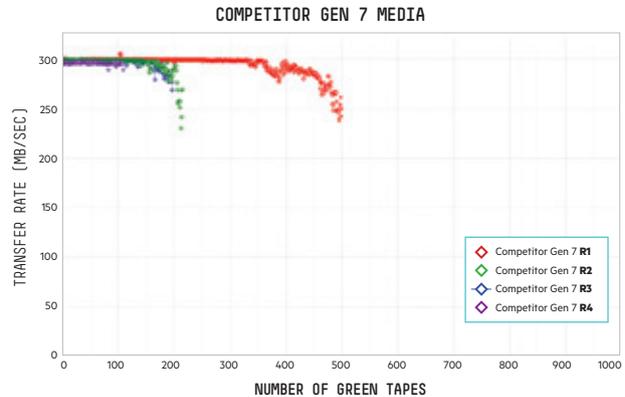
The chart shows the performance of HPE LTO-7 media over a test cycle involving 900 brand new 'green tape' cartridges. As you can see, the transfer rate and speed of backing up data is extremely consistent and reliable.

A gala performer

So who should you trust most? A company that may be good at just one part of the solution or the company that has mastered every part of the design and is the leader in terms of how well it performs.

If the primary purpose of a tape archive is to keep older content safe, it goes without saying that the technology has to be reliable. Otherwise there would be no point making an effort to keep it in the first place. But thanks to the HPE brand specification and testing program, you can be certain HPE LTO Ultrium media will deliver outstanding performance every time. Now. Next year. Ten years from now. Even thirty years into the future.

Only HPE can truly say that its LTO cartridges are greater than the sum of their parts, and that is why they are better than all the rest.



By comparison, the same test performed on a leading competitor's media once again highlights the difference between HPE and another brand. As the drive degrades, and capacity is lost, the transfer rate performance drops sharply because of the constant errors and retries.

#1

in stand-alone tape drives - with 4x the revenue of the nearest competitor.

#1

in tape autoloaders (1-20 slots) - with 2x the revenue of the nearest competitor and a Y/Y share gain of 4 percentage points in 2H 2015.

#1

in tape libraries (21-500 slots) - with a Y/Y share gain of 1.3 percentage points in 2H 2015.

(Source: IDC Worldwide Quarterly Tape Tracker 2H 2015)

Barium Ferrite: just a solo, not a symphony

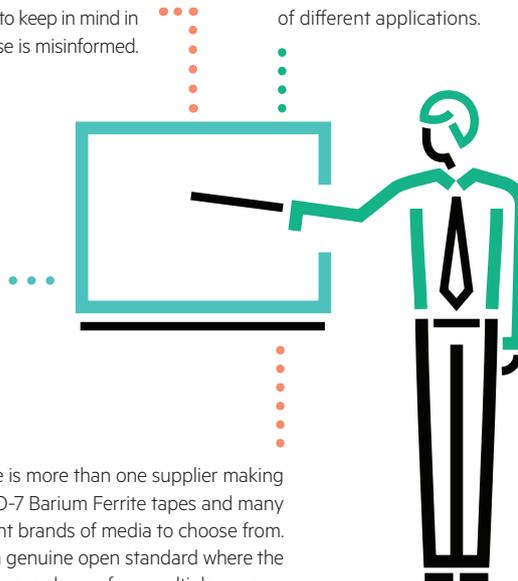
Finally, don't assume that certain LTO-6 and LTO-7 tapes are more reliable because they use a particular kind of particle – for example Barium Ferrite (BaFe). Although some HPE competitors and partners have made this assertion, in HPE's opinion, there's several reasons why these comments aren't accurate:

The particle formulation is of limited importance for determining how reliably your data can be stored on a piece of tape. As described in the preceding pages, the particle is just one small part of a very big solution: one instrument rather than the whole orchestra. This is the most important point to keep in mind in relation to media manufacturing; anyone who suggests otherwise is misinformed.

Although it was first used in LTO-6 in 2013, Barium Ferrite is not new technology. It has been around for decades and a multitude of companies use it in a range of different applications.

Barium Ferrite is merely a chemical compound so it can't be 'patented' in the conventional sense. There are many equally valid ways to make BaFe particles, not just one company's method.

There is more than one supplier making LTO-7 Barium Ferrite tapes and many different brands of media to choose from. It's a genuine open standard where the customer can choose from multiple sources.



Ultimately, what matters is how well the entire media solution performs together. That is the focal point of HPE testing and the results of our scrutiny clearly show that HPE media is the most reliable you can buy.

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