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HDDs have a long life ahead in certain workloads

A Podcast by Antony Adshead, Storage Editor, ComputerWeekly.com, with Rainer Kaese from Toshiba Electronics Europe

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Spinning disk hard drives are far from dead, and with data volumes set to explode, there are use cases that suit them well. That's the view of Rainer Kaese of Toshiba in this podcast.

Some have predicted the imminent demise of spinning disk hard drives (HDDs), but Rainer Kaese, senior manager for business development in storage products at Toshiba Electronics Europe, argues they have many more years life left in them.

Core to his argument is that with the volume of data expanding rapidly, HDDs offer cost-effective storage that can cope with huge capacity needs and the right performance for particular workloads if their capabilities are harnessed correctly.

Antony Adshead: How long should we expect spinning disk HDDs to be around for in the enterprise, and why?

Rainer Kaese: That's a really good question and there's a clear answer: for many more years. So, at least five, if not 10, or even more years.

And there's a quite simple reason: the data we have to store in enterprise and cloud is exploding. It's growing exponentially and it has to be stored in a competitive way. People don't want to pay all their money for it. And spinning disks are and will be the most economical way to store all these zettabytes of data.

If we compare it with SSDs [solid-state drives], the bit cost, the capacity cost of hard disk drives is currently around 1/7th. It used to be 1/10th. Now it is 1/7th, but if you look at the cost curve of the price per capacity of HDD and SSD they are dropping as parallel lines. And we know that parallel lines never meet.

So, hard disk drives are, and will always be, much cheaper in terms of cost per capacity than SSDs.

Adshead: What workloads will be most appropriate for HDDs in the coming five to 10 years? Here, we're assuming flash will increase its share at the higher levels of performance.

Kaese: If it is about performance, if it is about throughput, agility, IOPS and things, then flash will lead.

However, there are all this petabytes and zettabytes of bulk data, and it's not just what we know today. There will be more data coming out of this internet of things, Industry 4.0 – so much more data will be created and this data needs to be saved, stored and will also need to be analysed; that's why we store this data.

And if you look at the storage landscape for that application where you are storing and analysing a lot of data, then on one hand, we can say that flash will be much more expensive. On the other hand, there is also tape. Tape is a lot cheaper than flash and tape is a lot cheaper than HDDs, but tape is not an online medium. So, for online storage [...] and especially online analytics, tape cannot be used.

In this middle field of active online data, of massive amounts, that will be the playground for hard disk drives.

Adshead: How can spinning disk HDD compete against its solid-state rivals?

Kaese: If we talk about performance, we have to see that the HDD is way slower than any SSD. So, a single NVMe component is 5x to 20x compared to hard disk drives.

However, the HDD's domain is large online storage, [and so] we don't compare single components any more. Large online storage means a lot of hard disk drives. A lot of small HDDs can join their rather slow performance to one big, agile storage, and the industry has implemented many ways [to make] hard disk drives a little more agile. And this ... leads to large online storage.

All these videos, this online data, it is instantly there, but it is coming from hard disk drives not from NVMe, and this is because HDDs have joined forces with many [of them to be] able to deliver the performance required.

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