

Storing up issues in the magnetic world

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Caught on the IOPS

It is a given that flash-based storage is faster than any magnetic-based storage medium – but what does this really mean to an organisation?

To start with, let's calculate the cost per input/output operations per second (IOPS). For example, a single serial attached storage (SAS) 15,000 RPM magnetic disk drive (pretty much the fastest magnetic drives around) can provide around 175-210 IOPS. By using redundant an array of independent disks (RAID), an overall array of magnetic disks can be put together that can support a given number of IOPS. Using RAID 6, you would need around 50 SAS 15,000 RPM magnetic drives to achieve 10,000 IOPS – and that is at a theoretical level with the array tuned to the nth degree.

Now, let's look at flash memory. A single SATA 6Gbit/s solid state drive (SSD) can provide around 85,000 IOPS. However, SSDs are already showing that they have some of the problems of magnetic disks – and this is constraining the overall capabilities of a flash-based storage platform. By getting away from the use of SSDs and using a more engineered flash approach, the Violin FSP 7600 all-flash array can manage a sustained 1,000,000 IOPS – in the real world. This brings the cost per IOPS on flash down to the low cents level, while the cost per IOPS on magnetic disk is stuck at the dollars level.

Enough of the highly technical stuff, though. It has to be discussed, just so that we can get to this point: most businesses are generally far more interested in storage performance than in raw storage volume, and this difference in raw performance pricing should be a major influence

on an organisation's buying decision. It's a case of horses for courses: 'cheap' storage can end up costing a business heavily if it is not fit for purpose. At any rate, as discussed in previous articles, flash-based systems are now cost-comparative with magnetic systems at an effective storage volume level. Whatever way you want to look at it, the upfront capital cost for a storage array is a secondary concern: the value it adds to the business over its useful lifespan is what matters.

However, having said all this, not all storage workloads are IOPS-dependent. For magnetic disk based arrays, it has often been the case that specific systems have been purchased for specific workloads. Even where storage area networks (SANs) have been deployed, these have tended to be for specific areas, with different arrays being used for different workloads. With flash-based storage providing so much performance headroom, it is capable of dealing with mixed workloads on the one platform.

For the business, this is a major benefit. The high cost of acquiring, licencing, maintaining and running multiple different storage systems tuned to different workloads can be avoided. In addition, there is the cost of wasted storage – the general way of allowing sufficient storage volume 'just in case' expansion is required can lead to terabytes of unused storage being paid for across a whole estate of different storage arrays.

The single storage platform

With flash-based systems, a single storage platform can be used. Thus, unstructured (or less-structured) data can be mixed with transactional and the speed benefit of flash can easily deal with this. There is less need to over-provision (buying

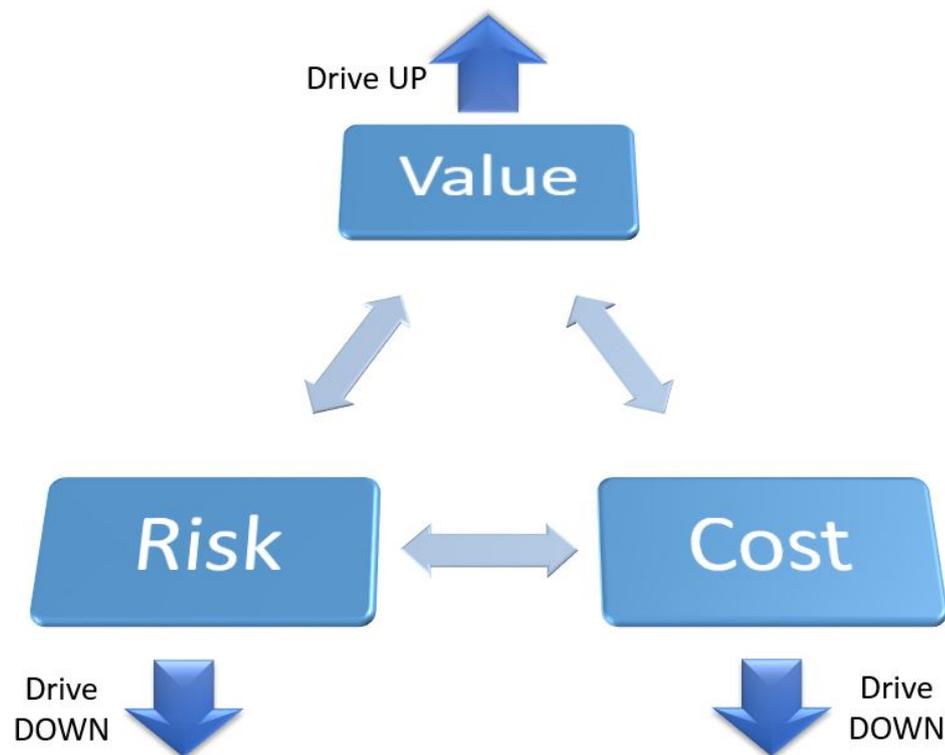
more storage than is needed at any one point) and licencing can be optimised. The overall platform can be denser, taking up less room in a datacentre; it will also be cooler and less power hungry. Storage growth is managed through adding more units to the array – scaling is relatively linear.

Business critical systems, such as enterprise resource planning (ERP) and customer relationship management (CRM) can be rationalised and consolidated. Databases can be shared more effectively, cutting down on the need for licences. Virtual desktop infrastructure (VDI) workloads can be co-hosted with databases. Monitoring,

measuring, reporting and root cause identification of storage issues becomes far easier. Optimisation of the overall three-pronged platform of storage, compute and networking becomes feasible, rather than an unattainable dream.

Such an approach has a major impact on the availability of information to the business. With fewer islands of data spread across multiple storage arrays, bringing the data together for more effective analysis is possible. Business decision making is improved; real-time decision support is enabled.

Total Value Proposition - VRC



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Figure 1

Not only this, but the business can try out new ideas more easily. With a more consistent pool of available storage, combined with an effectively virtualised compute and network environment, new systems can be configured and provisioned in a short space of time. Fail fast, fail often becomes a normal way of working: the overall cost of failing becomes so low against the overall benefits from those projects that work well.

TCO? As meaningless as Rol...

Quocirca tries to keep away from any total cost of ownership (TCO) discussions. For example, if we were to say that Storage Platform A had a TCO of \$20m, and Storage Platform B had a TCO of \$10m, which would you go for? It's tempting to go for the one with half the TCO, isn't it?

Let's then look at the benefit that each platform accrues. If Platform A provided value of \$100m, while Platform B only provided value of \$5m, that could change your perception of the initial decision.

Using such a total value proposition (TVP) approach is more rounded as it takes into account

the impact a change has on the business as a whole. When looking at changing a storage platform, TVP is so important – and it is down to the IT function to be able to voice such value in terms that the business it serves can understand.

Figure 1 shows a basic part of the TVP process. The aim of any change is to drive down cost and risk to the business, while maximising the overall value. By value, consider it as being the capability to sell more of what is already being sold at the same or greater margin, or to provide the capability to bring a new product or service to market at a sufficient margin.

By messaging how a move from magnetic disk to flash-based storage will impact these three variables, the chances of getting the business to fund such a change will be maximised.

After all, as the change will have such a fundamental impact on the competitiveness of the business, it would be foolhardy not to consider it fully. Especially as it is likely that the business' competitors will be considering the same options.

About Violin Memory

Violin Memory transforms the speed of business with continuous data protection through high performance, always available, low cost management of critical business information and applications.

Violin's All-Flash optimized solutions accelerate breakthrough CAPEX and OPEX savings for building the next generation data centre. Violin's Flash Fabric Architecture (FFA) speeds data delivery with chip-to-chassis performance optimization that achieves lower consistent latency and cost per transaction for Cloud, Enterprise and Virtualized mission-critical applications. Violin's All-Flash Arrays empowered by our enterprise data management software solutions enhance agility and mobility while revolutionizing data centre economics.

Founded in 2005, Violin Memory is headquartered in Santa Clara, California.

Further details are available at <http://www.violin-memory.com>



About Quocirca

Quocirca is a primary research and analysis company specialising in the business impact of information technology and communications (ITC). With world-wide, native language reach, Quocirca provides in-depth insights into the views of buyers and influencers in large, mid-sized and small organisations. Its analyst team is made up of real-world practitioners with first-hand experience of ITC delivery who continuously research and track the industry and its real usage in the markets.

Through researching perceptions, Quocirca uncovers the real hurdles to technology adoption – the personal and political aspects of an organisation's environment and the pressures of the need for demonstrable business value in any implementation. This capability to uncover and report back on the end-user perceptions in the market enables Quocirca to advise on the realities of technology adoption, not the promises.

Quocirca research is always pragmatic, business orientated and conducted in the context of the bigger picture. ITC has the ability to transform businesses and the processes that drive them, but often fails to do so. Quocirca's mission is to help organisations improve their success rate in process enablement through better levels of understanding and the adoption of the correct technologies at the correct time.

Quocirca has a pro-active primary research programme, regularly surveying users, purchasers and resellers of ITC products and services on emerging, evolving and maturing technologies. Over time, Quocirca has built a picture of long term investment trends, providing invaluable information for the whole of the ITC community.

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