5 WAYS TO LOWER TCO (TOTAL COST OF OWNERSHIP)

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Thanks to the growing popularity of social networks, search, online media, retail and financial services, data – both structured and unstructured – is growing at an exponential rate. This is causing many cloud datacenter managers to rethink their infrastructures in order to optimize how they store this avalanche of content effectively, efficiently and affordably.

Customizing architectures for tiered storage is the best way to manage this constant influx of data, whether you have a small cloud datacenter or you’re storing petabytes, even exabytes, in a hyper-scale datacenter.
Today’s “hyper-scale” datacenters are missing critical savings when IT architects think only about the capital expenses (CAPEX) to acquire the equipment for hosting applications such as search, social networking, big data analytics, and content sharing. Much of the cost savings of these deployments actually comes from operating expenses (OPEX) – specifically those associated with storage including such considerations as drive reliability, performance, efficiency, cooling, power usage, footprint density, etc. Data challenges and costs are best solved when architects take a system-level approach to storage in the datacenter. Features that impact how the drive performs over its useful life or the total cost of ownership (TCO) has replaced the simple cost of acquiring raw storage as the principal metric behind an efficient cloud datacenter.

Here are five things that should be optimized in order to significantly help lower infrastructure TCO:

1. Storage tiering. This is where companies have an opportunity to assign applications and workloads to specific category of drive in order to meet performance, latency, capacity and data retention requirements. Consider a tiering structure that stores “hot” high-priority, critical data that is accessed frequently on Tier 0 and 1 performance drives (utilizing PCIe, SSDs or 15K/10K HDDs), the bulk of mainstream content on Tier 2 capacity drives (utilizing 7200 RPM SAS/SATA HDs), and infrequently accessed “cold” data in Tier 3 (utilizing tape, optical or the newest helium filled drives).

2. Power and cooling. These are two of the most significant OPEX costs in a datacenter, but they can be reduced by installing hard drives that use fewer watts per gigabyte and support multiple power modes like idle or standby. Even a savings of a single watt per drive in basic power consumption across a large deployment over the 5 year life of a drive can add up to millions fewer kilowatt hours of electricity and translate into a $1 million less in OPEX. Beyond the individual drives, you can also benefit when you optimize how efficiently the entire datacenter uses the power being delivered to the facility. Consider that an unoptimized datacenter uses 2.5 times more electricity than is needed to run the equipment.

3. Downtime. Reliable, high-quality hard drives rated with a two million hour mean-time-between-failure (MTBF) rating will experience 40 percent fewer failures during their five year lifetime than those rated at the industry average of 1.2 million hours, reducing your maintenance and recovery costs.
4. Storage density. Using higher capacity drives such as 4TB SATA or SAS HDDs instead of 3TB or 2TB drives will increase storage density and lower TCO either by enabling you to store more content in your existing footprint or by reducing the number of servers, racks, cables and networking gear and the power they use to store your current level of data.

5. Areal density. Be aware of new drives that are becoming available that use innovative methods for increasing the amount of content on the surface of the drive’s platter or that allow for more platters to be added to the drive. Such platforms include new helium-filled drives that will hold 6 or 7 platters in a standard drive form factor; storing 40 percent more content using 23 percent less power and running 4 degrees Celsius cooler.

Storage architectures that are optimized for performance, capacity, reliability, power, cooling, and tiering can significantly lower a company's TCO even in an environment that's generating more data than ever before. By looking at your requirements and solutions holistically – at the system and datacenter levels – by taking account of OPEX, infrastructure and the broader CAPEX picture you can better customize your storage solutions to the use case. Learning how best to tier, pool, deploy and secure data will enable you to deliver optimal performance and efficiency with reduced system and energy costs.