Hewlett Packard Enterprise

Relying on averages for application performance is risky

HPE Nimble Storage can help you truly understand all the variables in IO deployment.

There are many factors that make standardization benchmarks nearly impossible to establish when apps are being deployed. However, with HPE InfoSight and the ability to see the full ensemble of an application's deployments at once, we have an opportunity to analyze the variation using hundreds of terabytes of telemetry, from thousands of customer applications. So we went to work to see what we could discover.

First, we considered a couple of performance fundamentals. In the world of IO performance, everything is split between two categories—transaction efficiency and transfer efficiency.

Transaction efficiency is the measurement of IO per second and transfer is the measurement of throughput or MB per second.

Increasing one requires a trade-off with the other. These efficiency trade-offs led us to question whether applications perform IO intermediately "splitting the difference" or do they divide interactions with storage into separately optimized categories with a divide-and-conquer approach?

So we began our analysis by first looking at the IO of the **HPE Nimble Storage** install base collectively—without separating out individual applications. Initially, the majority of the IO appeared in the transaction-optimized range. But simultaneously, a smaller but still significant proportion of the IO appears to peak in the transfer-optimized range. So how does one get such different results from the same set of data?

Bringing on real-world apps with realistic expectations

Think of it like this. Imagine a block with 10 single-story buildings and a single 100-story skyscraper. The average height for buildings would be 10 stories, which is extremely inaccurate. It helps to illustrate the importance of tabulating the sizes of IOs and not simply measuring averages.

So we continued our research seeking application-specific insights. Starting with virtual servers and virtual desktops and found that virtual desktops are like virtual servers but with a greater proportion of transaction-optimized reads. Then we look at Oracle and Microsoft® SQL Server databases and found that both databases show transaction-optimized reads to varying degrees—while the SQL Server does so more frequently. We continued our research on a variety of other applications and continued to find variation.

The complete disparity between these results highlights the importance of tabulating the sizes of IOs and not simply measuring their averages. Only by looking at a true histogram of IO by operation size (which takes 24 sensors) is the actual picture apparent of how applications operate. Simply measuring the number of IO performed and the data transmitted in aggregate (which only takes four sensors) is wholly insufficient.

Using this individualized approach, we offer real-time solutions regardless of what applications you're deploying—Oracle, Microsoft Exchange, Splunk, or others. Adapting to needs as they arise, we can estimate the median IO size for individual arrays and anticipate what the future may bring. Download the white paper and learn more about our methodology behind anticipating issues.

Read the full white paper online.

Learn more at
hpe.com/us/en/storage/nimble.html

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