



SCALEMATRIX
Cloud. Colocation. Managed IT.

Benchmarking Testing Results Report

“Performance is the New Benchmark for Success in the Cloud.”

San Diego, CA 7/29/15

ScaleMatrix Introduction

At ScaleMatrix, cloud computing performance is our primary focus. For us, “performance” is something we look at “from the keyboard perspective”. In other words, how fast a CPU core, GB of RAM or slice of Storage is does not tell the whole story in our experience. Some tools measure HTTP responses, some Storage make/delete responses but what we look for is how fast do our customers’ applications respond; how fast does their “stuff” work, end-to-end, which means that we test not just the hosts or the orchestration or the network or the storage – we test the entire stack. Also, the multi-tenant nature of Cloud Computing architectures require that we design and maintain performance levels that exceed our customers’ individual expectations as the stack has to support everyone’s needs. To this end, ScaleMatrix continually tests the performance of other cloud providers to ensure that we are consistently meeting, and exceeding, the requirements presented to us.

One of the challenges we face when testing against other providers is that ScaleMatrix’ entire cloud is reservation-based and most of our competitors are allocation-based. So in order to produce the most accurate possible results requires a thorough understanding of all these dissimilar environments and the effects that each component has on performance. It is also necessary to create each benchmark test so that it runs on as similar a stack and software configuration as possible.

Testing Summary

In this report, we present our latest series of benchmark results comparing ScaleMatrix’ TruCore Cloud Computing platform with Azure, Amazon, Google and Rackspace. We chose to perform OLTP – On-Line Transaction Processing – testing as our experience shows that this will produce the most “real-life” results as they relate to our customers’ usage of Cloud Computing. The tool used was IOMeter and it was configured for, and tests run with, 4KB, 8KB, 16KB and 32KB blocks and each block size went through three passes of the testing protocols. We used IOMeter as we found that it was the only tool that ran the same across all providers’ infrastructures.

We attempted to create an “apples to apples” comparison between our infrastructure and that of our competitors. This was difficult to do as the vCPU speeds are not always disclosed so we worked with various configurations in order to produce scenarios where CPU load stayed between 5% and 10% during the tests regardless of provider so as to make things as even as possible. In addition, we only used providers that offered an all-SSD storage platform so as to give everyone the best possible Storage response times.

Testing Configuration:

2xIntel-powered filer heads

Intel E5-2643v3

64GB of RAM each

LSI 9207-8e host bus adapters

Intel X520 10GigE network cards

3xDell MD1200 JBOD cases (12 drive bays per JBOD)

6xSTEC ZeusRAM ZiL drives (2 per JBOD)

30xSanDisk Optimus 400GB Enterprise SAS SSDs (10 per JBOD)

Nexenta version tested:

NexentaStor 4.0.4

Filesystem tested:

NFS v3

The specific configurations used were as follows and all configurations were given the same number of test runs:

Azure

- Standard D2 (Standard D4 tested, results were the same)
- 2 vCPU, 7GB of RAM
- 100GB of SSD storage
- Intel(R) Xeon(R) CPU ES-2660 @ 2.20GHz

Google

- N1-Standard-2
- 2 vCPU, 7.5GB of RAM
- 100GB of SSD
- Intel(R) Xeon(R) CPU E5-2670 @ 2.60GHz

Rackspace

- 60GB I/O Option 1 (2GB General Purpose v1 were tested, results nearly the same)
- 16 vCPU, 60GB of RAM
- 600GB of SSD storage
- Intel(R) Xeon(R) CPU E5-2670 @ 2.60GHz

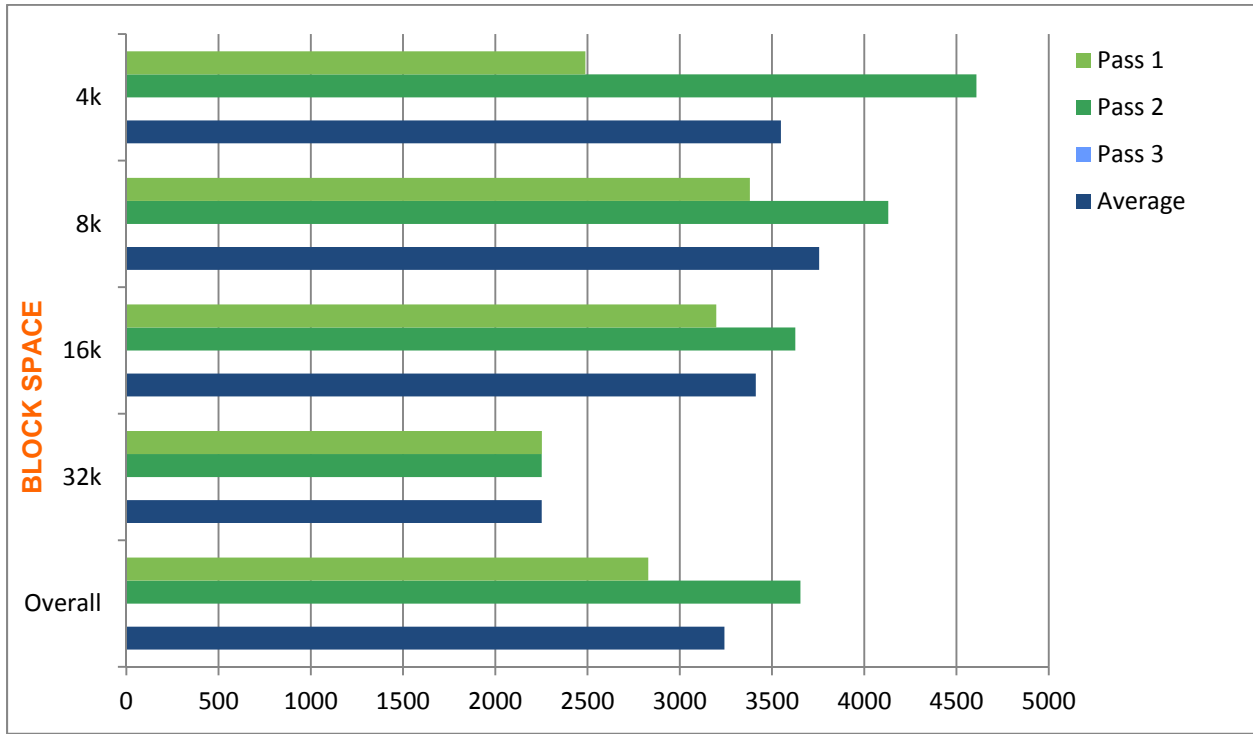
Amazon

- M3 Large
- 2 vCPU, 7.5GB of RAM
- 100GB of SSD storage
- Intel(R) Xeon(R) CPU ES-2670 @ 2.50GHz

ScaleMatrix

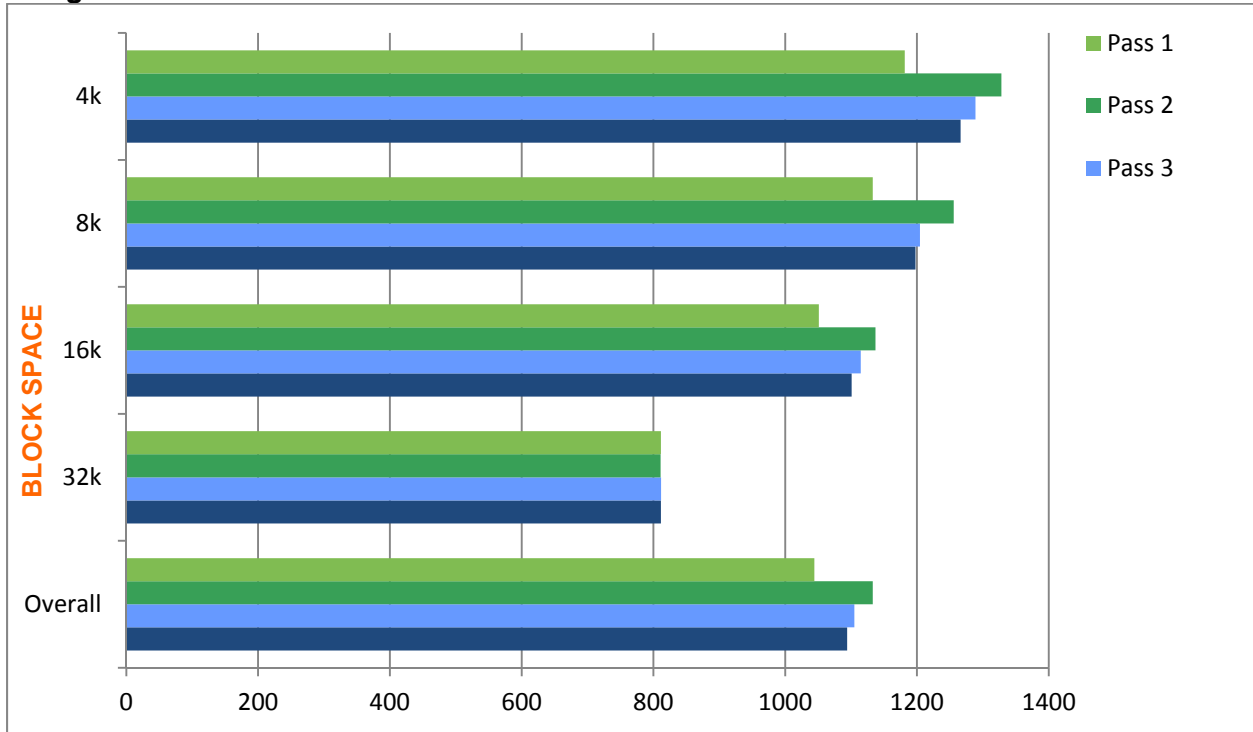
- TruCore™ SSD
- 2 vCPU, 8GB of RAM
- 100GB of SSD storage
- 2.0GHz cores

Azure Standard D2 SSD



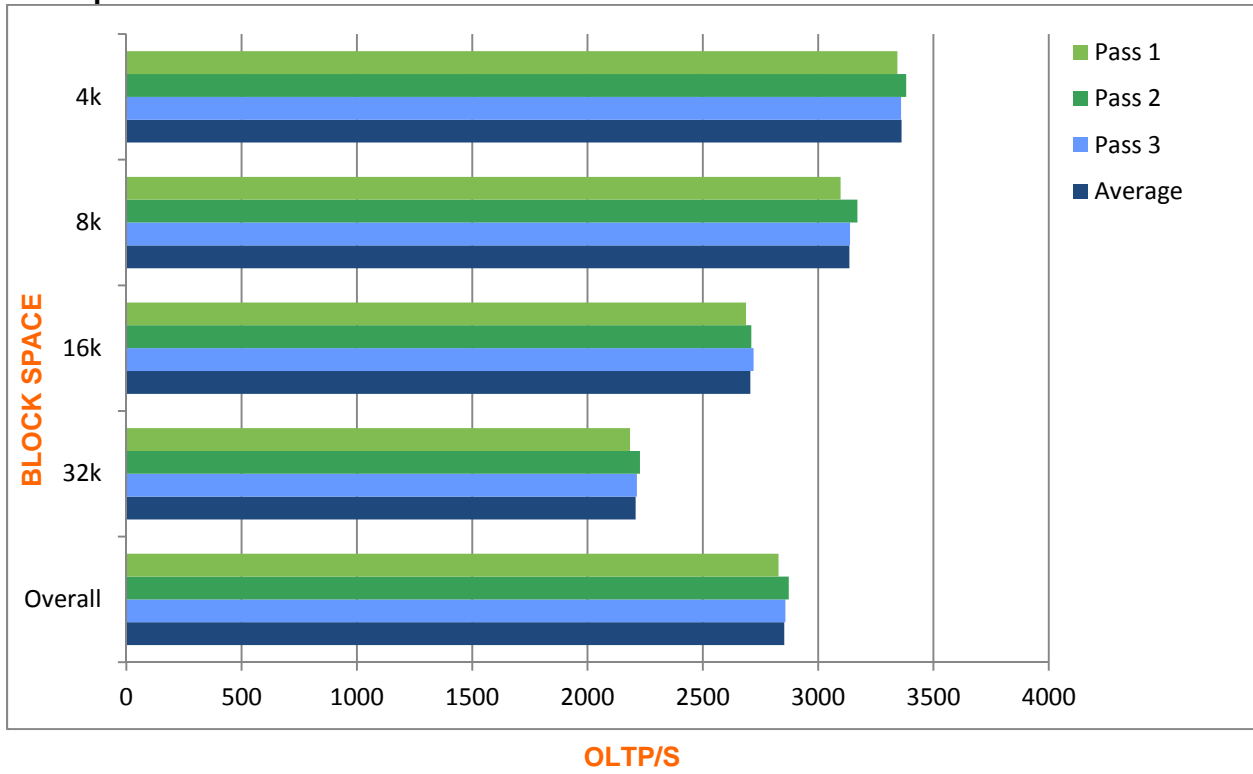
OLTP/S

Google n1-Standard-2 SSD

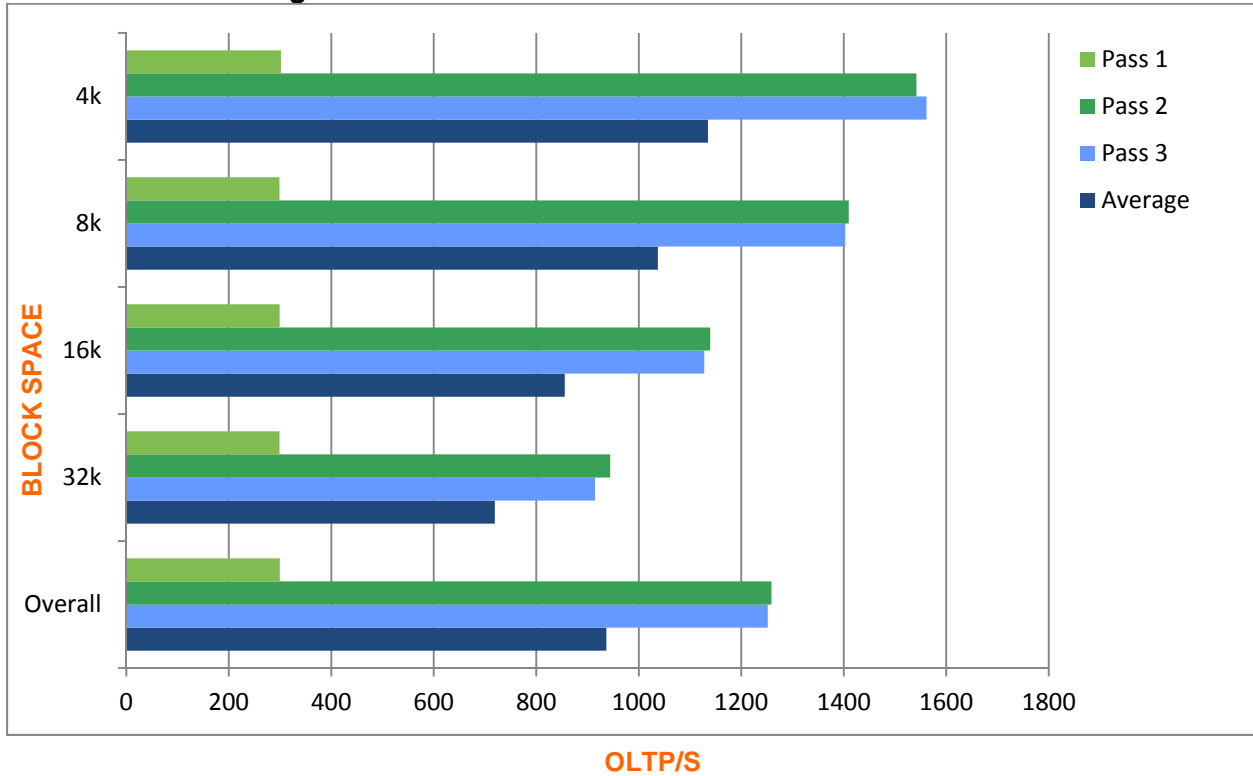


OLTP/S

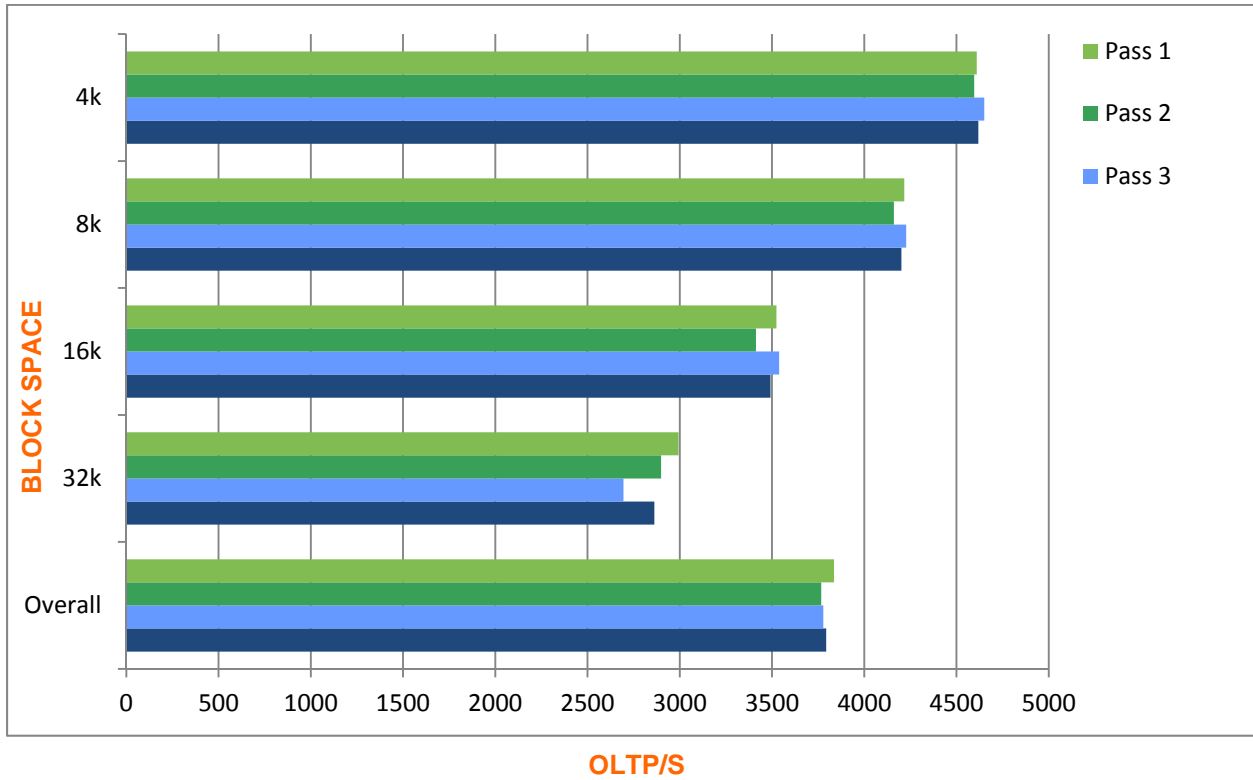
Rackspace 60GB I/O v1 SSD



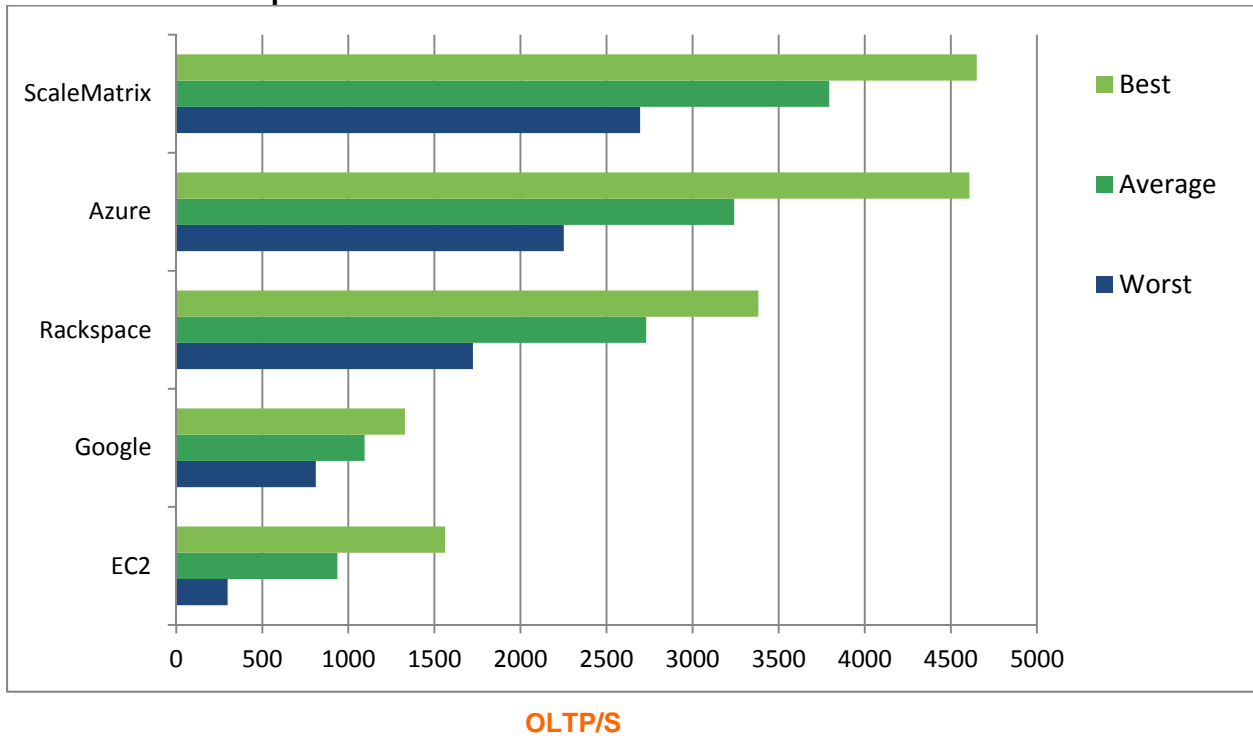
Amazon EC2 M3.Large SSD



ScaleMatrix SSD



Head-to-Head Comparison



Benchmarking Results Conclusions

The results show that ScaleMatrix continues to be the performance leader in the cloud on all tested configurations. In some cases the performance difference between ScaleMatrix and a competitor was more than 300%. ScaleMatrix' cloud performed better even with slower cores.

Overall Capacity: ScaleMatrix currently has 3.2PB of Managed Storage (File and Block) deployed, between San Diego and Katy (Houston).

Performance: ScaleMatrix offers 3 performance tiers; All-SSD (RTIO), General Performance and Archive (not to be confused with Object).

Total Cost of Ownership: Leveraging Nexenta has given us a TCO that is approximately 1/5th that of any of Nexenta's direct competitors.

Best Solution: As Service Providers, the lower TCO and integrated data integrity from ZFS provided the hands-down "best solution."