



Executive summary

Dell Technologies APEX Data Storage Services vs. Amazon EBS io2 Block Express storage: Oracle database I/O load generator performance and cost analysis

Principled Technologies tested two solutions that enable companies to get enterprise-level storage without purchasing storage arrays


The cost of ownership for an enterprise-class storage solution can be quite expensive, leading some organizations to consider the alternative of cloud service providers such as Amazon Web Services (AWS). However, we found that APEX Data Storage Services, an on-premises Storage as-a-Service solution from Dell Technologies, performed comparably to similar cloud storage from AWS in a synthetic I/O workload while having a significantly lower monthly cost.

At Principled Technologies, we compared the I/O performance and monthly cost of two solutions:

- APEX Data Storage Services (50TB Balanced-tier block storage)
- Amazon EBS io2 Block Express (16 x 3TB volumes with 21,916 provisioned IOPS each)

We found that similarly configured storage from each company had comparable I/O performance and offered sub-millisecond database sequential read latency. However, APEX Data Storage Services delivered significant cost savings—up to 81 percent of the monthly subscription costs of the Amazon EBS io2 Block Express Storage solution.

*APEX Data Storage Services vs. 16 x 3TB volumes of Amazon EBS io2 Block Express storage with a provisioned IOPS rate of 21,916 each.




More cost-effective

Up to 81% cost savings vs. Amazon EBS io2 Block Express cloud subscription



Comparable IOPS and storage throughput performance*



Sub-millisecond database sequential read latency

0.96ms latency provides fast response times for database queries

APEX Data Storage Services

APEX Data Storage Services is an on-premises Storage as-a-Service offering from Dell Technologies. APEX Data Storage Services enables customers to subscribe to hardware, infrastructure maintenance, and elastic capacity that they can manage via the APEX Console.

Save on monthly storage costs with APEX Data Storage Services

Enterprise storage solutions can be expensive, but we've found that an APEX Data Storage Services solution can match the performance of a Amazon EBS io2 Block Express solution while saving significant monthly costs. Figure 1 shows that a 3-year subscription of Balanced-tier block storage from APEX Data Storage Services can save tens of thousands of dollars per month compared to similarly performing storage from Amazon.

Monthly cost

Lower is better



■ Dell Technologies APEX Data Storage Services (with 3-year subscription)
 ■ Amazon EBS io2 Block Express

Figure 4: Monthly cost of storage for the APEX Data Storage Services solution (50 TB of Balanced-tier block storage), and the Amazon EBS io2 Block Express solution (16 x 3TB volumes with 21,916 provisioned IOPS each). Source: Principled Technologies.

Comparable I/O performance

We configured the Amazon EBS io2 Block Express volumes to match the performance of the APEX Data Storage Services solution we tested in order to make a fair cost comparison. Figure 2 shows the IOPS and data throughput performance of each solution. We measured 350,661 IOPS on the APEX Data Storage Services solution, which translated to 21,916 IOPS per volume on the Amazon EBS io2 Block Express solution.

IOPS

Higher is better



Throughput

Higher is better



■ Dell Technologies APEX Data Storage Services
 ■ Amazon EBS io2 Block Express

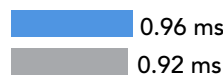
Figure 5: IOPS and throughput (in megabytes per second) performance of the APEX Data Storage Services solution (50 TB of Balanced-tier block storage) and the Amazon EBS io2 Block Express solution (16 x 3TB volumes with 21,916 provisioned IOPS each). Source: Principled Technologies.

Get fast storage latency

While both solutions we tested had sub-millisecond database sequential read latency, the APEX Data Storage Services solution had 60.2 percent better average wait latency.

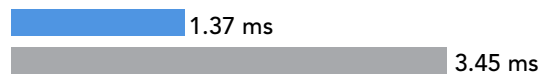
Database sequential read latency

Lower is better



Average wait (await) latency

Lower is better



■ Dell Technologies APEX Data Storage Services
 ■ Amazon EBS io2 Block Express

Figure 6: Database sequential read latency and average wait of the APEX Data Storages Solution (50 TB of Balanced-tier block storage) and the Amazon EBS io2 Block Express solution (16 x 3TB volumes with 21,916 provisioned IOPS each). Source: Principled Technologies.

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