wasabi
hot cloud storage

Wasabi Performance Benchmark Report

Comparing Performance Between Wasabi & AWS S3

Executive Overview

Wasabi is transforming cloud storage by offering a new approach that is less expensive and faster than the popular AWS Simple Storage Service (AWS S3). As cloud object storage use-cases continue to grow, so does the need for increased performance. Gone are the days where object storage was seen as a place to "set it, and forget it". Increasingly, customers require millisecond access to their stored data. They need to upload their data fast, so they can move onto other projects or save datacenter resources such as CPU cycles. Wasabi's performance advantages are derived from our purpose-built file system that leverages SMR (Shingled Magnetic Recording) disk drives and other innovative design attributes. Wasabi's performance advantages relative to competing public cloud object storage services have been proven in both laboratory and real-world customer environments.

To demonstrate the performance advantages of Wasabi's hot cloud storage service relative to AWS S3, the Wasabi Performance and Certification Team (PACT) conducted a series of performance benchmark tests in August 2019 against both the Wasabi and AWS S3 services. The tests were based on industry-accepted testing methodologies for evaluating cloud storage performance. This report reviews the testing methodology and results from this activity.

Testing Methodology

Wasabi's performance testing is based on the use of the Intel COSBench (Cloud Object Storage Benchmark) testing tool. This test tool is used to run a series of tests against both AWS S3 and Wasabi to compare the write and read performance of the two storage services in various configurations. As part of the test cycles, we tested object sizes ranging from 10 KB to 10 MB and compute thread counts from 1 to 30. The two AWS S3 & Wasabi configurations that were tested are shown in Figure 1 below.

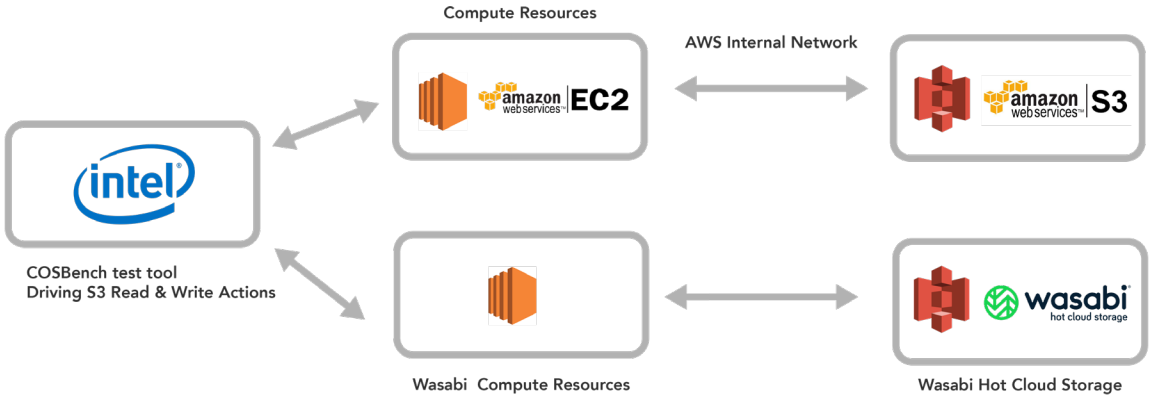

Figure 1 – Performance Testing Configuration

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The AWS EC2 compute + AWS S3 storage configuration shown in the top of Figure 1 serves as the baseline for the comparison testing. In this configuration, AWS EC2 was connected to AWS S3 directly over the AWS us-east internal data center network. The EC2 machine configuration was m2xlarge with 10 Gb/s interfaces and the AWS S3 config was S3 Standard.

The Wasabi compute + Wasabi storage test configuration shown in the bottom of Figure 1 involves the use of Wasabi compute resources in the same us-east data center as Wasabi hot cloud storage. In this configuration, the Wasabi compute machine was comparable in size to the AWS EC2 machine and was connected to the Wasabi storage service over the Wasabi internal data center network.

Testing Results & Analysis

Wasabi conducted 40 different tests that measured both read and write performance with a range of object sizes and number of compute threads. Using the Intel COSBench tool, Wasabi ran each object size and thread combination against both the AWS and Wasabi configurations. The throughput results for each combination are provided in Table 1 below. This table also includes a comparison of Wasabi vs. AWS S3 from a throughput perspective.

AWS S3 Write (PUT) Throughput (MB/s)

Object Size				
Threads#	**10KB**	**100KB**	**1MB**	**10MB**
1	0.19	1.74	11.71	27.88
5	0.94	8.41	56.22	160.42
10	1.96	16.79	111.07	281.42
20	3.79	29.94	213.8	574.5
30	5.44	47.99	331.03	827.99

Wasabi Write (PUT) Throughput (MB/s)

Object Size				
Threads#	**10KB**	**100KB**	**1MB**	**10MB**
1	0.64	11.02	27.00	79.79
5	6.83	29.01	139.80	378.66
10	11.83	104.86	349.11	740.88
20	12.23	176.44	542.33	1280
30	16.98	153.29	963.75	1830

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AWS S3 Read (GET) Throughput (MB/s)

Object Size				
Threads#	10KB	100KB	1MB	10MB
1	0.472	4.41	31.72	70.4
5	2.48	18.01	90.49	343.07
10	4.98	42.53	235.2	628.58
20	11.47	98.01	597.85	1190
30	22.89	148.9	1020	1220

Wasabi Read (GET) Throughput (MB/s)

Object Size				
Threads#	10KB	100KB	1MB	10MB
1	0.10	16.80	38.28	117.71
5	10.07	79.45	187.88	681.66
10	17.64	147.59	354.32	577.43
20	17.74	156.98	943.83	2,400
30	15.68	272.46	1,310	2,900

Wasabi vs. AWS S3 Write (PUT) Throughput Ratio

Object Size				
Threads#	10KB	100KB	1MB	10MB
1	**3.4**	**6.3**	**2.3**	**2.9**
5	**7.3**	**3.4**	**2.5**	**2.4**
10	**6.0**	**6.2**	**3.1**	**2.6**
20	**3.2**	**5.9**	**2.5**	**2.2**
30	**3.1**	**3.2**	**2.9**	**2.2**

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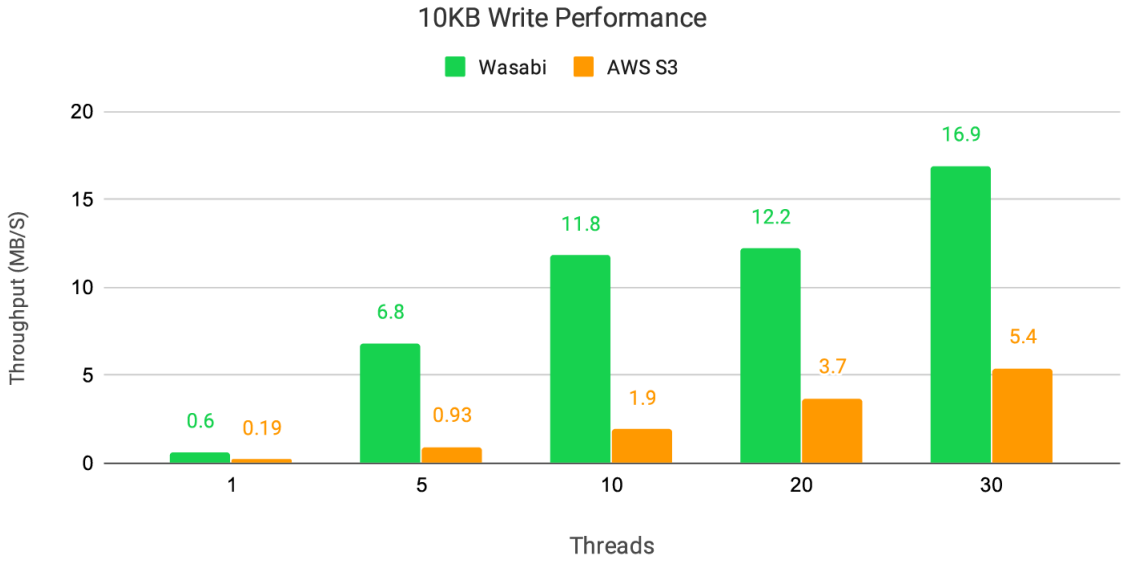
Wasabi vs. AWS S3 Read (GET) Throughput Ratio

Object Size				
Threads#	10KB	100KB	1MB	10MB
1	0.2	3.8	1.2	1.7
5	4.1	4.4	2.1	2.0
10	3.5	3.5	1.5	0.9
20	1.5	1.6	1.6	2.0
30	0.7	1.8	1.3	2.4

As you can see from the bottom of the Table 1, for 36 out of 40 test scenarios, Wasabi is faster than AWS S3 across the range of object sizes and compute threads. A graphical depiction of the test results is provided in the Figure 2 below.



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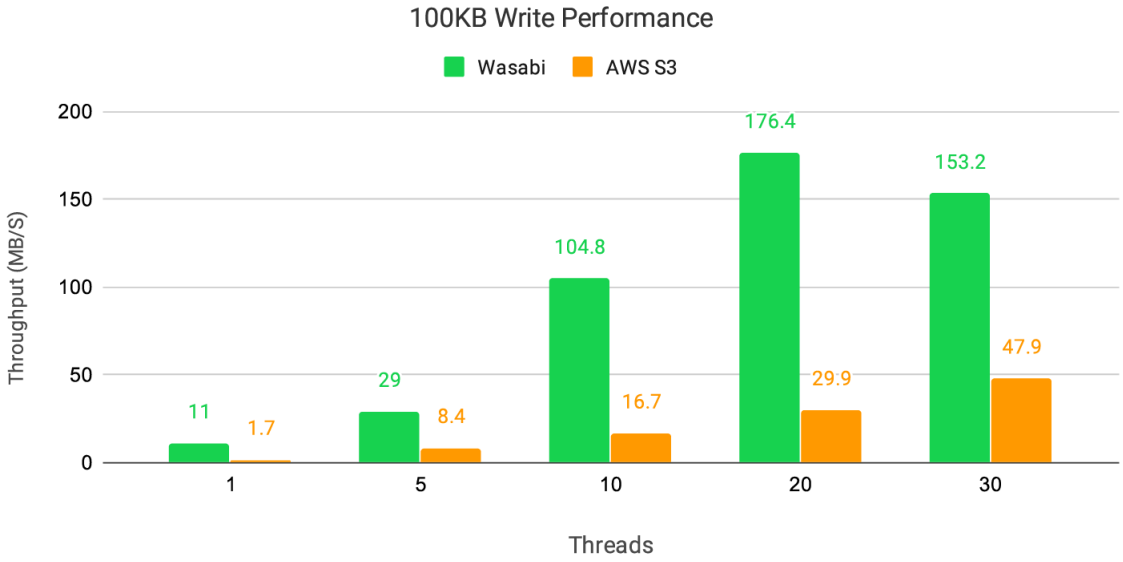

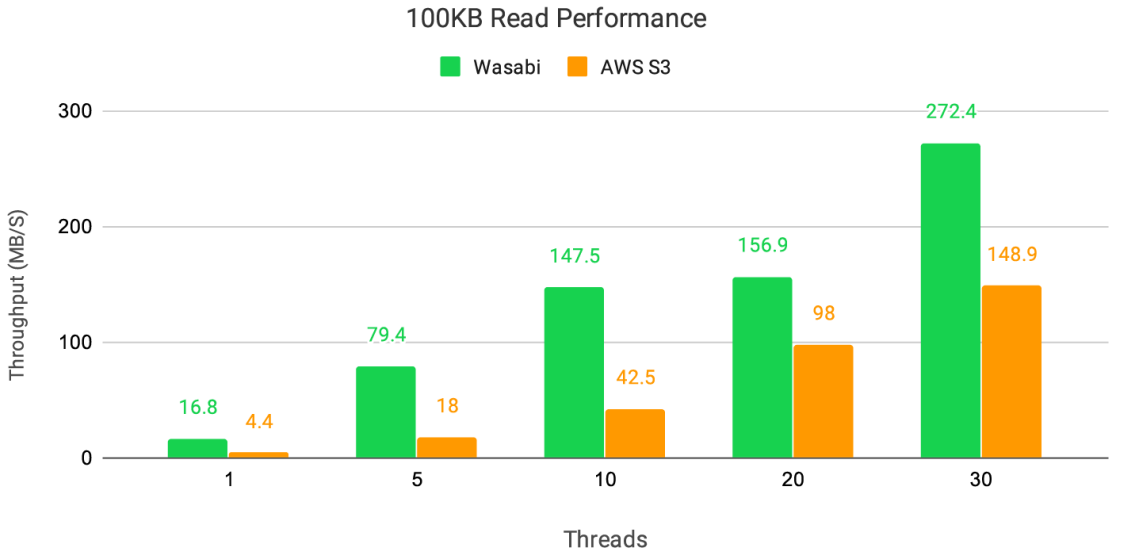

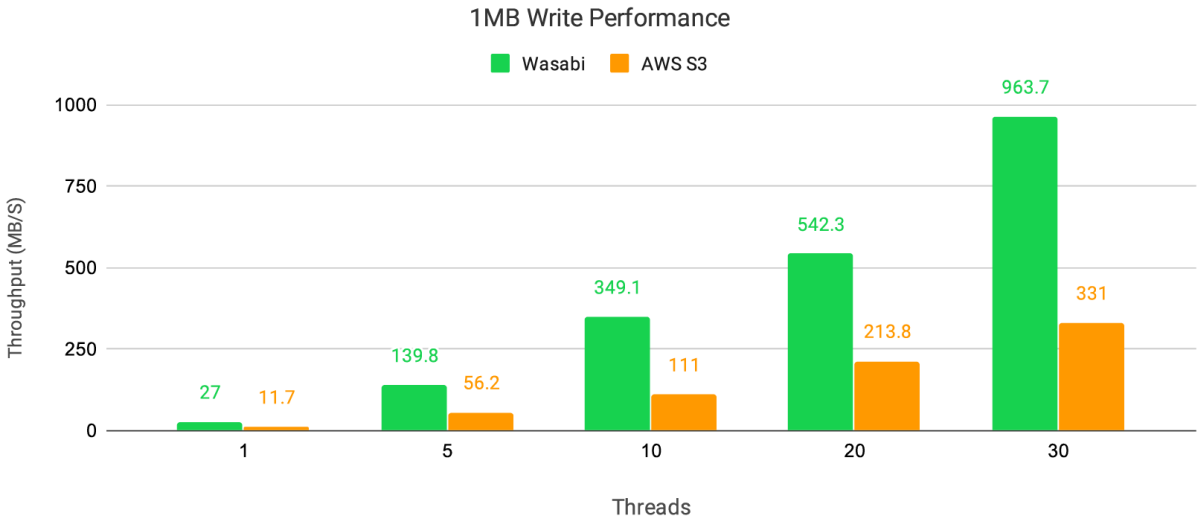

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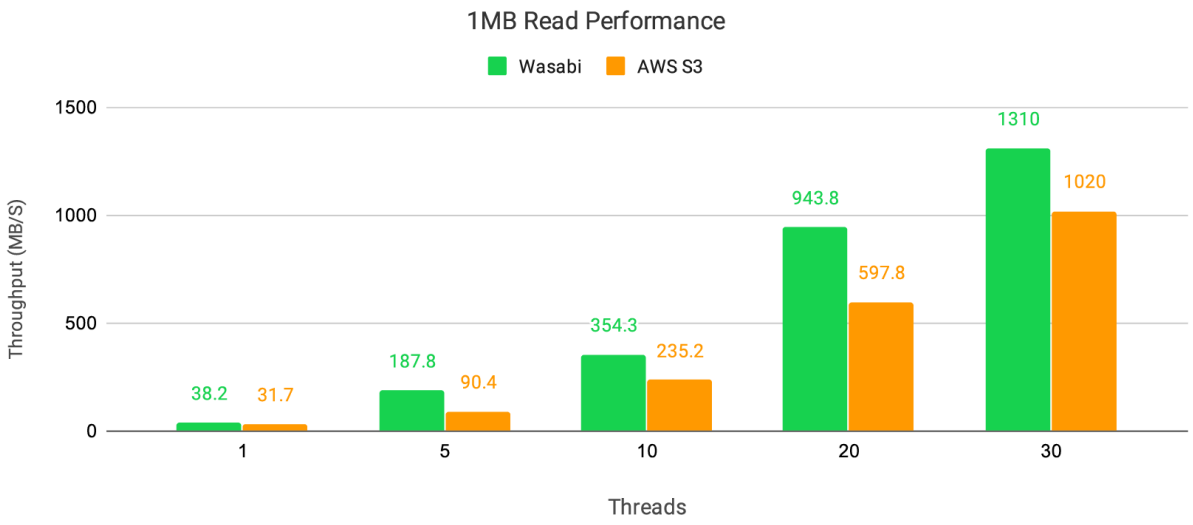

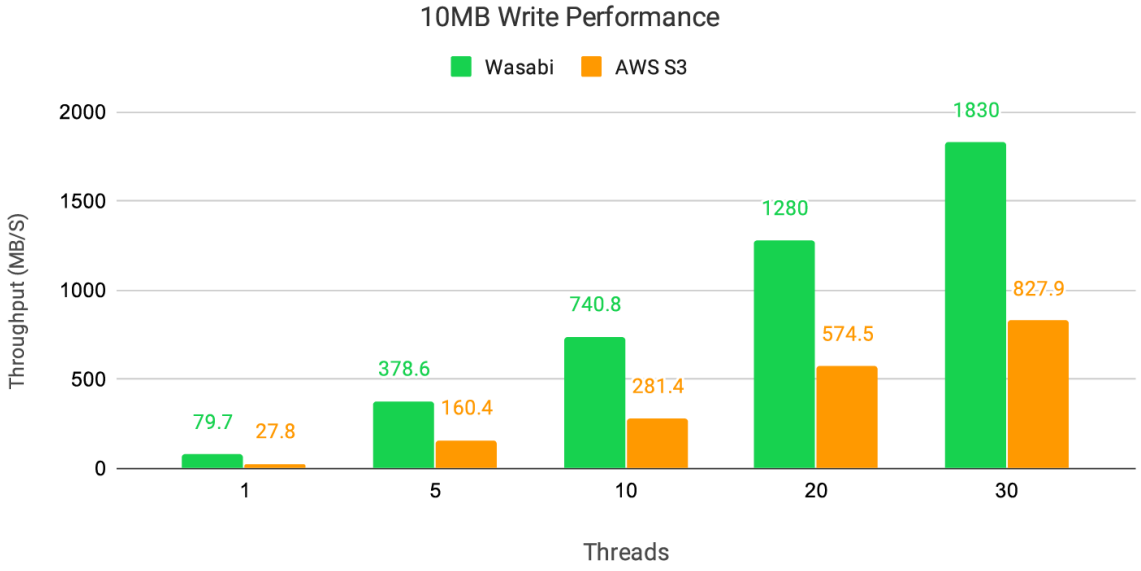

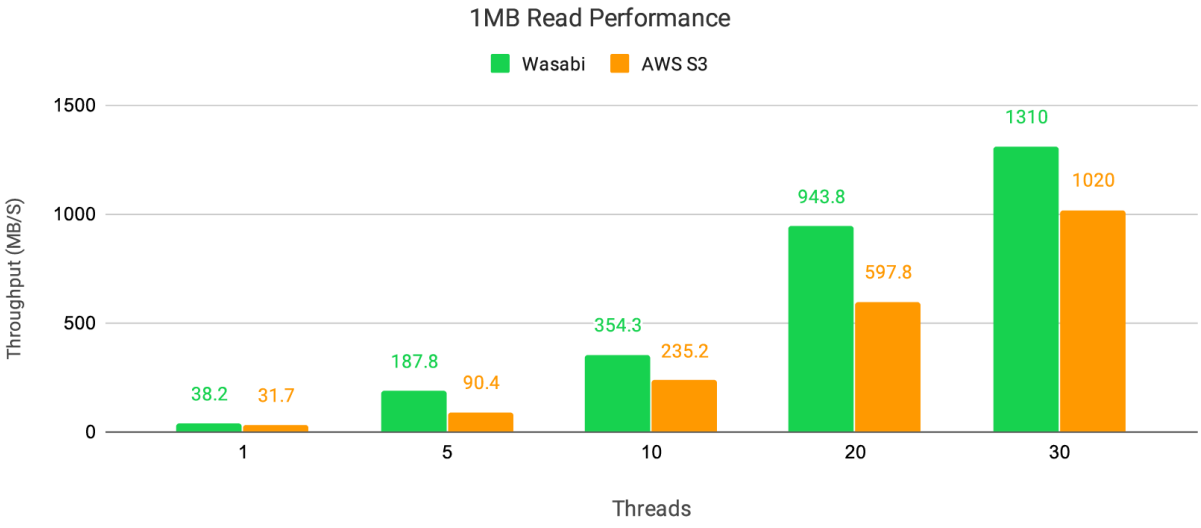

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Results Summary

This testing confirms that the purpose-built file system design used by Wasabi offers meaningful performance advantages over AWS S3 in the majority of test scenarios examined. In each of the 20 Write (PUT) cases tested, Wasabi displayed a considerable performance advantage.

If you have any questions regarding the information in the test report or wish to utilize Wasabi's COSBench test scripts for your own testing, please contact us.

ABOUT WASABI

Wasabi is the hot cloud storage company delivering low-cost, fast, and reliable cloud storage. Wasabi is 80% cheaper than Amazon and faster than the competition with 100% data immutability protection and no data egress fees. Created by Carbonite co-founders and cloud storage pioneers David Friend and Jeff Flowers, Wasabi is on a mission to commoditize the storage industry. Wasabi is a privately held company based in Boston, MA.

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