Get Higher Cassandra Database Throughput with AWS C6id Instances Compared to C6gd Instances

Cassandra

Scale Performance Almost Linearly

with C6id Instances Featuring 3rd Gen Intel Xeon Scalable Processors

Up to 1.36x the Performance on C6id Instances Featuring 3rd Gen Intel Xeon Scalable Processors

vs. C6gd Instances with Graviton Processors

C6id Instances Featuring Intel® Xeon® Scalable Processors Delivered up to 1.36x the Performance of Instances with Graviton Processors, and also Scaled Nearly Linearly with Cassandra

Businesses that require scalable high-access performance for massive amounts of data—for ecommerce, media streaming, or other NoSQL applications—rely on distributed databases such as Apache Cassandra. According to Apache, Cassandra is "trusted by thousands of companies for scalability and high availability without compromising performance. Linear scalability and proven fault-tolerance on commodity hardware or cloud infrastructure make it the perfect platform for mission-critical data."[1]

If your organization uses AWS Elastic Compute Cloud (EC2) to run Cassandra workloads, you want to select the instance best suited for your needs. An instance that delivers higher performance can better support your apps and could help your cloud investment go further. Linear-scaling performance makes an instance a reliable, flexible resource, even if your needs change. In tests with AWS EC2 C6id instances featuring 3rd Gen Intel® Xeon® Scalable processors, we saw nearly linear scaling with Cassandra. Furthermore, when we tested C6gd instances with Graviton processors, we found that at various vCPU counts, the C6id instances delivered more Cassandra throughput.

Near-Linear Scaling on AWS EC2 C6id Instances

As Figure 1 shows, C6id instances enabled by 3rd Gen Intel Xeon Scalable processors scaled almost linearly with Cassandra, delivering proportionate performance with added vCPUs. This scalability indicates that as your business or applications grow, C6id instances can reliably scale to meet your needs.

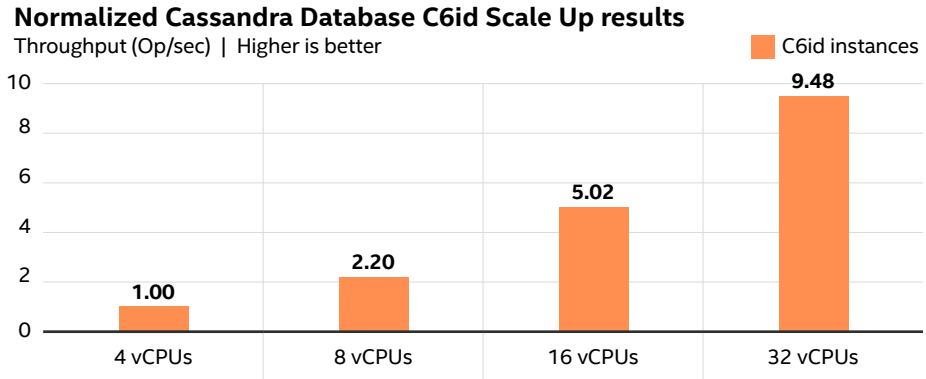

Figure 1. Relative Cassandra throughput that C6id instances delivered at various sizes compared to the smallest instance. Higher is better.

Intel Workload Proof Series: Cassandra on AWS EC2 C6id vs. C6gd Instances

See backup for workloads and configurations. Results may vary.

Increased Throughput from AWS EC2 C6id Instances

Testing also compared the C6id instances enabled by 3rd Gen Intel® Xeon® Scalable processors and C6gd instances with Graviton processors. As Figure 2 shows, at various instance sizes, C6id instances delivered higher Cassandra throughput, with up to 1.36 times the performance.

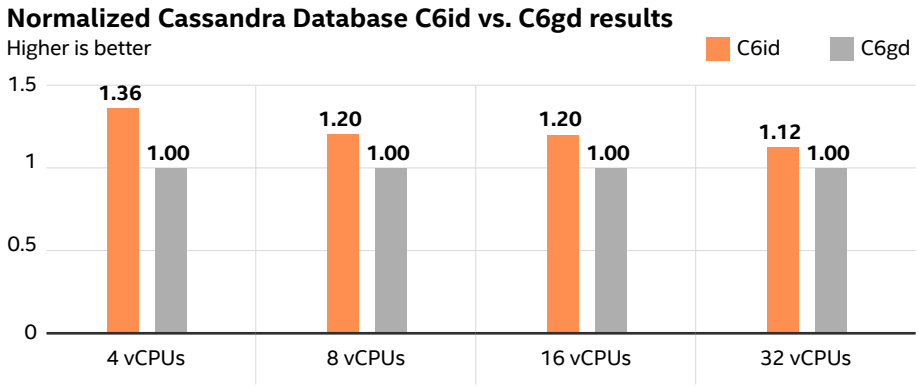

Figure 2. Relative Cassandra throughput that C6id instances delivered compared to C6gd instances. Higher is better.

Conclusion

Cassandra is one of the most popular distributed databases. If your business runs Cassandra workloads in the cloud, a high-performing, scalable solution can help you get more from your investment—now and into the future. Tests demonstrate that AWS EC2 C6id instances featuring 3rd Gen Intel Xeon Scalable processors scale nearly linearly with Cassandra, making them a reliable choice as your business grows. Results also show that at various sizes, C6id instances outperformed C6gd instances with Graviton processors by up to 1.36 times.

Learn More

To begin running your Cassandra workloads on AWS EC2 C6id instances, visit https://aws.amazon.com/ec2/instance-types/c6i/.

[1] "Apache Cassandra," https://cassandra.apache.org/_/index.html.

Tests by Intel on AWS us-east-1. Software: Ubuntu 22.04 LTS, 5.15.0-1004-aws, Apache Cassandra 4.0.3, cassandra-stress (80/20 r/w), gcc 11.2.0-19ubuntu, gcc 2.35, GNU Id 2.38, Python 3.10.6, openjdk "11.0.16" 2022-07-19, OpenSSL 3.0.2 15 Mar 2022, Docker 4.0.3. c6id instances: Intel Xeon Platinum 8375C @ 2.90GHz, hyperthreading enabled, EC2 NVMe storage and 1x 200G EBS disk, 1x ENA, BIOS 1 0xd000331, 8-256GB DDR4 3200 MT/s RAM. C6gd instances: Neoverse-N1 @ 2.5GHz, hyperthreading disabled, EC2 NVMe storage and 1x 200G EBS disk, 1x ENA, 8-256GB DDR4 2933 MT/s RAM, BIOS 1 0xa001144.

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