

# Achieve Better Decision Support Performance with AWS C6i Instances Featuring 3<sup>rd</sup> Gen Intel<sup>®</sup> Xeon<sup>®</sup> Scalable Processors



Spark



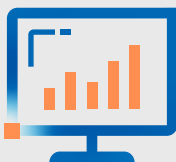
**Speed Decision Support Performance by up to 43% on 48vCPU Instances with Granulate**

*vs. without Granulate*



**28% Better Decision Support Performance on AWS c6i.12xlarge Instances with Granulate**

*vs. c5.12xlarge also with Granulate*



**22% Less Cost to Run a Decision Support Workload on AWS c6i.12xlarge Instances with Granulate**

*vs. c5.12xlarge Instances also with Granulate*

## These Instances, with Granulate Real-Time Continuous Optimization, Perform More Work at a Lower Cost than Older C5 Instances

Companies use decision support system (DSS) workloads to gather and analyze information to make a variety of critical business decisions. When running these workloads in the cloud, it is important to select instances that deliver strong and cost-effective performance. We used a decision support workload to measure the DSS performance of Amazon Web Services (AWS) EC2 cloud instance types. We tested C6i instances with 3<sup>rd</sup> Gen Intel Xeon Scalable processors and c5 instances with 2<sup>nd</sup> Gen Intel Xeon Scalable processors. We tested two configurations of each instance: one with Granulate Real-Time Continuous Optimization (Granulate) and one without Granulate. Granulate Cloud Solution is a workload optimizer that can improve the performance of Intel processors and allow them to achieve greater productivity at lower costs.

We found that Granulate-enabled instances outperformed their counterparts without Granulate. Additionally, the newer instances outperformed the older instances. Based on these findings, businesses can experience performance and price advantages by opting to enable Granulate.

### Granulate Boosted Performance

Figure 1 shows how Granulate affected the decision support performance of the two AWS instance types. We set the decision support workload score of each instance without Granulate to 1, and then we calculated the improvement with Granulate. Enabling Granulate on c6i.12xlarge and c5.12xlarge instances improved performance by 43% and 34%, respectively.

### Relative Performance with and without Granulate

Normalized Speed | Higher is better

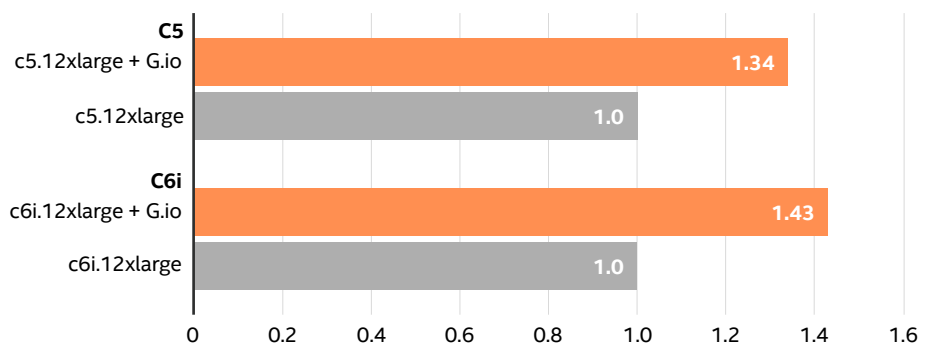


Figure 1. Decision support performance achieved by a c6i.12xlarge instance and a c5.12xlarge instance, both with and without Granulate. Higher is better.

## Newer Instances with Granulate Outperformed Older Instances with Granulate

As Figure 2 shows, the c6i.12xlarge instance enabled by 3<sup>rd</sup> Gen Intel® Xeon® Scalable processors with Granulate delivered up to 28% greater performance over the c5.12xlarge instance with Granulate.

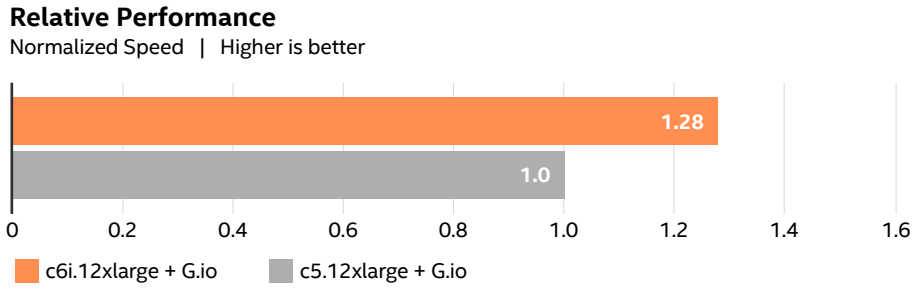


Figure 2. Decision support performance achieved by a c6i.12xlarge instance with 3<sup>rd</sup> Gen Intel Xeon Scalable processors and by a c5.12xlarge instance with 2<sup>nd</sup> Gen Intel Xeon Scalable processors, both with Granulate. Higher is better.

## Newer Instances with Granulate are More Cost-Effective than Older Instances with Granulate

As Figure 3 shows, due to the shorter run times, running the decision support workload on the c6i.12xlarge instance enabled by 3<sup>rd</sup> Gen Intel Xeon Scalable processors with Granulate cost 22% less than the c5.12xlarge instance with Granulate.

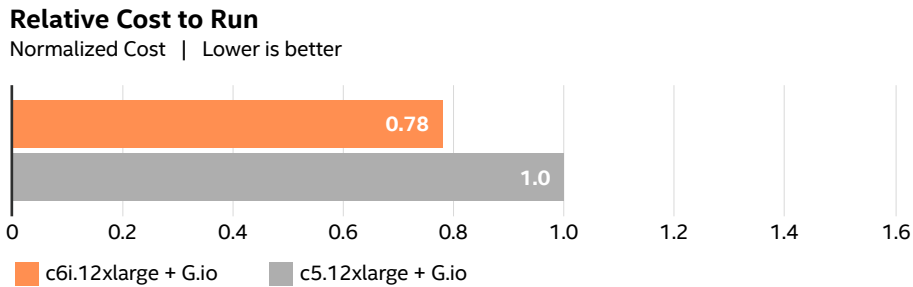


Figure 3. Relative cost to run decision support workloads on a c6i.12xlarge instance with 3<sup>rd</sup> Gen Intel Xeon Scalable processors and on a c5.12xlarge instance with 2<sup>nd</sup> Gen Intel Xeon Scalable processors, both with Granulate. Lower is better.

## Conclusion

We tested decision support performance of AWS C6i instances featuring 3<sup>rd</sup> Gen Intel Xeon Scalable processors and C5 instances featuring 2<sup>nd</sup> Gen Intel Xeon Scalable processors, both with and without Granulate Real-Time Continuous Optimization. Adding Granulate increased performance for both series, and the newer series with Granulate both outperformed and cost less than the older series with Granulate.

## Learn More

To begin running your decision support workloads on Amazon C6i instances with 3<sup>rd</sup> Gen Intel Xeon Scalable processors with Granulate, visit <https://aws.amazon.com/ec2/instance-types/c6i/>.

Testing performed by Intel in June 2021 (C5 test) and Nov. 2021 (c6i tests). All 4-node tests run on AWS us-east-2 with 48 vCPUs, 96GB RAM, 4 EBS 200GB for 16,000 IOPS, 1GB Storage BW, Hadoop 3.3.0, Hive 3.1.2, Spark 3.0.1, and TPC-DS v. 1.1.0. Granulate tests used Granulate agent v. 2.2.0. Instance details: c5.12xlarge: Intel Xeon 88275CL, 12 Gbps network BW, AWS Linux Kernel 4.14.177-139.254.amzn2.x86\_64 #1 SMP; c6i.12xlarge: Intel Xeon 8375C, 18.75 Gbps network BW, Amazon Linux kernel 4.14.252-195.483.amzn2.x86\_64 #1 SMP. Instances cost \$2.04/hr and storage was \$464/mo.



Performance varies by use, configuration and other factors. Learn more at [www.intel.com/PerformanceIndex](http://www.intel.com/PerformanceIndex).

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See above for configuration details. No product or component can be absolutely secure. Your costs and results may vary.

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