# AWS C5 Instances Featuring 2nd Gen Intel® Xeon® Scalable Processors and Granulate Deliver Better Decision Support Performance

## Compared to Both C5a Instances with AMD EPYC Processors and C5 Instances without Granulate Real-Time Continuous Optimization Enabled

Decision support system (DSS) workloads have become integral tools for many organizations, helping to collect raw information and turn it into actionable insights. For companies that run their DSS workloads in the cloud, the wide range of instances available can be overwhelming and determining which instances will deliver strong performance can be a challenge. We measured the performance of several Amazon Web Services (AWS) EC2 cloud instance types using a DSS benchmark. We began by looking at the effect of adding Granulate Real-Time Continuous Optimization (Granulate) to C5 instances enabled by 2nd Gen Intel Xeon Scalable processors. Granulate is a workload optimizer that can improve both Intel processor performance and productivity. Next, we compared the performance of the C5 instance with Granulate to that of a C5a instance using AMD EPYC processors.

The Granulate-enabled instance achieved greater DSS workload speeds than both the same C5 instance without Granulate and the AMD EPYC processor-based C5a instance. Based on these test results, businesses who seek the strongest DSS performance would do well to select C5 instances enabled by Intel processors with Granulate.

## Enabling Granulate Led to an up to 40% Performance Increase

As Figure 1 shows, enabling Granulate on the c5.12xlarge instance featuring 2nd Gen Intel Xeon Scalable processors caused performance on a decision support workload to improve by up to 40%.

**Relative Completion Speed with and without Granulate**

Normalized Speed | Higher is better

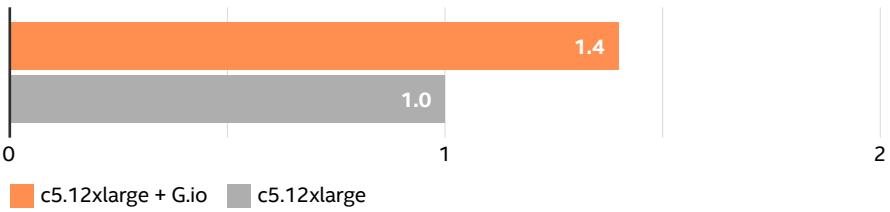



Figure 1. Decision support performance achieved by a c5.12xlarge instance, featuring 2nd Gen Intel Xeon Scalable processors, both with and without Granulate.

**Spark**

**Improve Decision Support Performance by up to 40% by Adding Granulate Cloud Solutions to AWS c5.12xlarge Instances Featuring 2nd Gen Intel Xeon Scalable Processors**

*vs. c5.12xlarge Instances Without Granulate*

**Improve Decision Support Performance by up to 52% by Selecting AWS c5.12xlarge Instances Featuring 2nd Gen Intel Xeon Scalable Processors with Granulate**

*vs. c5a.12xlarge Instances with AMD EPYC Processors*

**Intel Workload Proof Series: Decision Support Performance on AWS C5 Instances with Granulate vs. C5a Instances**

See backup for workloads and configurations. Results may vary.

## A C5 Instance with Granulate Completed a DSS Workload with Greater Speed Than an AMD EPYC Processor-Based C5a Instance

As Figure 2 shows, the c5.12xlarge instance enabled by 2nd Gen Intel® Xeon® Scalable processors with Granulate delivered up to 52% greater performance than the c5a.12xlarge instance based on AMD EPYC processors.

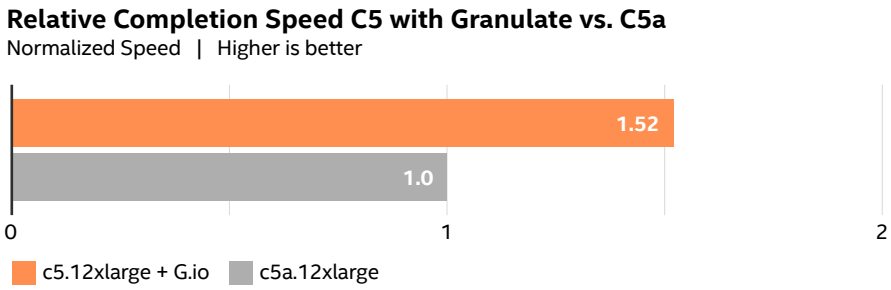


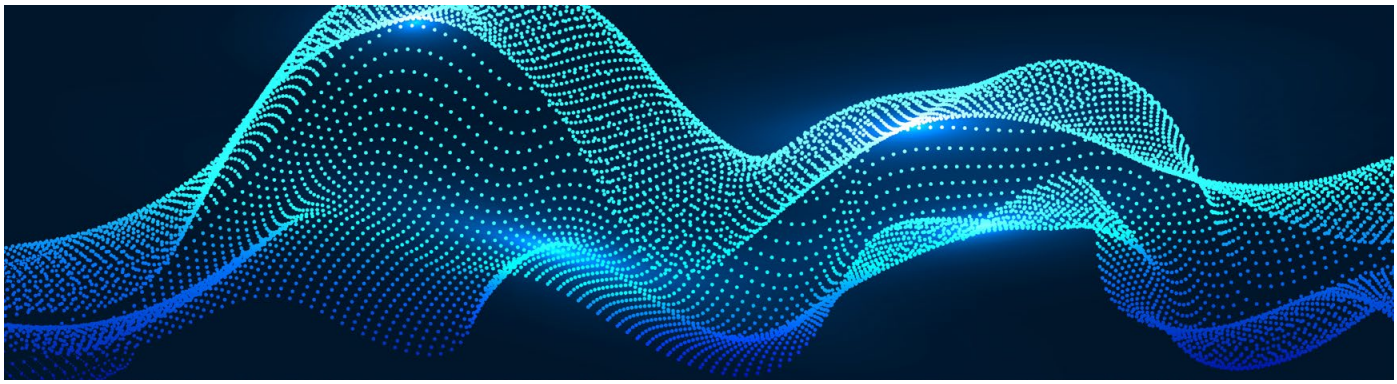

Figure 2. Decision support performance achieved by a c5.12xlarge instance with 2nd Gen Intel Xeon Scalable processors and Granulate vs. a c5a.12xlarge instance with AMD EPYC processors.

## Conclusion

We conducted tests to evaluate the decision support performance of two AWS C5 instances featuring 2nd Gen Intel Xeon Scalable processors—one with Granulate Real-Time Continuous Optimization enabled and one without—and an AMD EPYC processor-based AWS C5a instance. Enabling Granulate increased C5 instance performance by up to 40%, and the Granulate-enabled C5 instance outperformed the C5a instance we tested by up to 52%.

## Learn More

To begin running your decision support workloads on Amazon EC2 C5 instances with 2nd Gen Intel Xeon Scalable processors with Granulate, visit https://aws.amazon.com/ec2/instance-types/c5/.



Testing performed by Intel in June 2021. 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 8275CL, 12 Gbps network BW, AWS Linux Kernel 4.14.177-139.254.amzn2.x86_64 #1 SMP; c5a.12xlarge: AMD EPYC 7R32, 12Gbps Network BW, AWS Linux 4.14.177-139.254.amzn2.x86_64 #1 SMP.


Printed in USA 0922/JO/PT/PDF US001 ♻ Please Recycle