Solution Brief

Autonomous Workload Optimization Software by Granulate™ an Intel Company

Real-Time Continuous Optimization

Improve performance and cost-effectiveness in the data center and in the cloud, with autonomous workload optimization software from Granulate™ an Intel Company.

GRANULATE™
An Intel Company

Workload Optimization from Granulate™ an Intel Company

Customers report:

UP TO **63%**[1] AVERAGE COST REDUCTION

UP TO **38%**[2] FASTER RESPONSE TIME

UP TO **41%**[2] INCREASE IN THROUGHPUT

ZERO CODE CHANGES

gCenter data taken, 22 February 2022. For more information see Granulate disclaimer. Your costs and results may vary.

Typical workload optimization processes can be costly, disruptive, and time-consuming. To achieve performance improvements through optimization, developers must spend time rewriting code instead of creating value for the business.

Instead, with real-time continuous optimization from Granulate™ an Intel Company, organizations can handle their compute workloads with 60 percent fewer servers while improving performance by 40 percent, with no code changes or R&D efforts required.[1]

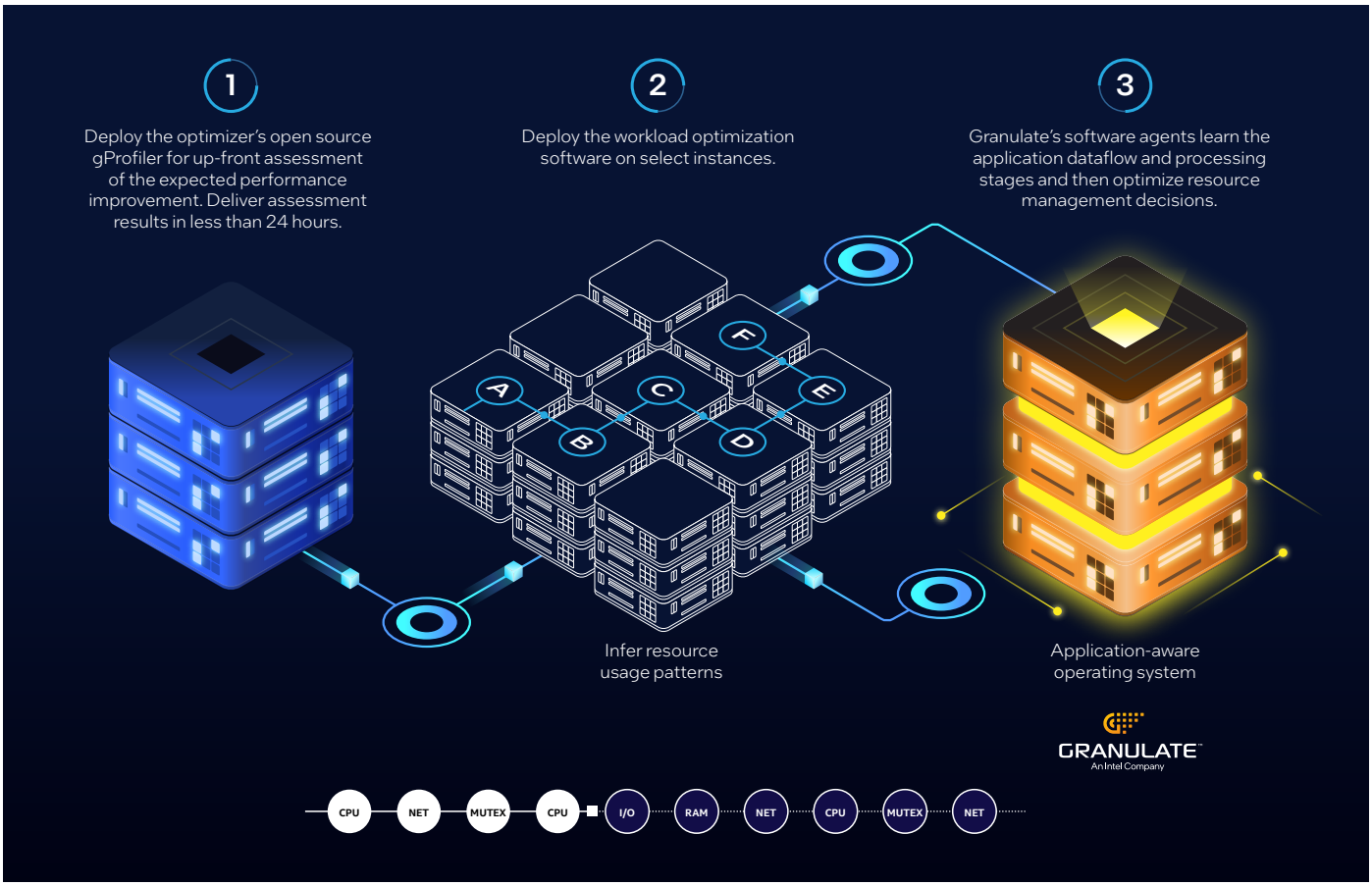
Once installed, the Granulate software analyzes resource usage patterns and dataflow to adapt resource management automatically and continuously. The result is ongoing improvement in resource allocation and utilization, boosting performance and reducing costs in the data center and in the cloud.

Granulate agents use US-patented algorithmic models to identify instances of data bottlenecks and resource contention within workloads and then adjust resource management decisions to accelerate dataflow through an application. This process involves adapting resource allocation at the operating system and runtime level to continuously and autonomously optimize memory allocation, process swapping, thread scheduling, storage access, and network communications. Users experience ongoing performance increases as Granulate software continues to recognize usage patterns and optimize each workload.

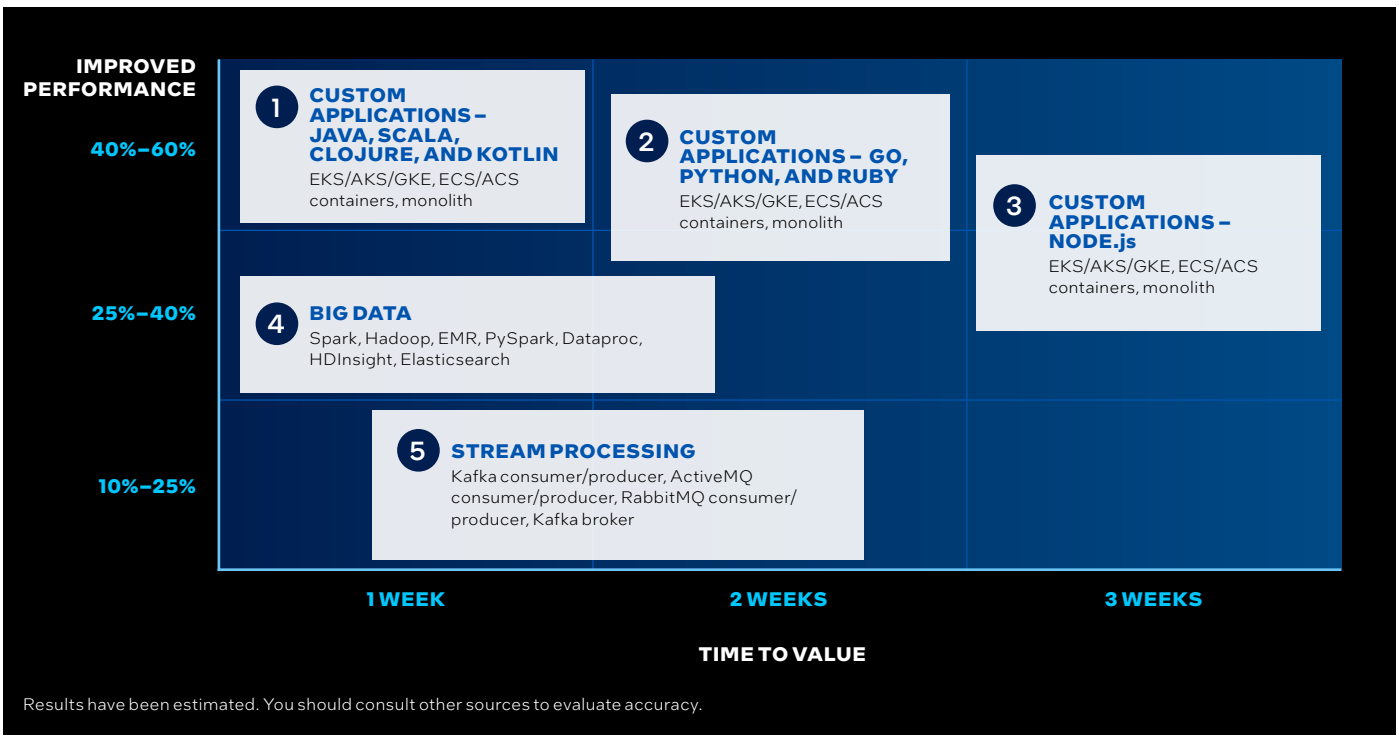
Granulate software optimizes Intel® processor performance, helping to ensure superiority over the competition.

Granulate workload optimization software is purpose-built for Intel® processors, delivering differentiated value for Intel customers.

How does it work?



Use cases: Granulate workload optimization delivers value



Results have been estimated. You should consult other sources to evaluate accuracy.

Mobileye™ reduced PySpark costs by 45 percent[1]

REDUCED COST

45%[1]

FASTER JOB COMPLETION TIME

44.5%[1]

Simple and seamless integration

Very little time investment

No code changes required

Performance benefit in less than 14 days[1]

About Mobileye

Industry: Mobility
HQ: Israel
Employees: 1,300+
Size: Over 60K cores for REM™ activity

Mobileye is a global leader in the development of computer vision and machine learning, data analysis, localization, and mapping for advanced driver-assistance systems and autonomous driving. Mobileye technology helps keep passengers safer on the road, helps reduce the risk of traffic accidents, and has the potential to revolutionize the driving experience by enabling autonomous driving.

Mobileye's proprietary software algorithms and EyeQ® chips perform detailed interpretations of the visual field to anticipate possible collisions with other vehicles, pedestrians, cyclists, animals, debris, and other obstacles. Mobileye's products can also detect roadway markings such as lanes, road boundaries, barriers, and similar items; identify and read traffic signs, directional signs, and traffic lights; create a RoadBook of localized drivable paths and visual landmarks using Road Experience Management™ (REM™); and provide mapping for autonomous driving.

Mobileye™ and AWS

Mobileye™ an Intel Company runs core workloads on Amazon Web Services (AWS) for greater speed, agility, and compute power. AWS enables Mobileye to innovate rapidly using its compute, storage, database, analytics, machine learning, and edge computing services. These services help Mobileye supply automakers with advanced self-driving applications. Mobileye runs big data workloads on AWS, constructing data lakes on Amazon Simple Storage Service (S3) and Amazon Elastic Compute Cloud (EC2) Intel-based instances. Mobileye can ingest, process, and analyze significant amounts of vehicle data gathered from sensors, images, and video feeds. Insights gained from the data give Mobileye the ability to fine-tune its technology in significantly shorter cycles and iterate on its autonomous vehicle capabilities.

The challenge

Infrastructure: AWS
Workload type: Big data, PySpark
Application language: Python

Mobileye also runs big data workloads on AWS, using PySpark to support its RoadBook™ of localized drivable paths and visual landmarks to provide centimeter-accurate mapping for autonomous driving. Amazon EC2 R4.8/16/24XL and R5.8/16/24XL on Spot instances, specifically Intel-powered instances, enable Mobileye to quickly innovate on top of a highly scalable, fault-tolerant infrastructure, but these services have also become a significant cost driver for the organization.

Solution

Granulate agents were deployed on a Mobileye EC2 workload as container sidecars and began learning the workload, data flow, and resource usage patterns within minutes. Following a few days of learning, the agents were ready to be activated to start optimizing the application's performance.

Results

Mobileye monitored the performance and results throughout the Granulate activation. Mobileye documented a 44.5 percent reduction in average job completion time.[1] The immediate impact of the shorter job completion times was a 45 percent cost reduction,[1] due to fewer instance hours required to run the same workload.

Why Optimize with Granulate?

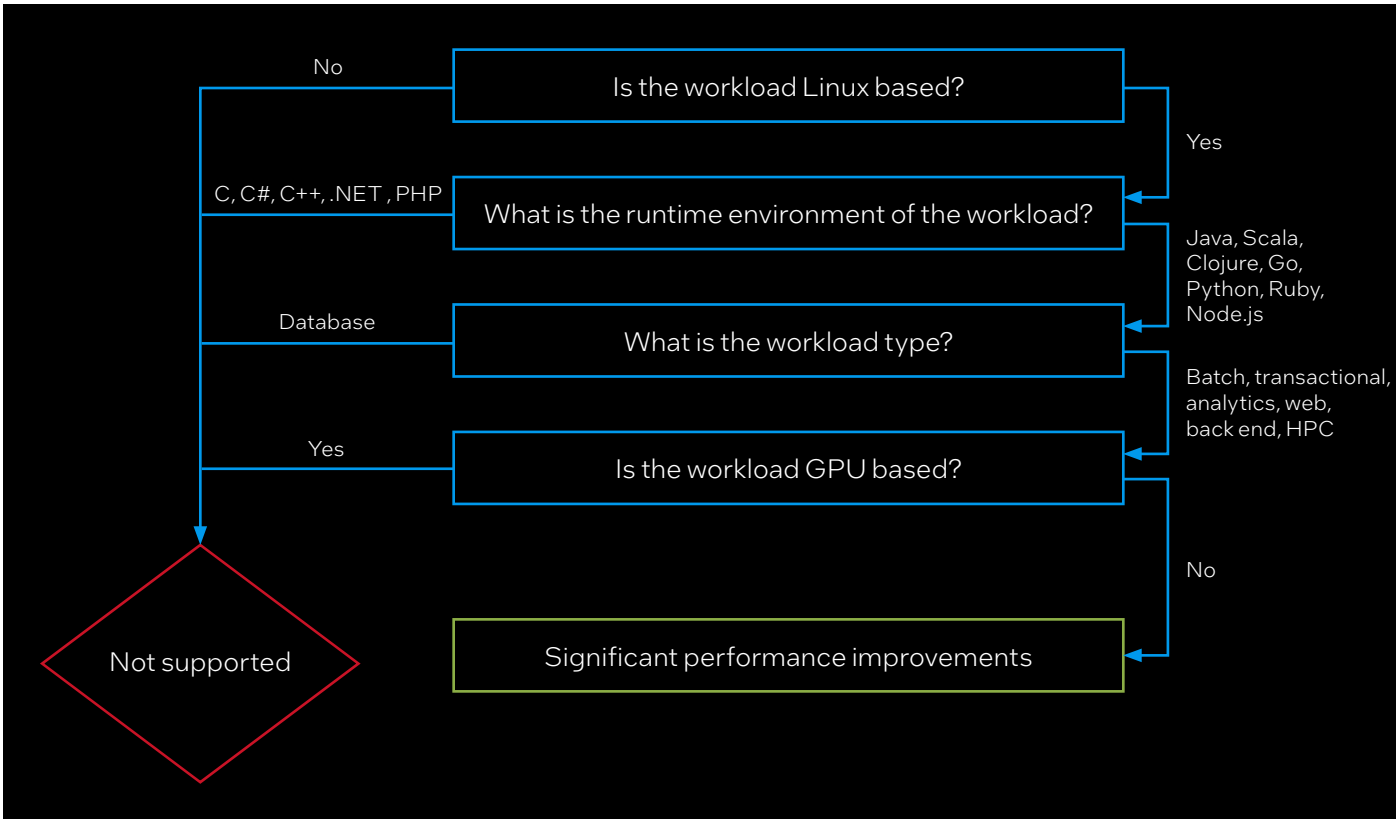
While searching for an optimization solution, Mobileye identified Granulate as having the potential to achieve better performance for PySpark workloads and significantly reduce costs. Granulate was an especially appealing solution for Mobileye, given the optimizer's unique ability to improve big data workload performance without migrating to a third-party data lake or analytics platform.

There were other unique advantages that stood out to the Mobileye team:

- **Granulate workload optimization software has native integration with AWS services:** Mobileye could enjoy the cost reduction and performance improvements to its PySpark workload, without changing the way its DevOps team operated.
- **The workload optimization process requires no implementation efforts:** Granulate agents can be deployed using Docker containers within several minutes and without any code changes.
- **Granulate's workload optimizer provides better performance and lower costs:** Mobileye could benefit not only from significant cost reduction but improved agility and service-level agreement performance by implementing Granulate's workload optimization solution.

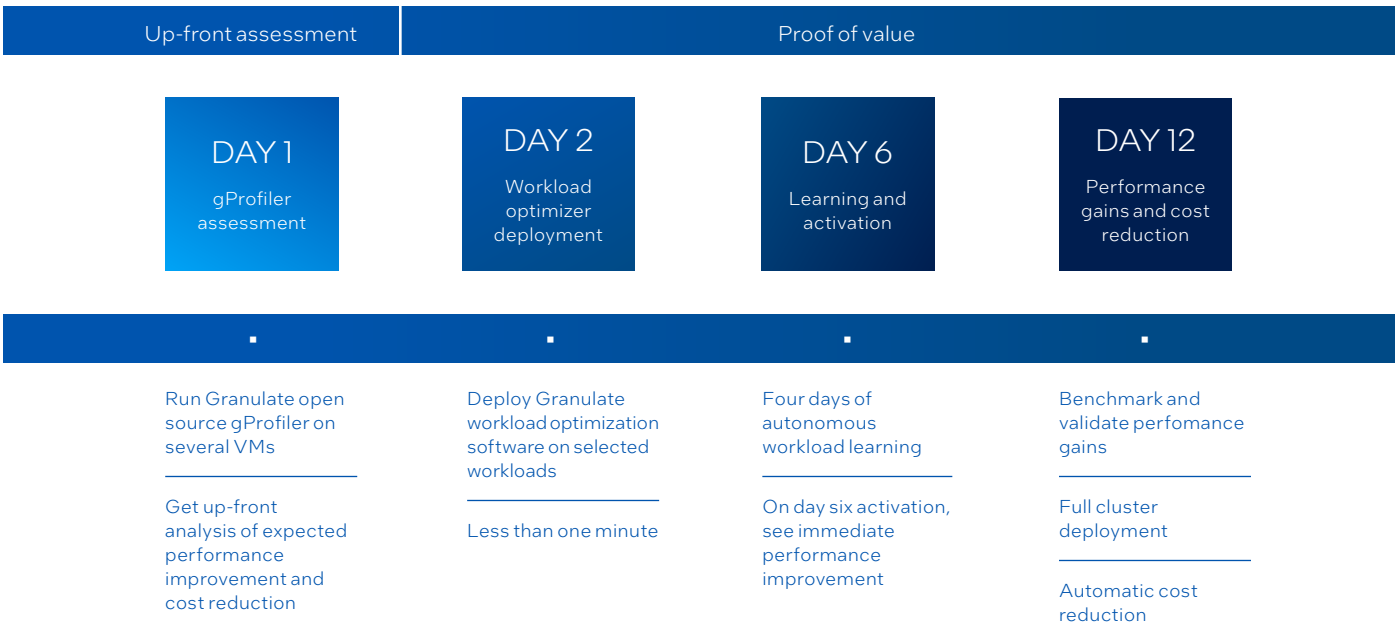
Granulate workload optimization decision tree

Choosing a candidate workload



Granulate deployment

Complete proof-of-concept (POC) life cycle in less than two weeks



Our security commitment

Security
We conduct ongoing rigorous security testing and third-party assessments. Deployment model is available without internet connectivity.

Privacy
We offer world-class data protection and settings that protect your infrastructure data.

Compliance
Granulate policies and products are compliant with GDPR privacy regulations.

Granulate enables customers to focus on their core business

As the valuation of the global cloud computing market is expected to exceed USD 1 trillion by 2026,[3] more and more businesses will rely on the cloud for developing and delivering new products and offerings, and the need to optimize will also escalate. Granulate is already helping businesses extend the capabilities of their cloud infrastructure and lowering costs with minimal effort, freeing up DevOps resources to focus on new and exciting innovations. The best way to get started is to ask for a POC estimate, which is a quick and easy way to see the potential savings and performance improvement Granulate can help achieve for your specific workloads.

Get a quick-turnaround estimate

Contact your Intel representative to ask about profiling your workloads on Granulate.

Learn more about Granulate ›

Learn more about Intel cloud optimization tools ›

Learn more about Intel Ignite ›

intel + GRANULATE™ An Intel Company

Notices and disclaimers

1. Granulate. 2021. "Bigabid uses Granulate to dramatically reduce bid timeouts, latency, and compute costs." See granulate.io/case-studies/bigabid/
2. Internal measurements provided by Mobileye and Granulate and tested on AWS EC2 instances R4.8xlarge, R4.16xlarge, R5.8xlarge, R5.16xlarge, R5.24xlarge. For more information on configurations, See aws.amazon.com/ec2/instance-types/.
3. Globe Newswire. April 2021. "USD 1025.9 Billion Expected for Cloud Computing Market Size & Share at 18% CAGR by 2026: FnF Research." See globenewswire.com/news-release/2021/04/07/2206013/0/en/USD-1025-9-Billion-Expected-for-Cloud-Computing-Market-Size-Share-at-18-CAGR-by-2026-FnF-Research.html

All information provided here is subject to change without notice. Contact your Granulate representative to obtain the latest Granulate product specification and roadmaps.

Cost reduction scenarios described are intended as examples of how a given Granulate-based customer, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Granulate an Intel Company does not guarantee any costs or cost reduction.

Granulate technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailers or learn more at intel.com.

The information provided is to be general in nature and is not specific guidance. Recommendations (including potential cost savings) are based upon Granulate's gCenter database and based upon Granulate customers' experiences, as reported to Granulate, and are estimates only. Granulate an Intel Company does not guarantee or warrant others will obtain similar results.

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Intel® technologies may require enabled hardware, software, or service activation.

No product or component can be absolutely secure.

Your costs and results may vary.

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