

How to run a greener data operation with Google Cloud and MongoDB

Intelligently streamline operations and build a sustainable data practice

Sustainability is more important to consumers' buying decisions than ever before. [PwC research](#) shows that eight out of 10 consumers are willing to pay more for sustainably produced goods. Sustainability figures into employee recruitment, too: [Deloitte research](#) shows 55% of Gen Z and 54% of Millennials have researched a company's environmental impact and policies before accepting a job offer. Currently carbon-neutral with a goal of becoming carbon-free by 2030, Google Cloud offers a cloud built for sustainability. MongoDB is also extending its environmental commitments this decade, with [a net zero by 2030 promise](#), alongside the aim to be 100% powered by renewable energy by 2026.

Achieving full visibility into the environmental footprint of your organization – from the sustainability of product packaging to the energy

use of your buildings to the complexity of resource-intensive supply chains – can be extremely challenging. How do modern-day businesses optimize resource utilization and weave in supply chain improvements in areas such as water usage, packaging, and carbon emissions into a practical sustainability strategy – one that reconciles the interests of consumers, employees, and the needs of the planet with growth, profitability, and performance goals?

In this ebook, we'll cover how your business can use MongoDB Atlas and Google Cloud to build a sustainable foundation and leverage analytics to drive process optimization for environmental initiatives.

Creating a sustainable foundation for growth by moving to the cloud

Companies aiming to lower their carbon footprints are moving to the cloud and moving to fully managed services and platforms that are built in multi-tenant environments, as it is more environmentally efficient. On average, Google Cloud is [twice as energy efficient](#) as a typical data center. IDC estimated that migrating on-premises computing to the cloud could reduce emissions by [more than 1 billion metric tons](#) of CO2 from 2021-2024.

Moving to a cloud architecture and shared infrastructure leads to lower overall emissions. Less physical land and resources are used in data centers, the servers used are more efficient, and public cloud providers are themselves committed to sustainable infrastructure and a reduced carbon footprint. Today, Google Cloud's operations are [carbon neutral](#), but aiming higher with a goal to run on carbon-free energy at all data centers by 2030. By 2025, Google Cloud will be 100% powered by renewables. Google Cloud is sharing technology, methods, and funding to enable enterprises around the globe to transition to more carbon-free and sustainable systems.

Cloud platforms and software companies are innovating on features that help your business optimize its resources. For example, Google Cloud offers [carbon footprint monitoring](#) so you can measure, report, and try to reduce carbon emissions.



At the data layer, there are huge resource savings to be made by moving into a cloud service offering that is scalable. MongoDB Atlas, a fully-managed developer data platform, ensures that it is only using the resources that your business needs to run, no more. You can keep costs and environmental impact low with the use of automation within the platform to pause pre-production environments outside of business hours and only scale up when traffic is high.

If you have seasonal peaks and lows or experience an unexpected moment of virality, good monitoring and automation can greatly reduce resource consumption.

MongoDB and Google Cloud are in deep collaboration to enable our customers to make greener choices. Within the MongoDB Atlas platform, you get a transparent view of workloads, including a green leaf icon that highlights low-carbon Google Cloud regions so you can consider the carbon impacts associated with their projects.

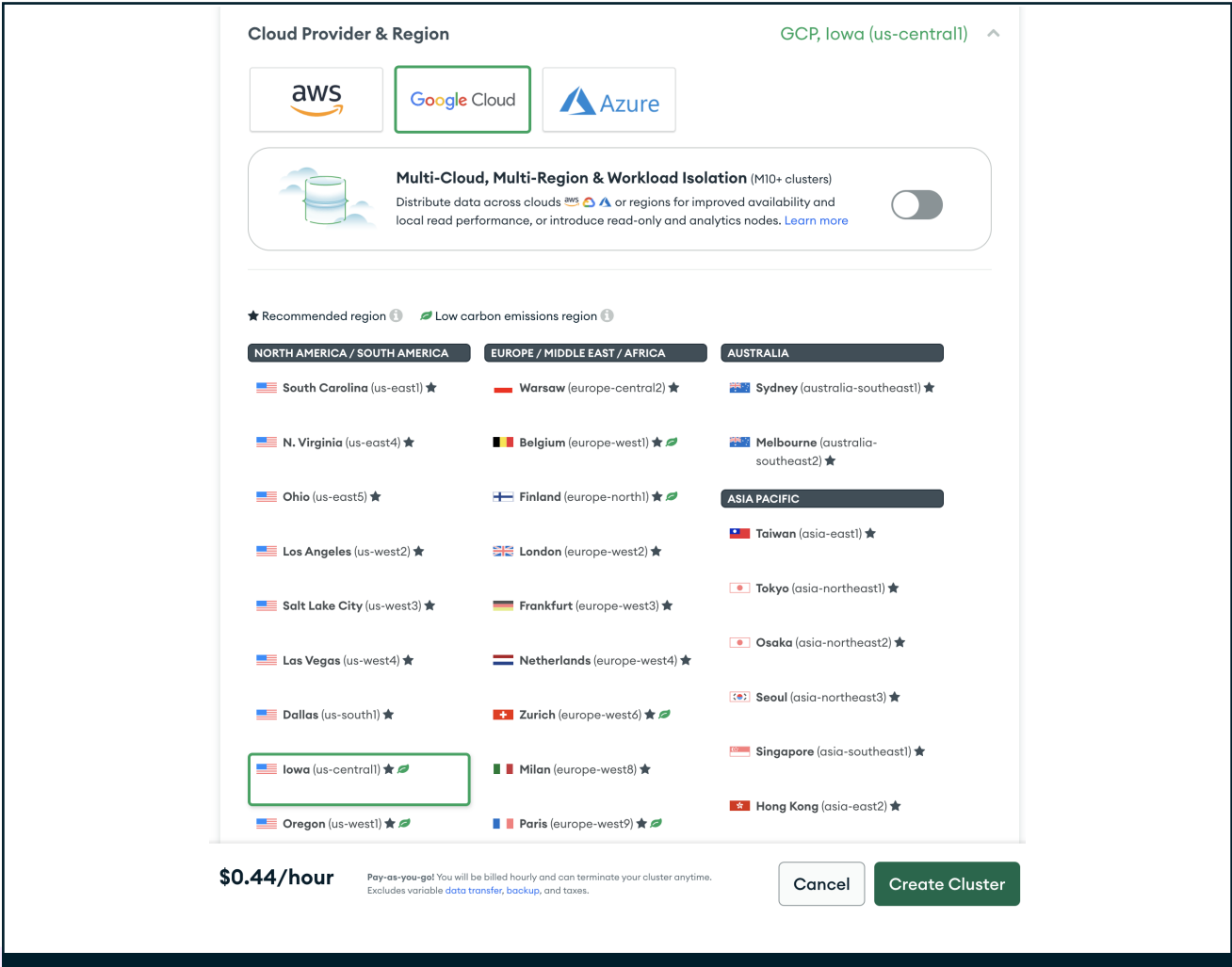


Figure 1: Within MongoDB Atlas, users can select low-carbon Google Cloud regions as indicated by green leaf icons.

This is the foundation on top of which you can create applications to run your organization in a more eco-friendly way. Once that foundation is in place, how can you leverage data in MongoDB

and Google Cloud to optimize processes to be more environmentally friendly?business so they can optimize processes to be more environmentally friendly?

Leveraging real-time data for sustainable insights

Modern companies use cloud-based IT infrastructure, analytics, and AI to gain a clear and detailed understanding of customer purchasing patterns and supply chain processes. In turn, those data-driven insights support timely, accurate, and reliable forecasts to optimize production, make better sourcing and replenishment decisions, and plan more efficient distribution and transportation.

There are many reasons why so many businesses produce waste. From grocers throwing away spoiled food to service companies that poorly utilize their physical office space, it takes a lot of extra effort to meet sustainability goals. With the

help of better data management and analytics, your business can streamline the supply chain, uncover opportunities to reduce waste, and find solutions that lead to sustainability.

The challenge here is a data challenge: how do you get complex insights into your data to drive the optimization of these processes? The solution is building smart event-driven architectures with MongoDB Atlas and [Google Cloud BigQuery](#) to get the insights you need into your business data in a smart and eco-efficient way.



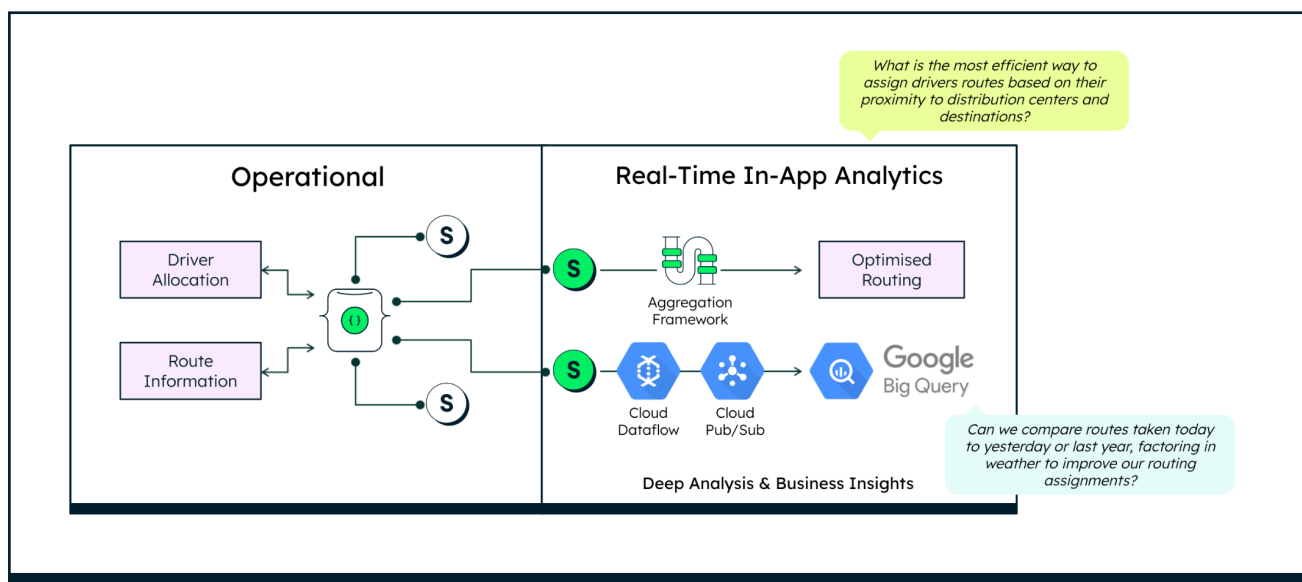


Figure 2. MongoDB supports the real-time operational throughput of the application as well as real-time analytical decisions. Google Cloud Pub/Sub and Dataflow can be used to easily sync data to Google Cloud BigQuery for longer-running, more complex analytics. Together, this data architecture meets the needs of complex organizations.

In this example, a company has leveraged MongoDB Atlas as a translytical data layer, using workload isolation to gain insights into their data in real-time, without interrupting the operational work of the application. MongoDB's rich query language and aggregation framework allows for complex questions to be answered by the data. Then, [a data pipeline can be set up between MongoDB Atlas and Google Cloud BigQuery, using pre-built templates for Google Cloud Dataflow](#) to simply sync the data.

Let's look at an example of a green initiative that can apply to retail, logistics, or any company that employs a fleet of delivery or service vehicles: an application built to route drivers. Through clever use of data, there can be a big environmental impact, such as shorter and more efficient routing which can lead to less gas usage and CO2 emissions.

How could the above data architecture support this? MongoDB will do the operational and real-time analytical workload, giving the drivers routing assignments based on which driver is closest to

which distribution center or headquarters and destination for the most fuel-efficient supply chain – calculated and recalculated in real-time. Then Google Cloud BigQuery takes on the complex analytics needed to run deeper insights by comparing routes taken today compared to yesterday or last year, factoring in weather and other external dependencies. This gives fleet managers a well-rounded analytical data landscape on which to make decisions in real-time and for the future.

There are many other use cases that can create environmental resource savings with smart use of real-time and complex analytics. For example, [Journey Foods](#), a supply chain and food science technology platform, uses MongoDB to deliver AI-driven data insights to improve how food is sourced and delivered, including supply chain optimization and nutritional ingredient sourcing. Or read how mobile gaming company [Yile](#) has been able to shift resources from maintenance to R&D, as well as expand vertically and horizontally with zero downtime and without risk of overprovisioning.

Summary

With a growing number of both consumers and employees preferring environmentally conscious companies, it's imperative to expand your strategies for carbon emissions and utilize data operations that build out more sustainable practices that are aligned with growth and profitability.

The first step toward creating a sustainable foundation to achieve these goals is a move to the cloud. Moving to the shared public cloud infrastructure lowers emissions; cloud services are more efficient and use less land and resources, reducing your company's carbon footprint.

With MongoDB Atlas on Google Cloud, you'll get immediate access to carbon-neutral technology that will be run on carbon-free energy by 2030.

Our usage-based pricing model helps reduce waste and save costs by preventing over-provisioned databases. MongoDB Atlas's fully managed developer platform offers monitoring tools, serverless capabilities, and automated scaling that ensures your business is only using the resources you need.

Are you ready to get started with MongoDB Atlas on Google Cloud?
Learn more about our partnership and solutions at our resource page:

[MongoDB on Google Cloud.](#) —————>