

# Run a Green Data Retail Operation with Google Cloud and MongoDB

How modern retailers use data to intelligently streamline operations and go green

Sustainability is more important to consumers' buying decisions than ever before. New [Google research shows that 82%](#) of consumers now say that environmental sustainability is more top-of-mind than it was before the COVID-19 pandemic. 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 retail, from the sustainability of product packaging to the complexity of resource-

intensive supply chains, can be extremely challenging. How do modern-day retailers optimize the resource utilization of a sprawling ecommerce empire and weave in supply chain improvements in areas such as water usage, packaging, and carbon emissions into with a practical sustainability strategy – one that reconciles the interests of consumers and the needs of the planet with a brand's growth, profitability, and performance goals?

This ebook covers how MongoDB Atlas and Google Cloud can be used to build a sustainable foundation and leverage analytics to drive optimisation of processes for environmental initiatives

## Creating a Sustainable Foundation for Growth by Moving to the Cloud

Retailers 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. Research into sustainable architectures shows that migrations to the public cloud can reduce CO<sub>2</sub> emissions by nearly 60 millions tons a year, with an [average 84% immediate reduction](#) in carbon emissions as a result.

Moving into 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 retailers to optimize the resources they're using. Google Cloud has launched [carbon footprint monitoring](#) so users can measure, report and try to reduce their carbon emissions.



At the data layer, there are huge resource savings to be made by moving into a cloud service offering that is scalable. It's estimated that 40% of database instances are at least one size larger than needed. MongoDB Atlas, a fully-managed developer data platform, ensures that it is only using the resources that your business needs to run, no more. The use of automation within the platform to pause pre-production environments outside of business hours and only scale up when traffic is high can all be used to keep costs and environmental impact low. In retail, where traffic

is seasonal and there are unpredictable peaks and lows, good monitoring and automation can hugely reduce resource consumption.

MongoDB and Google Cloud are in deep collaboration to enable customers to make greener choices. Within the MongoDB Atlas platform, a new level of transparency was introduced for workloads, including a green leaf icon that highlights low-carbon Google cloud regions and encourages customers to consider the carbon impacts associated with their projects.

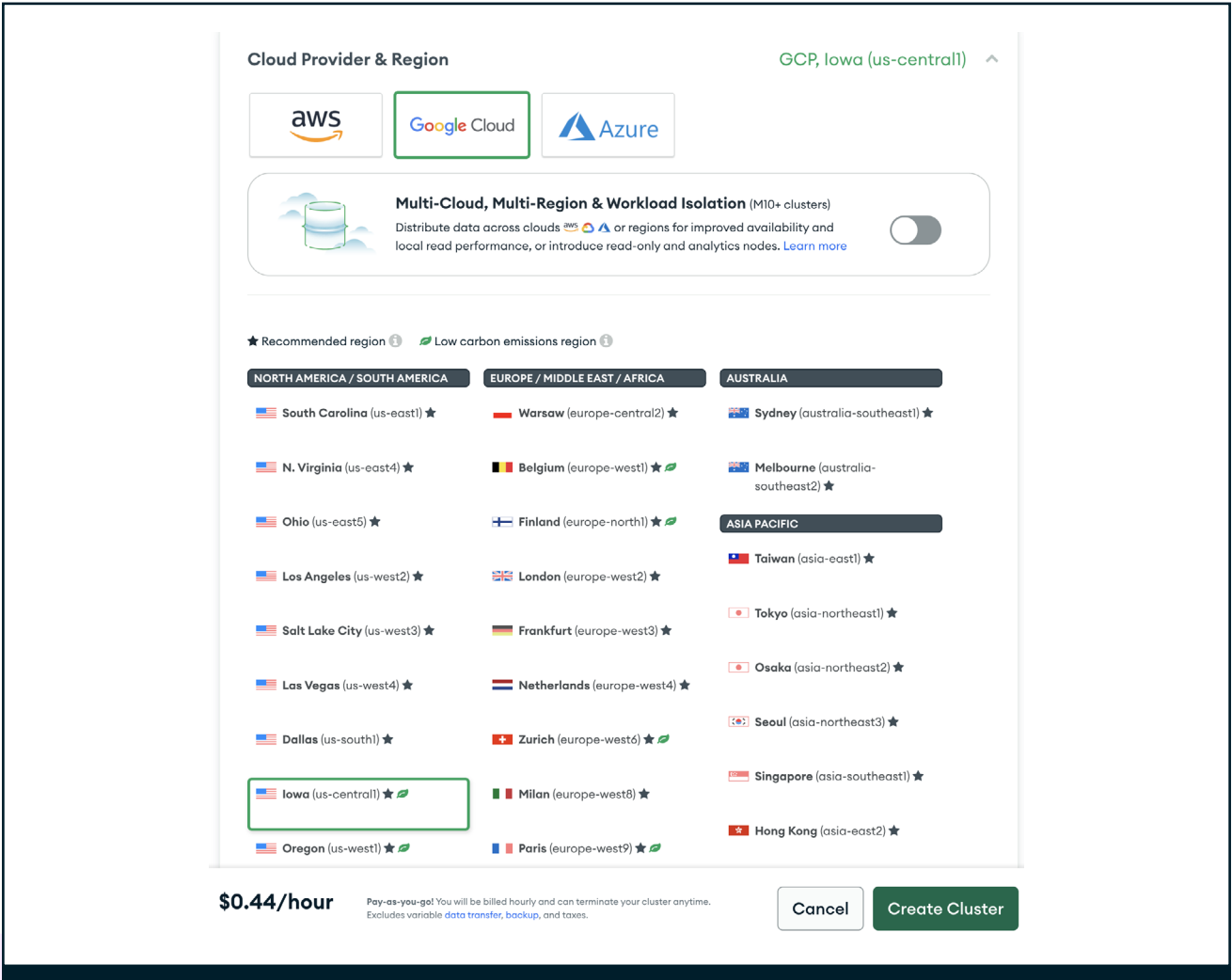


Figure 1: Within MongoDB Atlas, users can select low-carbon Google cloud regions as indicated by green leaf icons.

This is the foundation on top of which retailers are creating applications to run their retail organizations in a more eco-friendly way. Once that foundation is in place, how can retailers

leverage their data in MongoDB and Google Cloud to gain insights to help them understand their business so they can optimize processes to be more environmentally friendly?

# Leveraging Real Time Data for Sustainable Insights

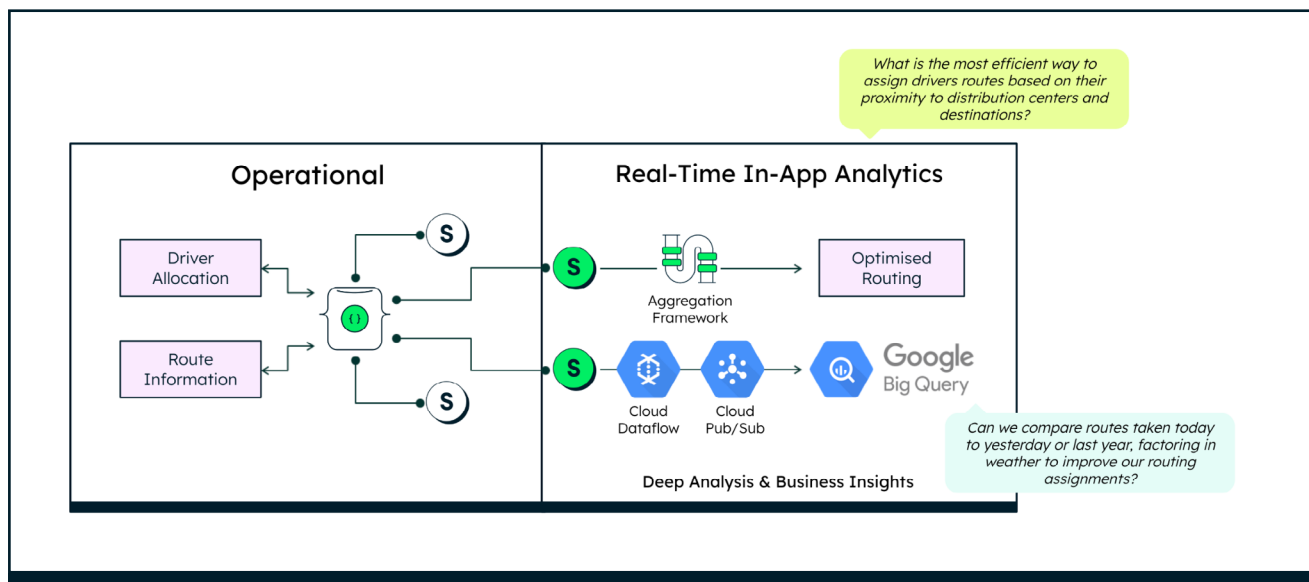
Modern retailers use cloud-based IT infrastructure, analytics, and AI to gain a clear and detailed understanding of consumer purchasing patterns and supply chain processes. Those data-driven insights, in turn, support timely, accurate, and reliable forecasts that brands can use to choose where and when to produce goods, make better sourcing and replenishment decisions, and plan more efficient distribution and transportation.

There are a plethora of reasons why retail can be a wasteful industry. Between grocers throwing away spoiled food, and the fast fashion trends that clothing dealers have to keep up with to compete,

it takes a lot of extra effort for retailers to achieve greener commerce in the supply chain. With the help of better data management and analytics, retailers can streamline the supply chain 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? Retailers are building smart event-driven architectures with MongoDB Atlas and [Google Cloud BigQuery](#) to get the insights they need into their data in a smart and eco-efficient way.





**Figure 2.** MongoDB supports the real time operational throughput of the application as well as being able to support real time analytical decisions. In 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 a complex retail organization.

Here they leverage 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 rich query language and aggregation framework allows for complex questions to be answered of the data. Then a [data pipeline can be set up between 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 in the retail supply chain: an application built to route delivery drivers. Through clever use of data, there can be a big environmental impact: shorter and more efficient routing can lead to less gas usage and CO<sub>2</sub> 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 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: comparing routes taken today compared to yesterday or last year, factoring in weather and other external dependencies. This gives the retailer a well rounded analytical data landscape on which to make decisions in real time and for the future.

There are many other use cases in the retail space that can create environmental resource savings with smart use of real time and complex analytics. For example in a supermarket having a live view of inventory and customer buying patterns can lead to more accurate forecasting of stock to reduce spoilage. Or read how [Rent The Runway](#), an online fashion rental service, have optimized their garment processing time by 67% by implementing an automated robotic arm using real time analytics to sort clothes.



## Summary

With a growing number of consumers focused on doing business with environmentally-conscious companies, retailers are developing strategies to cut carbon emissions and utilize data operations that build out more sustainable practices.

From the eco-friendliness of a company's product packaging, to the intricacies of resource-intensive supply chains, today's retailers are faced with optimizing water usage, packaging, and carbon emissions while also continuing to align for sales growth and profitability.

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

With MongoDB Atlas on Google Cloud, retailers have access to carbon-neutral technology that will be run on carbon-free energy by 2030. They're also developing optimization strategies with a pay for what you use model, which is directly leading to less waste and over-provisioning of databases. MongoDB Atlas' fully-managed developer platform offers monitoring tools, serverless capabilities and automation scale up/down abilities that ensure businesses are only using the resources they need to run.

Are you ready to get started with MongoDB Atlas on Google Cloud? Learn more about our partnership and solutions for retailers at our resource page: [MongoDB on Google Cloud for Retail](#).

