

Cloud
computing

Building **supply chain resilience** with LTIMindtree and Google Cloud

Cloud platforms, intelligent sensors, and disruptions such as COVID-19 have rapidly transformed the supply chain management landscape. To compete in this dynamic environment, enterprises need solutions with visibility, resilience, and sustainability.



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Google Cloud

In the wake of the havoc COVID-19 unleashed on supply chains around the globe, resilience has become a top priority for businesses scrambling to fortify their networks of suppliers and channel partners. Nearly three-quarters of U.S. companies suffered supply chain disruptions in 2020, leading to loss of sales, lower profits, higher inventory costs, and damaged customer satisfaction.¹

Supply chains are getting increasingly digitized, which exposes them to technological disruptions – whether due to cyberattacks, network outages, software failures, or cloud provider issues – which can lead to significant delays or loss of visibility. CDK Global, servicing 15,000 dealerships in the U.S, faced back-to-back cyberattacks, forcing dealerships to turn to pen and paper to process auto repairs and new-car sales. The impact caused a 5.4% decrease in car sales year over year for the quarter.² The number of organizations impacted by such attacks has surged 2,600% since 2018.³

The fragility of global supply chains came to the fore during recent attacks by Houthi rebels on commercial vessels in the Red Sea. A real-time supply chain visibility chain would have helped the businesses engaged in international trade going through the Red Sea quickly identify whether any of their shipments were directly affected by the crisis. The shipping companies could then have quickly communicated with their stakeholders to provide accurate information about shipment status, retaining trust and building confidence. The information would have enabled them to assess and decide on alternatives, based on the severity and longevity of the crisis, the reliability of backup channels, and cost implications. The potential savings for large international organizations are in the billions of dollars.

With supply chains generating an estimated 60% of global emissions, sustainability has also become a critical issue.⁴ Governments and regulatory organizations are tightening

1 [Coronavirus has disrupted supply chains for nearly 75% of U.S. companies](#), Axios, March 11, 2020

2 [June new vehicle sales expected to take hit from cyberattack on dealer software](#), freep.com

3 [Identity Theft Resource Center 2023 Data Breach Report](#), January 2024

4 [What the world needs now... sustainable supply chains](#), Accenture, September 13, 2022

rules pertaining to environmental practices, waste management, and emissions. Companies must comply to avoid penalties, legal risks, and potential business restrictions. Consumers are also increasingly demanding that products be produced and delivered sustainably. That shift is pressuring companies to adopt greener practices, use sustainable materials, and reduce their carbon footprint across their supply chains.

To address all these priorities, companies are increasingly turning to digital solutions that provide flexibility, visibility, and real-time insights. With their global reach and

massive scalability, cloud platforms can give suppliers and their customers near-real-time visibility into the status of each item in a supply chain, including location, environmental conditions, chain of custody, and projected delivery status. Supply chain dashboards are an increasingly popular option for addressing the visibility problems that plague global networks. Nearly two-thirds of executives say incomplete information is their biggest supply chain problem, and 53% say information timeliness is also a major challenge.⁵

Resilience and transparency with the cloud

Cloud platforms provide a foundation for supply chain solutions and applications. Solutions built with cloud-native services benefit from their higher availability, faster scalability, and world-class security and resilience to deliver unprecedented supply chain insights.

LTIMindtree is a longtime Google partner and [Google's Cloud Partner of the Year](#) for the manufacturing industry



5 [Driving Best-in-Class Supply Chain Collaboration with a Business Network](#), International Data Corp., August 2023

segment in 2024. A multinational firm with more than 80,000 employees, LTIMindtree has broad experience building innovative supply chain modernization and digitization solutions for various industries. For example, it built trip analytics software for a fleet customer. The software uses telematics data from 6,000 vehicles and integrates with SAP Process Integration to ensure 99% uptime and 20% improvement in fleet utilization.



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– **Aniket Aggarwal**, Associate Director, LTIMindtree

“Trip Analytics improves utilization through route and job optimization,” explains Aniket Aggarwal, Associate Director at LTIMindtree. “It increased the number of jobs that can be completed, by reducing the time spent on the road. In addition, it improves uptime, by integrating service centers with vehicles so that vehicles can be assigned to the right service center

while the service center can ensure bay and part availability before the vehicle comes in.”

For equipment manufacturers, LTIMindtree deployed a combination of multilevel available-to-promise (ATP), back order rescheduling, and production prioritization solutions to improve demand fulfillment while achieving a 15% to 20% reduction in warehouse picking costs.

Recently LTIMindtree developed Material NxT, a comprehensive digital platform for supply chain management that provides real-time visibility into an entire supply chain, from sourcing and procurement to inventory and logistics. The platform empowers businesses to track the movement of materials, predict shortages, and optimize the supply chain for better efficiency and reduced costs with predictive analytics and artificial intelligence integration for optimal forecasting.

These are just some examples of how LTIMindtree is leveraging Google Cloud services to build supply chain solutions focusing on adding resilience and transparency to supply chains.

Google Cloud is a leader in supply chain transformation

Supply chains are complex, with many moving parts, participants, processes, and protections. Unlike with internal workflows, supply chain success often depends upon disparate players' fulfilling their responsibilities without central oversight. Orchestrating a supply chain requires sophisticated data collection and analysis, pinpoint tracking, and a transparent chain of custody. Google Cloud delivers industry-leading capabilities in all of these critical areas.

Security

Google Cloud Security offers robust protection through multilayered security infrastructure, including encryption by default, zero-trust architecture, and advanced threat detection powered by machine learning. Identity and access management controls regulate access control; data loss prevention



features guard against disruption; and integrated security tools such as Chronicle enable enterprises to retain, analyze, and search massive amounts of security and network telemetry data. Google Cloud ensures compliance with global standards, providing secure environments for industries such as finance and healthcare, and supports shared responsibility to ensure that both Google and customers manage security collaboratively.

Sustainability

Google Cloud's commitment to sustainability is reflected in its carbon-neutral cloud services and energy-efficient data centers. The company is committed to achieving net-zero emissions across all its

operations by 2030.⁶ By leveraging Google Cloud Platform's sustainable infrastructure, companies can reduce their environmental impact and support long-term resilience by aligning economic and environmental objectives.

Data advantage

Google is widely acknowledged as one of the world's leading companies in the application of data analytics. Its advanced tools such as BigQuery and Google Data Studio enable businesses to collect and analyze data from points in the supply chain in real time.

The FeedbackIoT platform architecture on Google Cloud leverages the scalability, security, and advanced analytics capabilities of Google Cloud services to manage and analyze internet of things (IoT) data in real time. The platform connects IoT devices securely over standard protocols such as MQTT and HTTP. Google Cloud Pub/Sub allows for real-time data ingestion, enabling the collection of large volumes of

data from IoT devices and routing them to appropriate processing or storage systems. Google Cloud Dataflow transforms raw IoT data into meaningful insights in real time.

BigQuery enables real-time analysis of large data sets, enabling supply chain managers to make informed decisions quickly. By analyzing data from sources such as IoT devices, enterprise resource planning systems, and logistics platforms, businesses can identify bottlenecks, predict delays, and optimize routes and inventory levels.

Google's Supply Chain Twin can consume procurement and logistics data from enterprise resource planning (ERP) systems and other data sources to create a real-time digital representation of the supply chain. This visibility enables companies to monitor operations, inventory levels, and shipments across all locations in real time, improving their ability to respond to disruptions or changes in demand. They can leverage AI and

machine learning to help anticipate supply chain disruptions, demand fluctuations, or capacity constraints.

Artificial intelligence

Google's roots in artificial intelligence go back more than 20 years. Its robust analytics and machine learning capabilities can play a pivotal role in predicting and mitigating risks. Tools such as Vertex AI, Gemini, and many machine learning frameworks enable businesses to automate the analysis of historical data to forecast demand, plan inventory, and prepare for contingencies. By understanding patterns in supply chain disruptions, companies can proactively adjust their sourcing strategies or stock levels to minimize the impact of those

disruptions. AI can be applied to such diverse disciplines as demand forecasting, inventory optimization, logistics, risk management, and supplier performance assessment.

Communication and collaboration

Google Cloud Collaboration tools such as Google Workspace enable teams to share information and coordinate efforts across a single cloud platform. The platform provides secure cloud-based access to documents, emails, and real-time communication channels to empower supply chain teams to make faster, more informed decisions and respond quickly to unexpected challenges.

Scalable infrastructure

With 49 current and planned cloud regions providing access in more than 200 countries, Google Cloud's global scale adapts to changing conditions with world-class resilience. Firms that are expanding operations, entering new markets, or responding to a surge in demand can quickly scale up or down to meet new requirements. This reduces the risk of downtime



and ensures that critical supply chain systems remain operational, even amid surges in demand.

Supply chain resilience

As COVID-19 demonstrated, disaster recovery and business continuity are critical elements in building resilience. Google Cloud offers comprehensive disaster recovery solutions that ensure that critical systems and data are backed up and can be quickly restored during a disruption. A global network of data centers provides geographic redundancy, which further enhances resilience.

“More data enables more robust and accurate supply chain planning, so Google continues to build an ecosystem of data providers and to grow the number of available data sets on Google Cloud,” Aggarwal says. Among Google Cloud’s nearly 60 supply chain partners are the U.S. Census Bureau, the National Oceanic and Atmospheric Administration, and Dun & Bradstreet.

The supply chain management landscape has evolved rapidly, due to influences such as cloud platforms, intelligent sensors, and disruptions such as COVID-19. To compete in this dynamic environment, enterprises need to apply solutions that enhance visibility, resilience, and sustainability. Cloud platforms such as Google Cloud provide the technological foundation for tackling these challenges. With robust AI, machine learning, and real-time data capabilities, Google Cloud helps businesses optimize their operations, anticipate disruptions, and reduce environmental impact. LTIMindtree’s innovative solutions, built on Google Cloud, exemplify how advanced analytics and digital platforms can transform supply chain management, empowering companies to be agile, efficient, and prepared for future uncertainties.

For more information about LTIMindtree’s partnership with Google Cloud [click here](#).