

Spoke: Building a smarter AI-powered helpdesk ticketing solution



About Spoke

Spoke is an innovative ticketing system and knowledge base that gets smarter with every interaction. With a strong focus on design and user experience, Spoke gives employees access to the knowledge and services that help them get their job done.

Industries: Technology

Location: United States

[Product: Compute Engine](#)



Spoke leverages Google Cloud Platform and MongoDB's flexible document model, cloud indexing, scalable operations, powerful database management and performance to seamlessly embed artificial intelligence in every aspect of its workplace productivity solution.

Google Cloud Results

- Zero time spent on infrastructure management and scale
- Improves platform performance through Google migration and MongoDB Atlas optimization tools, reducing loading times and request processing time
- Enables solution scalability to fit for any stage through powerful indexing capabilities

70% better engine production monitoring and debugging

About MongoDB

MongoDB, a Google Cloud Technology Partner, is the leading modern, general purpose database platform, designed to unleash the power of software and data for developers and the applications they build. Headquartered in New York, MongoDB has more than 7,400 customers in over 100 countries. The MongoDB database platform has been downloaded over 40 million times.

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Compute Engine

(<https://cloud.google.com/compute/>)

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Cloud Storage (<https://cloud.google.com/storage/>)

Cloud Pub/Sub (<https://cloud.google.com/pubsub/>)

MongoDB has more than 7,400 customers

AI Platform (<https://cloud.google.com/ai-platform/>)

Kubernetes Engine

(<https://cloud.google.com/kubernetes-engine/>)

TensorFlow (<https://www.tensorflow.org/>)

and autoscale
functionalities
in Kubernetes
Engine

- Increases the number of trackable data points by 10x by leveraging Google Cloud Platform and Cloud Machine Learning Engine
- Reduces support ticket processing latency times to 200 to 300 milliseconds

Whether it's a laptop that isn't working properly or someone looking for the company vacation policy, employees need to find quick answers to everyday challenges or productivity can grind to a halt. The workplace solutions developer Spoke (<https://www.askspoke.com/>) focuses on solving these types of daily office issues.

Spoke and its support ticket platform automatically answers and processes questions from employees via channels such as chat, email, and SMS. Typical questions can include IT or Human Resources issues such as registering for a health care program or finding instructions on connecting to an office printer.

A key feature of the Spoke platform is how its ticket system uses artificial intelligence (AI) to understand how to answer or trigger the necessary service workflow to resolve employee requests. Spoke can be accessed by chat, too, which is a more accessible format for employees to seek assistance. Spoke wanted to make AI a central part of its platform, and the company needed a solution that could meet these demanding platform requirements.

"When we started Spoke, we wanted a backend option that would be fast, plays well with our platform's infrastructure, and would be extremely simple to manage," says Pratyus Patnaik, Chief Technology Officer at Spoke.

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*—Pratyus Patnaik, Chief
Technology Officer, Spoke*

By integrating Google Cloud Platform
(<https://cloud.google.com/>) (GCP) resources into its

platform and partnering with database solutions provider [MongoDB](https://www.mongodb.com/) (<https://www.mongodb.com/>), Spoke found the answers it needed. With these tools, Spoke helps to ensure that its platform can handle any questions or service requests from customers.

Integrating AI assistance

For Spoke, a central development goal was to offload basic tasks and employee questions from support staff. The company's support platform uses AI to automatically analyze and learn from each support ticket filed by employees, cross-referencing from resources including past tickets and a knowledge base to answer questions or redirect them to an appropriate live support team member.

Spoke draws on GCP and [MongoDB Atlas](https://www.mongodb.com/cloud/atlas) (<https://www.mongodb.com/cloud/atlas>) on GCP to power the AI features. [Cloud Machine Learning Engine](https://cloud.google.com/ml-engine/) (<https://cloud.google.com/ml-engine/>) and [TensorFlow](https://www.tensorflow.org/) (<https://www.tensorflow.org/>) play a central role in training and development, while [Compute Engine](https://cloud.google.com/compute/) (<https://cloud.google.com/compute/>) hosts and serves models to maximize deployment speed and scale on the Spoke platform. Because GCP helps power MongoDB Atlas, Spoke can take advantage of features such as easier database management that offloads routine administration and frees up time that can be redirected towards AI development. Co-locating application servers and database in the same GCP

zone improves the latency and processing time significantly.

MongoDB and its intelligent operational data platform architecture, which includes its flexible document model and powerful and dynamic indexing capabilities, also helps Spoke with tasks such as text searches, session management, and fast retrieval of callback maps to enable conversational dialog. These tools help ensure that Spoke and its AI infrastructure can learn and adapt to client needs at scale.

"Early on, we had to be pragmatic about juggling higher-level strategic work and routine database management," says Pratyus. "With Google Cloud Platform and MongoDB, we can make AI and automation a more central part of Spoke through the time we save via smarter database tools, and so we can focus exclusively on improving the overall customer experience."

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—Pratyus Patnaik, Chief
Technology Officer, Spoke

Maximum performance

As an employee-facing solution, Spoke knows that quick query times play a major part in customer and platform success. Part of the performance gains that Spoke has seen from GCP simply came from better specifications, as the physical hardware that runs GCP outclassed the company's previous solution in areas such as storage, RAM quantity, and CPU speeds.

Spoke also leans on GCP offerings including

[Kubernetes Engine](#)

(<https://cloud.google.com/kubernetes-engine/>) and the

platform's reliability to help maintain steady performance and high uptime.

MongoDB Atlas includes built-in monitoring and automation features, which provide similarly valuable resources for optimizing platform performance. Within MongoDB Atlas, Spoke expanded its internal tracking from only 3 data points to nearly 30 metrics that include CPU load and task processing times. Additionally, MongoDB Atlas includes integrated alerts, which inform Spoke administrators about potential scalability thresholds, and the Performance Advisor, which automatically suggests indexes and helps roll out optimizations that improve platform performance. MongoDB Atlas also enabled zero downtime when updating the database version.

All of these hardware and software factors have contributed to the performance benefits Spoke has seen since its migration to GCP and MongoDB Atlas. Because of MongoDB Atlas and its smart monitoring and automation tools, Spoke can eliminate old performance bottlenecks and anticipate future scale out needs, which has led to major platform improvements. With GCP and MongoDB, Spoke has shaved 300 milliseconds to seconds off of tasks such as chat responses and query times while reducing platform latency times to up to 200 milliseconds maximum.

"We were frustrated by not having a clear way to see stress points that bogged us down," says Pratyus.

"MongoDB and the monitoring tools on MongoDB Atlas improved how we managed Spoke and quickly helped us find areas that offered large performance improvements."

"Since Spoke moved to MongoDB Atlas, they've had no need to go back into that basic troubleshooting. Those are hours they can redirect towards building new features or optimizations that better support customers."

—*Abhinav Mehla, Senior
Manager, Worldwide Partners,
MongoDB*

Learning to work smarter

Spoke has seen general productivity and ease of use benefits for routine and high-level tasks by using GCP and working with MongoDB. When Spoke initially moved over to MongoDB Atlas, the developers avoided any downtime and only needed a few hours to complete the fully automated migration. GCP offers similar benefits for Spoke, as [Cloud Storage](https://cloud.google.com/storage/) (<https://cloud.google.com/storage/>) assists with database backups and [Cloud Pub/Sub](https://cloud.google.com/pubsub/) (<https://cloud.google.com/pubsub/>) provides a reliable infrastructure for system queueing and communication. With security features including audit logs, encryption at rest, and user access management, GCP also helps ensure internal data integrity.

This simplified philosophy has also carried over to database and network administration for Spoke. In the past, Spoke would need to enlist multiple engineers to manage and troubleshoot platform or database issues for days at a time. By making the most of the automation and smarter management tools offered by GCP and MongoDB Atlas, Spoke can offload these routine tasks and allow its team members to focus on larger organizational goals and building the next generation of features.

"Since Spoke moved to MongoDB Atlas, they've had no need to go back into that basic troubleshooting," says Abhinav Mehla, Senior Manager, Worldwide Partners, at MongoDB. "Those are hours they can redirect

towards building new features or optimizations that better support customers."

Powerful AI for HR and IT

Spoke required a solution that could match the unique demands of its AI engine, which has to process and learn from employee human resources and IT questions that can range from 401K enrollments to laptop troubleshooting. With GCP and MongoDB, Spoke has a foundation that is robust enough to handle the company's future goals of expansion while delivering benefits today.

"GCP and MongoDB just make everything easier," says Roopak Venkatakrisnan, Software Engineer at Spoke. "It's been nice to say that we can forget about our database and platform management. That's not something you can usually do, but with its automation and alerting capabilities, we don't have to worry about routine tasks. It just works."