Cloud-Native Architecture and Microservice APIs

The critical ingredients for supply chain commerce

Manhattan

The Evolution of Cloud Computing in Supply Chain

When organizations began the transition to cloud computing, it was largely to offload data center operations and reduce financial overhead. However, the cloud has proven to be much more beneficial than just data migration. Today, it's enabling businesses to leverage continuous innovation, autonomous scalability and seamless extensibility. At Manhattan, we see cloud computing as the foundation of a new era, where software is designed to be cloud native, modular, scalable, resilient and able to autonomously adapt to the ever-changing demands of the market.

The application engineering mindshift from monolithic systems to cloud-native architectures is significant. Legacy systems, with their tightly bound components and dependency on large relational databases, limit the ability to scale and innovate. Every time a capability is added, it is a major project that requires resources, computing power and time. In contrast, cloud-native architectures—built entirely with independent application program interface (API) microservices—have unlocked the flexibility and adaptability needed to stay competitive in today's fast-paced environment.

"I've witnessed firsthand the transformative impact of microservice APIs and cloud-native architectures on retail, wholesale and manufacturing organizations. These remarkable innovations have become pivotal in driving scalability, operational efficiency and overall business agility in an industry that is rapidly evolving."

Sanjeev Siotia
Chief Technology Officer
Manhattan Associates

Cloud-Native Benefits: Innovation and Scalability

Manhattan re-engineered our supply chain commerce applications into hundreds of smaller, manageable, microservice API components. Doing so significantly enhanced our customers' operational agility because they have access to new features and innovations every 90 days. With legacy architectures, we released software annually. Even then, many customers waited until their next major upgrade—years later—to benefit from new features.

Scalability is another critical benefit. Traditional, monolithic systems often struggle to scale efficiently, leading to performance bottlenecks during peak demand periods and requiring an over-commitment of computing resources to compensate. Modern technology architectures are designed to scale automatically, dynamically adjusting based on varying loads. This ensures optimal performance and lower costs, even when demand is highest.

Cloud-Native Benefits: Resilience and Cost Savings

Resilience is built into the very architecture of microservices. Because each API operates independently, failure of one does not affect the larger system. The cloud platform simply creates new copies of a failing service container and removes it, without impacting system performance. This model enhances the overall reliability and availability of our applications, which is crucial for maintaining uninterrupted operations.

Finally, the cloud-native approach has proven to be significantly more cost-effective, especially in the long term, than legacy, monolithic solutions running in data centers by optimizing infrastructure expenses.

There's a reason—actually many reasons—why so many critical business functions are making their way into the cloud.

Hybrid Cloud Solutions are Incomplete Solutions

While cloud-native architectures offer numerous, proven benefits, transitioning from offering legacy applications can be challenging for software vendors. Some technology providers opt for hybrid solutions, which attempt to break apart and integrate legacy solutions with modern architectures or data lakes. These companies may claim to offer technology "in the cloud," but Manhattan cautions against relying on hybrid solutions as a long-term strategy. That's because inevitably your operations are only as strong as its weakest link. While hybrid cloud concepts serve a purpose in the short term, they are certainly less effective for long-term scalability and consistency. And they are unable to deliver the total visibility and control across the supply chain that are essential for unified operations. If large pieces of software are built on legacy architecture, they will not deliver the innovation, scalability and resilience that cloud-native architectures offer—attributes that modern supply chain commerce demands.

For businesses striving to lead their industries, a full transition to cloud-native architectures is essential. It ensures that all components of the system can operate efficiently and cohesively, while adapting to deliver long-term success.
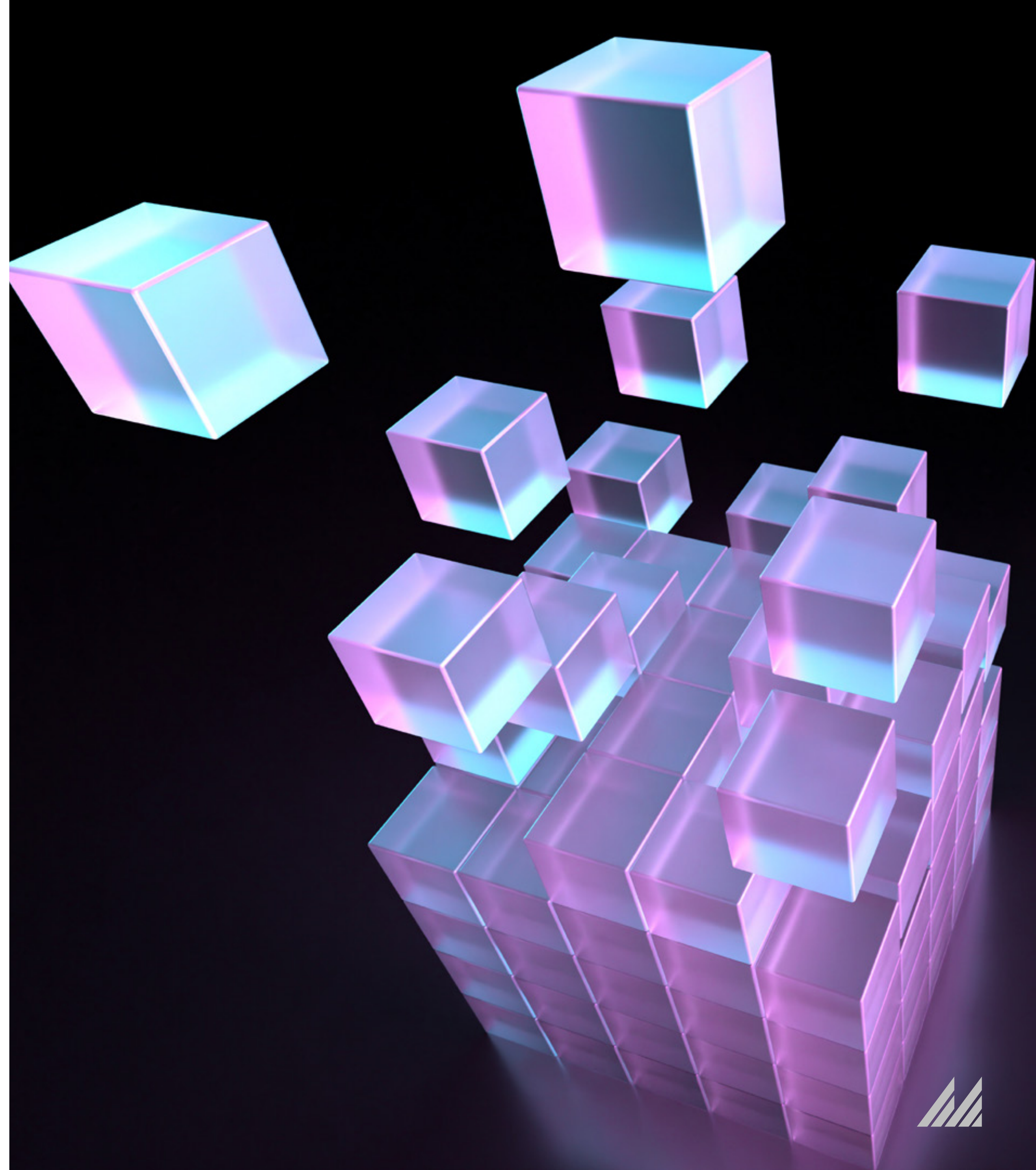
Real-World Applications and Success Stories

Since 2017, when we introduced the Manhattan Active® Platform, we've seen repeatedly how microservice APIs and a cloud-native architecture have made a significant impact. One global retailer reduced its time-to-market for new features from six months to just weeks, allowing it to respond quickly to market trends, meet customer demands and differentiate itself.

During the pandemic, many of our customers experienced tenfold increases in omnichannel traffic, nearly overnight. Thanks to the cloud-native attributes of Manhattan Active solutions, the companies were able to implement capabilities like ship-from-store in just days. They also dynamically scaled resources with zero human intervention, ensuring seamless shopping experiences for customers and maximum revenues at a time when they most needed them.

The Future of Supply Chain Commerce

Looking ahead, we're confident that a cloud-native, microservice API foundation will become the standard for every industry, including supply chain commerce. We believe businesses that actively embrace these technologies will be better positioned to succeed in the modern supply chain and commerce landscape—both today and into the future.

When you're ready to begin your transformation, give us a call. We've helped hundreds of organizations thrive and we'd love to help you too.