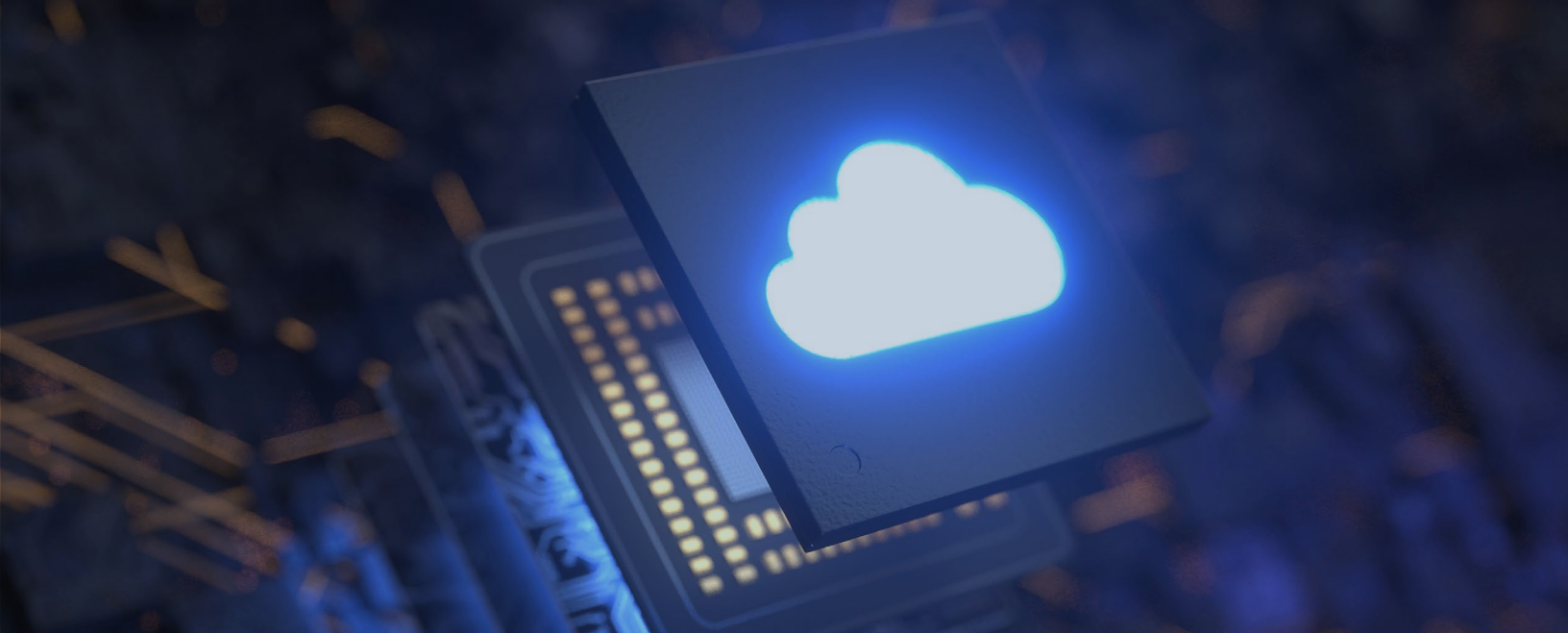


**PART TWO**

# **EMBRACING CLOUD ARCHITECTURE:**

## **SWITCHING TO SERVERLESS CLOUD ARCHITECTURE**

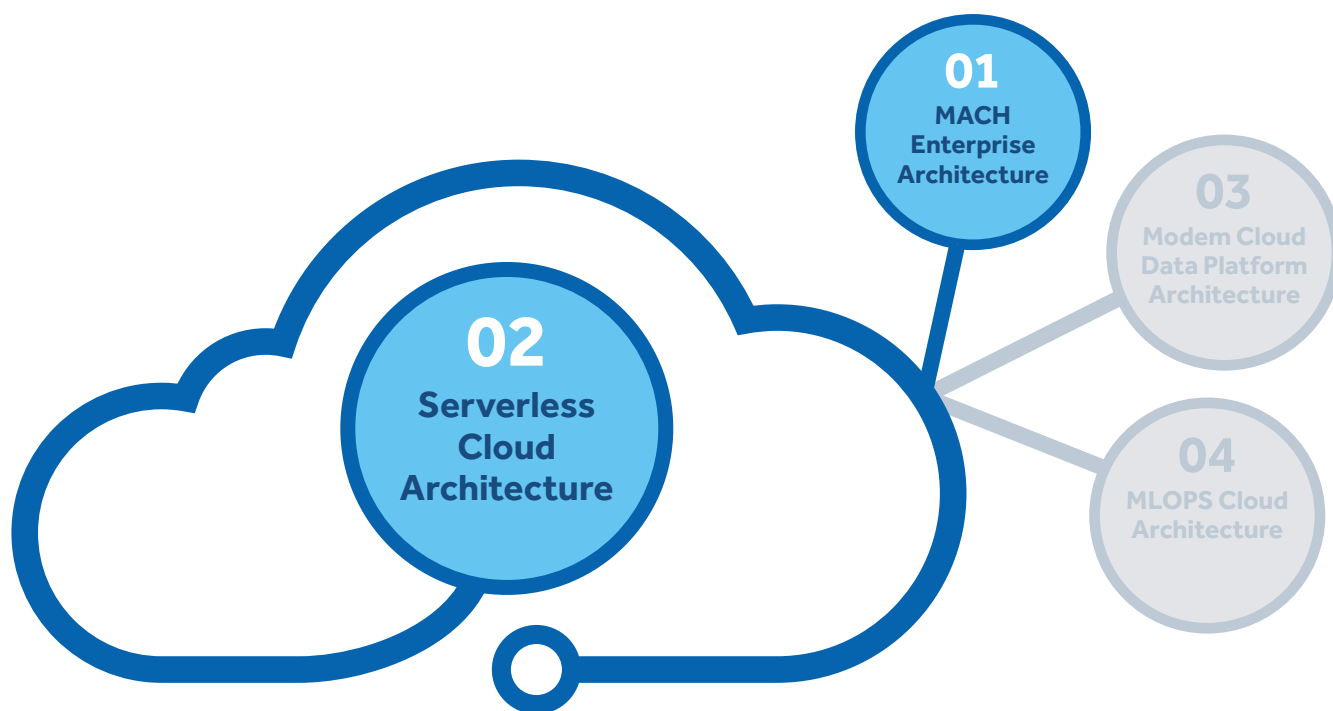


As consumer demand pushes businesses to expand their digital offerings, nominal process changes will likely not push the needle far enough for organizations to see results. Instead, staying ahead of modern customer expectations will require a re-evaluation of current structures and processes.

Restructuring on-premises architectures in the cloud is a foundational upgrade that can have a myriad of benefits. Once implemented, it can set businesses up for cost savings, improved agility, and greater opportunity to scale.

In the [first part of our modern cloud architecture series](#), we reviewed the challenges of migrating legacy systems to the cloud, the case for embracing cloud architecture, and the benefits of various cloud environments.

In this second part of our series, we dive into serverless computing, how it can benefit specific industry segments, and RCG's experience and expertise in implementing serverless cloud architecture for businesses at scale.



# MODERN CLOUD ARCHITECTURE SERIES

Welcome to a four-part series on the importance of cloud architecture. Stay tuned as we will be releasing a new topic each quarter in 2022.

**01** [MACH Enterprise Architecture](#)

**02** **Serverless Cloud Architecture**

**03** **Modern Cloud Data Platform Architecture**  
(Coming Soon)

**04** **MLOPs Cloud Architecture** (Coming Soon)

# WHAT IS SERVERLESS ARCHITECTURE?

**Serverless** computing is an evolution of cloud computing that removes the user's job of installing, provisioning, maintaining, scaling up/down, and upgrading servers. It enables a simpler, more cost-effective way to build and operate cloud-native applications, in which the cloud provider allocates machine resources on-demand, taking care of the servers on behalf of their customers.

For businesses, this means manual infrastructure management tasks are eliminated, so teams can focus on writing code that serves their customer's ongoing needs.

## Why Build a Serverless Architecture



Benefit from a fully managed service



Scale flexibility



Only pay for resources you use



Enhance developer productivity



Seamless Connections



Develop Intelligent Apps



A serverless system automatically:

- provisions the computing resources required to run application code, manage data, and integrate applications all without managing servers on-demand, or in response to a specific event
- scales those resources up or down in response to increased or decreased demand
- scales resources to zero when the application stops running, the database stops being queried or they become idle

Using serverless cloud-native product offerings, users are able to write and deploy code and manage datastore and application integrations while the cloud provider dynamically manages the allocation and provisioning of servers.

## Payment & Management Structures

A significant difference between on-premise and cloud computing is the payment structure and management of resources. Different models involve varying levels of management by cloud providers, with serverless offering full management.

### On-Premise

In an on-premise legacy structure, you manage and pay for all resources.

### IaaS & PaaS Models

In infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS) models, only some resources are managed by your vendor. Other resources must be paid for from the time you provision them until the time you explicitly decommission them.

### Serverless Model

In a serverless model, all resources are managed by your vendor, meaning you only have to pay for resources when they are being used. Payment starts when a request is made and ends when execution finishes. Customers never pay for idle capacity.

# Cloud Management for Approaches

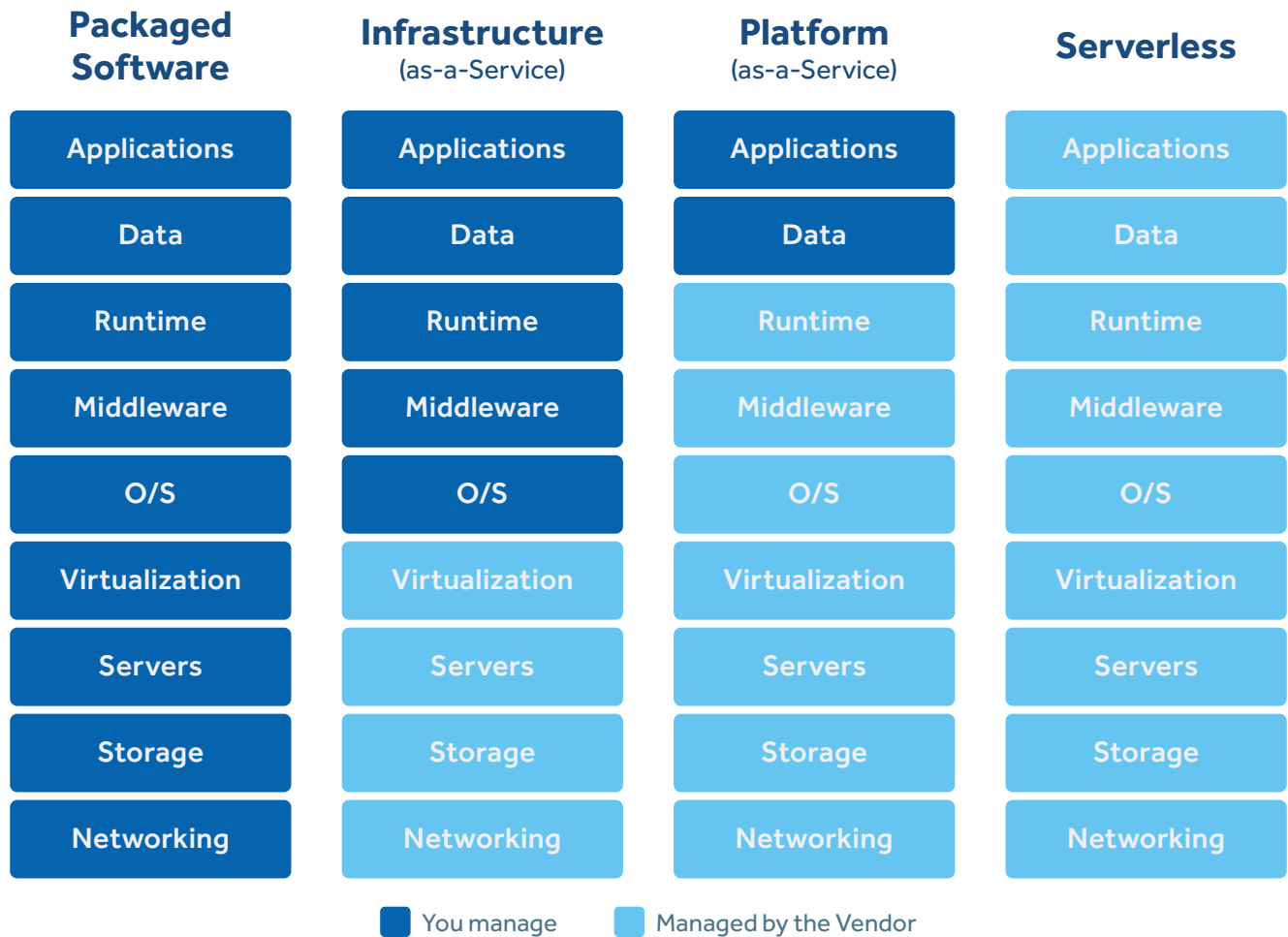


Figure 1

## Characteristics of Serverless Computing

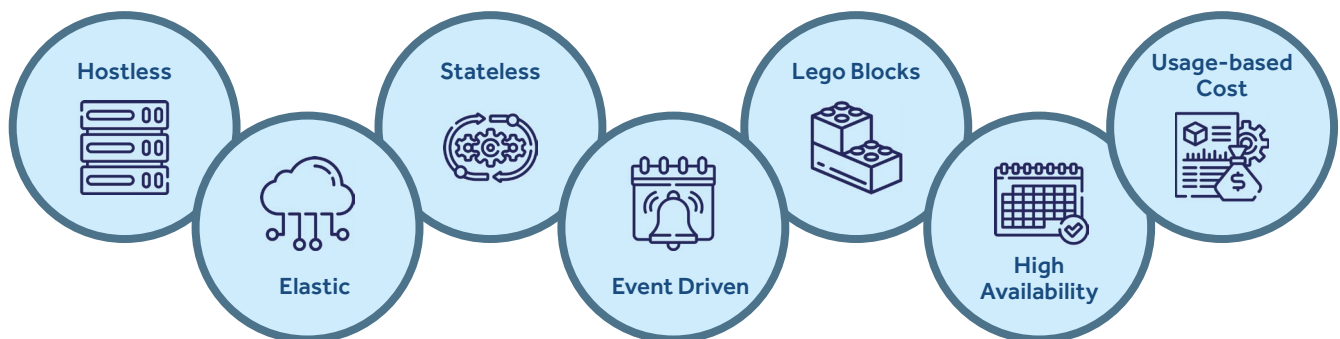


Figure 2

# WHY SERVERLESS?

The benefits of serverless architecture are far-reaching, impacting nearly every part of the business. For developers, built-in service integrations and high availability, and the third-party management of infrastructure tasks all free up time to focus on customer needs. For business leaders, lower costs and improved scalability mean faster implementation of strategic business improvements.

Some of the major benefits of serverless architecture for business owners include:



## **Lower costs**

Serverless computing is generally very cost-effective, as traditional cloud providers of backend services (server allocation) often require the user to pay for unused space or idle CPU time.



## **Simpler pricing model**

A serverless cost model is pay-per-execution, which offers a great deal of simplicity on highly unpredictable production and test workloads.



## **Global auto scalability**

Developers using serverless architecture don't have to worry about policies to scale up their code. The serverless model handles all scaling on demand.



## **Focus on the business**

Serverless cloud computing allows the project team to focus on what really matters for the business, that is, the development of the app itself, thus achieving results with less team members.



## **Improved latency**

With serverless computing, providers have points of presence near every user, and apps perform equally well for everyone.



### **Simplified backend code**

With function-as-a-service (FaaS), developers can create simple functions that independently perform a single purpose, like making an API call.



### **Stability**

Developers no longer have to worry about facilitating infrastructure, orchestrating and allocating code data, handling downtime, network and performance issues, and managing failures as they used to do on legacy on-premise software platforms.



### **Improved DevOps**

Serverless architecture simplifies deployment and, in a larger sense, simplifies DevOps cycles and operations because developers don't have to describe the infrastructure needed to integrate, test, deliver and deploy code builds into production.



### **Eliminate DBA Tasks**

A serverless database model is built on the separation of storage and compute which scales independently, automatically starts up, shuts down, and scales capacity up or down based on the workload. It enables you to run your database in the cloud without managing any database capacity, instance, cluster, or node configurations.



### **Agility**

Serverless architecture can significantly cut time to market. Instead of needing a complicated deployment process to roll out bug fixes and new features, developers can add and modify code on a piecemeal basis.



# HOW CAN SERVERLESS ARCHITECTURE BENEFIT YOUR INDUSTRY?

Serverless customers connect hundreds of thousands of concurrent users across platforms, scale seamlessly to handle exponential traffic during flash sales, ensure the reliability of election processes, develop secure messaging across finance platforms, deliver impactful digital education, power IoT solutions at the edge, and more.

RCG's cloud engineering team is very proud of our capabilities to build customized and innovative end-to-end serverless cloud solutions for our customers.

At RCG, we are currently executing and have delivered many cloud projects for clients across various industry verticals using modern Serverless cloud architecture on AWS, Azure and GCP and helping customers to:

- achieve operational and management efficiency
- enhance customer satisfaction and get simplified operations
- make business more inclusive, globally scalable, and profitable
- get secure operations without worrying about data storage regulations
- cut down on expenses and create products at cheaper costs
- gain maximum business value and increase your profits

Every industry can benefit from enabling serverless architecture.

# Consumer

Serverless computing outsources the management of tasks associated with programming, freeing retailers from the responsibility of standard issues like scalability and security. This allows them to focus on projects that enhance brand experience and improve time to market.

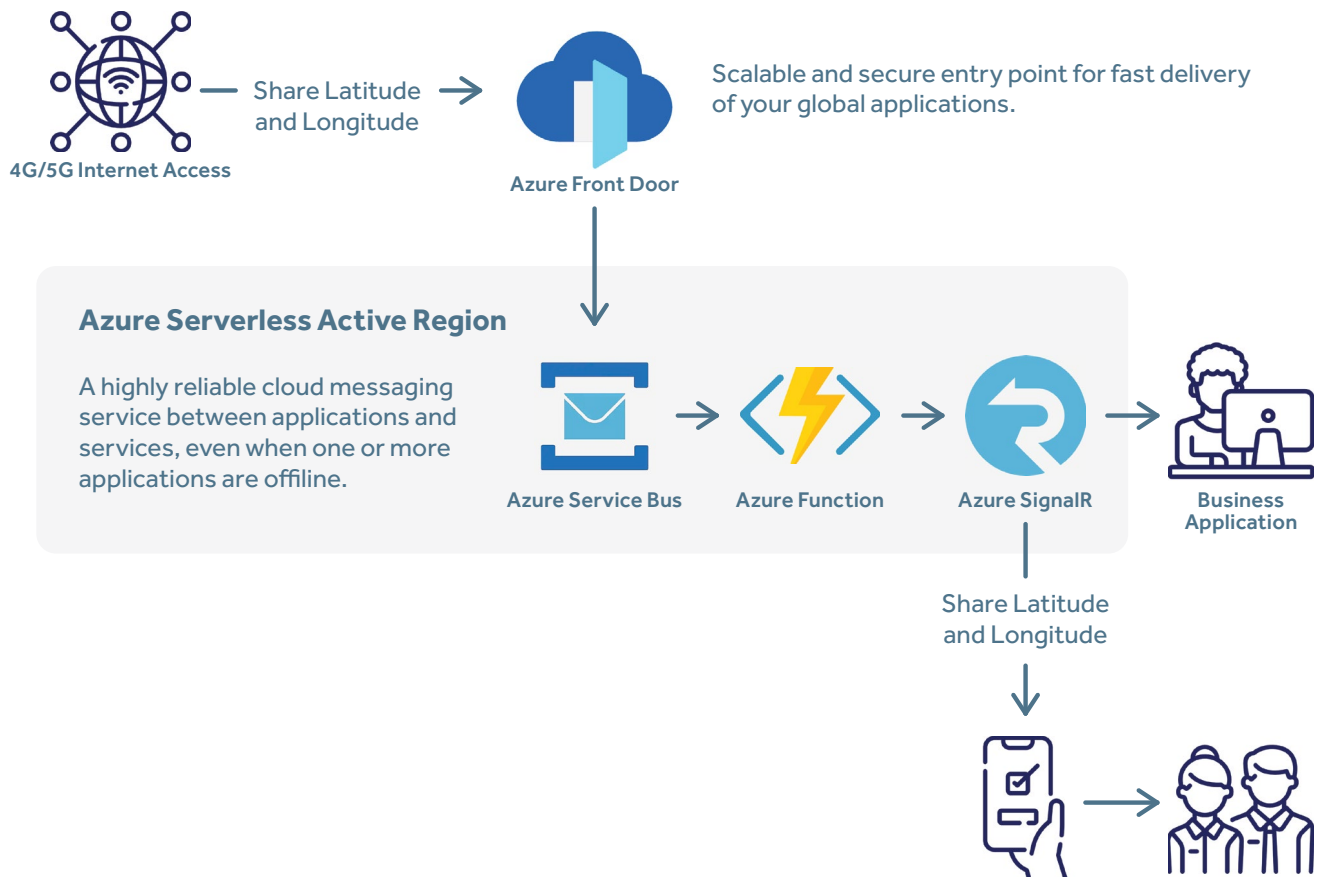


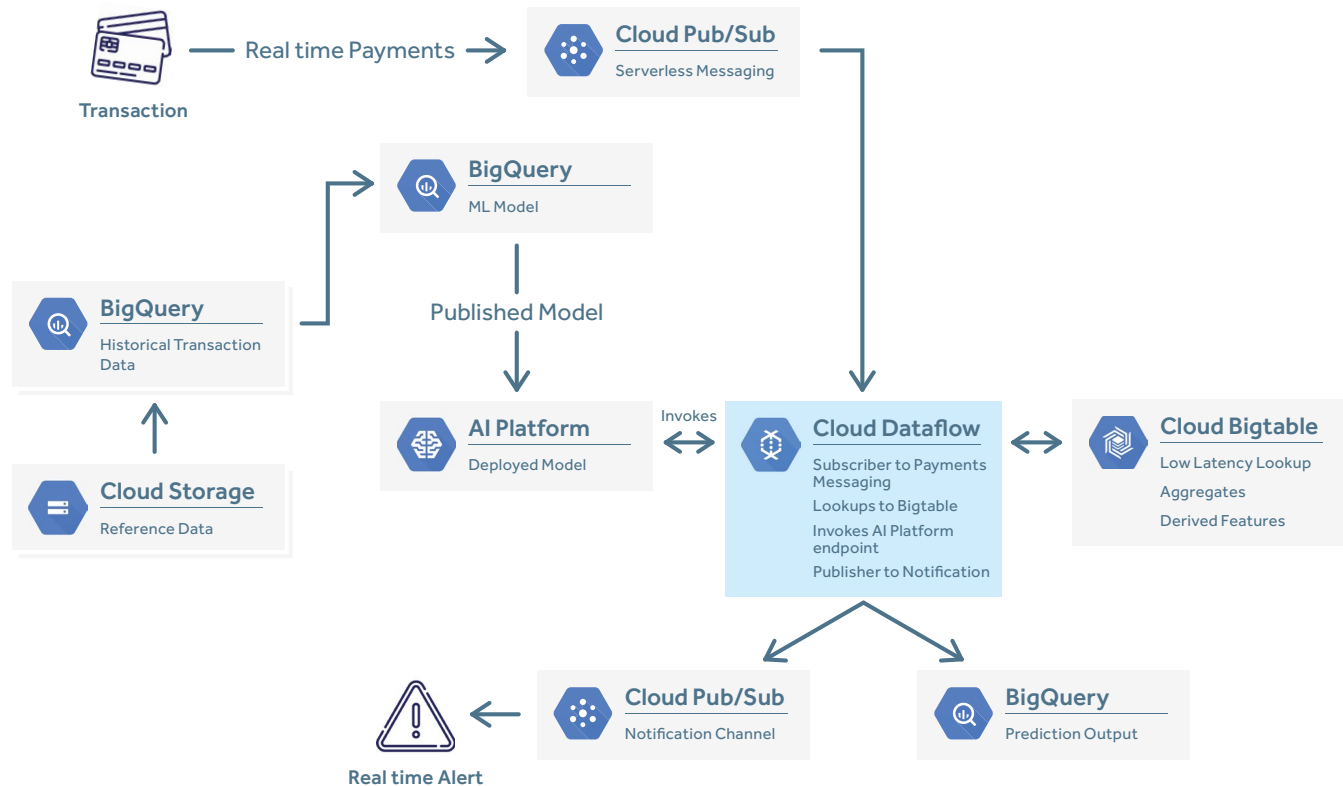
Figure 3

In Figure 3, the architecture shows how to set up a real-time messaging service to share the live location of the delivery service on Azure. This scenario describes how to architect a serverless solution that processes changes to underlying data within a web view without the need for a page refresh using real-time services. This example can also be useful for users trying to build a real-time location-sharing, asset-tracking, and price-update platforms for their web or mobile applications.

RCG has broad experience [serving consumer needs](#). Uniquely positioned in IT consulting, we're equipped to assist clients across the retail, travel, and hospitality industries.

# Banking & Finance

The cost-effective and event-driven nature of serverless computing makes it a beneficial structure for the banking and finance industry. Since serverless applications maximize on-demand-only costs, when services are not required, the chargeback is zero. Financial services' highly variable workloads (for example, recurring yet temporary risk and repricing calculations) can benefit from serverless.



**Figure 4:** Google Cloud serverless reference Architecture for Financial industry to track real-time financial transaction fraud.

A smart analytics design pattern enables you to build a scalable real-time fraud detection solution using GCP serverless, no-ops products on Google Cloud. In addition to setting up fraud notifications, you can build dashboards to monitor the performance of the fraud detection pipeline. Because the Google Cloud products used in this solution are serverless and fully managed, you won't need to spend time setting up and maintaining infrastructure, enabling you to focus on getting the solution up and running in only a few hours.

Banking and finance can be a complicated industry to navigate due to strict regulatory compliance standards, as well as high performance, security, availability and reliability requirements. RCG has more than four decades of success serving major banking & financial clients using modern architecture and latest cloud technologies.

## Insurance

Serverless architecture offers engineering experience, a customer-centric approach, and a strong focus on security—a top priority in the highly regulated insurance industry.

By using serverless architecture, the insurance provider can become more agile, releasing higher-quality solutions for customers on a faster timeline while reducing costs and removing the responsibility of infrastructure maintenance from staff.

Despite existing property and casualty insurance companies' best efforts, the process of buying home, auto, or specialty insurance, let alone bundling them together, is rarely easy or clear. Rates change, coverage is confusing and understanding why is anything but intuitive.

Serverless computing enables engineers at insurance companies to build event-driven systems faster because it speeds up the feedback cycle so that the systems iterate more efficiently, reminding the engineers and architects that they shouldn't be writing code when they don't need to be writing. The engineering team can shift their focus from the nuts and bolts of building to using the building blocks of serverless architecture to quickly add business value.



# AWS Serverless Data Analytics Pipeline

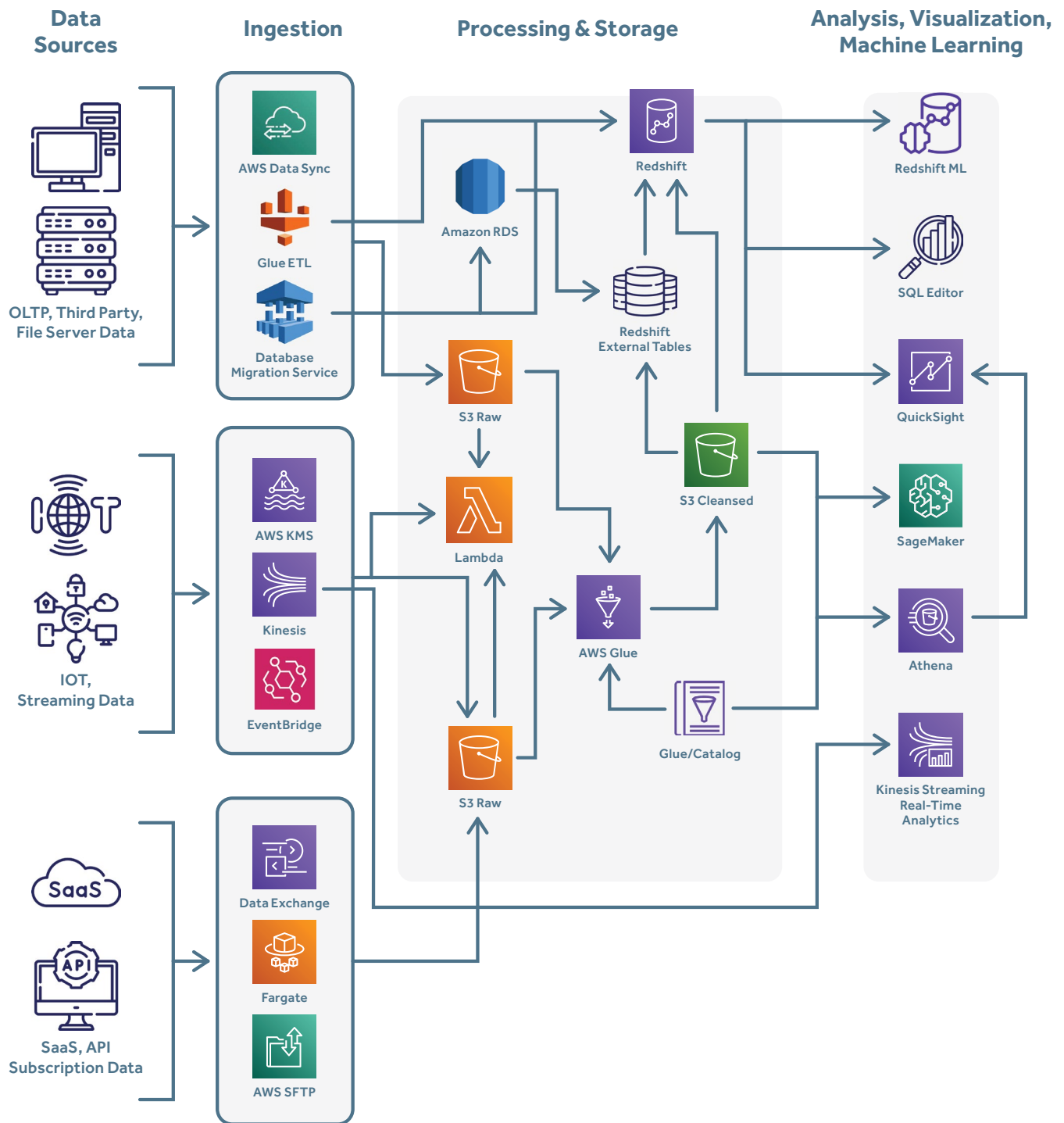


Figure 5: Reference architecture adapted from [Amazon Web Service](#).

As shown in Figure 5 of AWS Reference Architecture, by using AWS serverless technologies as building blocks, an insurance business can rapidly and interactively build data lakes/warehouse and data processing pipelines to ingest, store, transform and analyze petabytes of structured and unstructured data from batch and streaming sources—all without needing to manage any storage or compute infrastructure.

These advanced analytics capabilities can help the insurance industry:

- mitigate risks
- detect insurance frauds
- make predictive machine learning models for underwriters & agents
- offer better rates to low-risk profiles
- perform quotes
- claim analytics
- simplify and speed up the policy renewal process
- enable agents and marketing teams to cross-sell & up-sell
- target specific groups of people in communities to grow the business

For the insurance industry, understanding customer context and relationships is key. At RCG, we have a rich history helping Insurers and InsurTech organizations in the global 1000 marketplace to achieve a competitive digital transformation.

# READY FOR SERVERLESS?

By removing the user's job of manually managing infrastructure tasks, serverless enables a simpler, more cost-effective way to build and operate cloud-native applications. With features such as improved DevOps, simplified backend code, and global auto scalability, developers are able to respond to changing customer needs quickly and efficiently. For organizations across every industry, serverless architectures create the time and budget needed to focus on business outcomes.

## RCG CLOUD ENGINEERING

At RCG, we use a business outcome focus to help customers determine their best approach to working on the cloud. From there, we assist with:



Migration



Integration



Development



Management



Evolution

Leveraging our proprietary tools, technology partners, and breadth of expertise and experience, we help customers reach their goals quickly, helping them to realize the future of the cloud today.

[Learn more about our cloud engineering services.](#)

**UP NEXT:**

# **MODERN CLOUD DATA PLATFORM ARCHITECTURE**

The one-size-fits-all approach of using a relational database for everything no longer works. In part three of our cloud architecture series, we'll discuss cloud-native, purpose-built data platforms on three major cloud providers.

These house scalable platforms that provide methods to enrich data for self-service reporting and automated analytic services. The modern cloud data platforms allow customers to build data-driven, highly scalable, distributed applications.

RCG has experience building a trusted data foundation across all three CSP's providing best practices on data ingestion, cataloging of data assets, data quality drive approach (Delta Lake), curated data assets (Lakehouse), and a data marketplace to drive self-service reporting and analytics. Additionally, with end-to-end analytic models, users are able to choose the best databases to solve specific problems, breaking away from the restrictive nature of commercial databases.



# About the Authors

## Kurt Wysock

Kurt Wysock leads RCG's Cloud Engineering Practice providing thought leadership and measurable business outcomes for RCG clients as they continue their digital transformation journeys and embrace modern cloud enterprise architectures. Kurt is an accomplished enterprise architect with over 35 years of experience delivering solutions in broad range of industry verticals including retail, marketing, manufacturing, HSSE, logistics, and finance.



As part of the global cloud practice, Kurt evaluates technologies, vendors, and market trends and works with RCG customers to help deliver application modernization and cloud migration strategies and initiatives.

## Maulik Shah

Maulik Shah works as a Senior Director – Delivery at RCG, leading onshore-offshore project delivery teams and helping RCG's multiple clients to solve their complex data problems and to successfully deliver their critical data analytics projects by building cost-effective, customized & reliable IT solutions for the specific business needs to simplify business analytics and operations of data-driven organizations and to create significant long-term business values.



Maulik has more than 21 years of strong IT and hands-on technical experience in building end-to-end data operations, big data processing, enterprise Datawarehouse/lakes and entire BI Analytics landscape for large enterprises using various technologies on cloud, on-premise and multi-cloud hybrid environment.

## About RCG

RCG is a global provider of digital solutions across mobile, web, cloud, and legacy platforms, with a focus on actionable data and analytics. We have a rich history of enabling clients in the Global 1000 marketplace to realize their digital ambitions—serving clients across a range of markets, with particular emphasis on financial services, insurance, healthcare, and consumer industries.

As your end-to-end digital innovation partner, we empower you to tackle the challenges you face in customer engagement, workforce enablement, and operations optimization. From customized strategy to implementation and sustainment, our seasoned experts collaborate with your team on solutions that deliver measurable impacts quickly and reliably.

In today's digitally driven world, transformation is essential if your company wants to disrupt the status quo and be respected as a leader in your field. RCG is the partner you can trust to help you realize your objectives and turn ideas into action. RCG is based in Iselin, New Jersey, with offices throughout the United States and offshore delivery centers in the Philippines and India.



Looking for actionable insights that lead to positive business outcomes? We'd love to hear from you.

**E:** [solutions@rcggs.com](mailto:solutions@rcggs.com)

**W:** [rcgglobalservices.com](http://rcgglobalservices.com)