RCG Global Services
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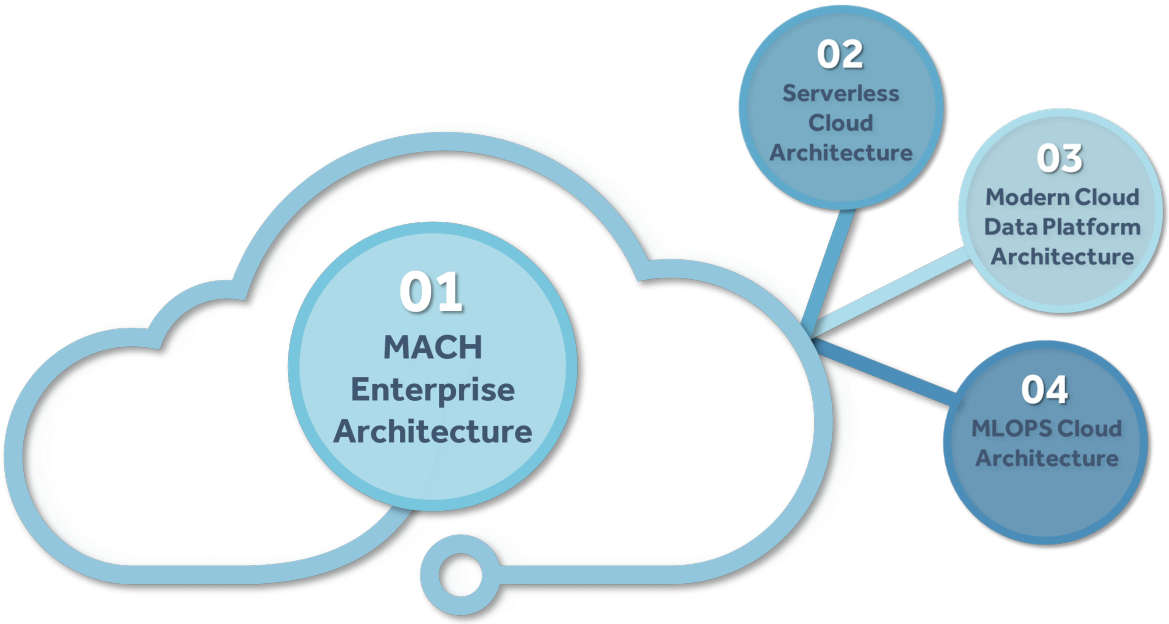
PART ONE

EMBRACING CLOUD ARCHITECTURE - *MOVING TO MACH ENTERPRISE ARCHITECTURE*

Businesses beginning a move to the cloud are likely facing expanding digital needs and seeking a way to accelerate the continuous improvement of their applications. In today's climate, the demand for agile delivery of new or updated applications is paramount to an organization's success.

Unfortunately, successful cloud migrations require more than just a "lift and shift" approach. Simply moving existing legacy architecture onto the cloud "as is" can lead to the opposite of the desired result—a system that is inefficient, clunky, and expensive to run.

So how do you complete a migration to the cloud that will support your expanding digital needs? It starts with understanding cloud architecture.



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

04 MLOPs Cloud Architecture

CHALLENGES WITH MIGRATING LEGACY TO THE CLOUD

With traditional "on premises" or "legacy" solutions, the frontend and backend processes are combined into a single system. Because they are tethered to each other, a single issue or change in code could end up breaking the entire system. In a "lift and shift" approach, businesses choose to simply replatform this coupled architecture in the cloud, rather than introduce new architecture meant for a cloud environment.

Attempting to use legacy architecture in the cloud can pose a variety of challenges:

- Difficult to maintain and keep up-to-date
- Previous issues on premises are carried over
- Getting new features to market is overly time-consuming
- A single change in code can impact the entire system
- Limited to third party architectures and configurations for purchased applications
- Unanticipated overuse of compute resources result in higher invoices than budgeted
- Not easy to plug in best of breed components into the solution architecture

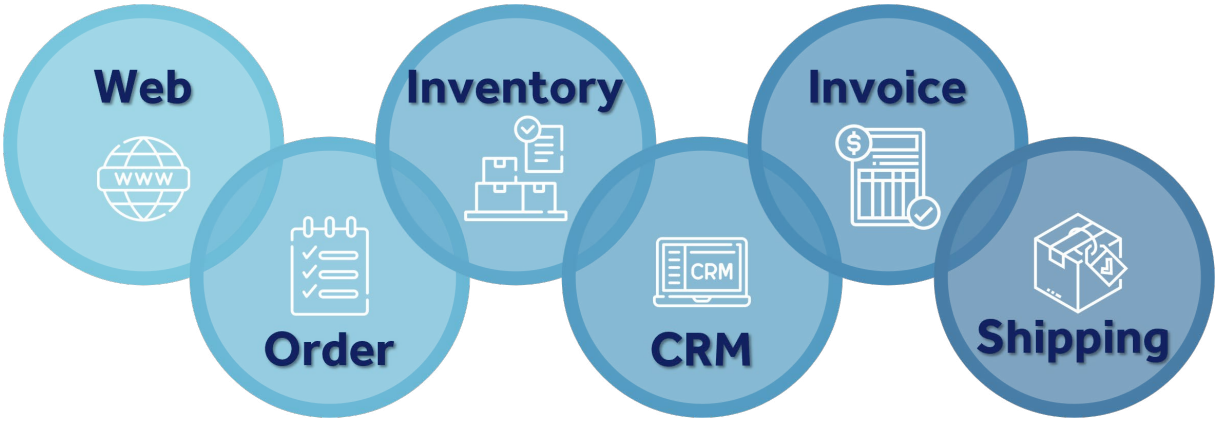
SAYING GOODBYE TO YOUR CORE PLATFORM

While having a single core platform worked in the past, it's quickly becoming an outdated approach that can no longer support today's digital demands.

New, decoupled cloud architecture uses microservices to divide applications into a set of smaller, specialized components, giving developers the ability to work on different pieces in isolation without affecting the system as a whole.

Coupled vs. Decoupled Systems Architecture

Tightly Coupled Systems Architecture: A coupled, or "monolithic" architecture is a concept of system design and computing where every application's components are linked together in such a manner that each component is dependent upon each other. Tightly coupled architecture promotes interdependent applications and code.



Decoupled Systems Architecture for Cloud: In a decoupled or "Loosely Coupled" design, components are independent, so changes in one component will not affect the operation of others. In the cloud, components are broken down into "microservices" which consists of a suite of small services, each with its unique codebase. Microservices use lightweight mechanisms (such as an application program interface or API) to communicate between the various services.

DIGITAL IS DRIVING THE CASE FOR CHANGE

According to a McKinsey Global Survey of executives,"companies have accelerated the digitization of their customer and supply-chain interactions and of their internal operations by three to four years. And the share of digital or digitally enabled products in their portfolios has accelerated by a shocking seven years."

As customers and employees continue to demand enhanced virtual experiences, organizations are racing to offer more efficient, custom and personalized experiences to match their needs. **To keep up with these demands, businesses need a flexible digital foundation that can support fast and frequent changes.**

Agile & Flexible Solutions

In order to stay competitive, businesses need to increase their speed to market. This requires agile solutions that allow for continuous integration and fast deployment of new products and updates.

In an e-commerce environment, customers are looking for brands who can adapt to their changing needs fast. Tasks such as updating catalogs, improving payment options, or introducing a new mobile application, should be able to happen both quickly and frequently, without disrupting the entire system.

Best-of Breed-Technologies

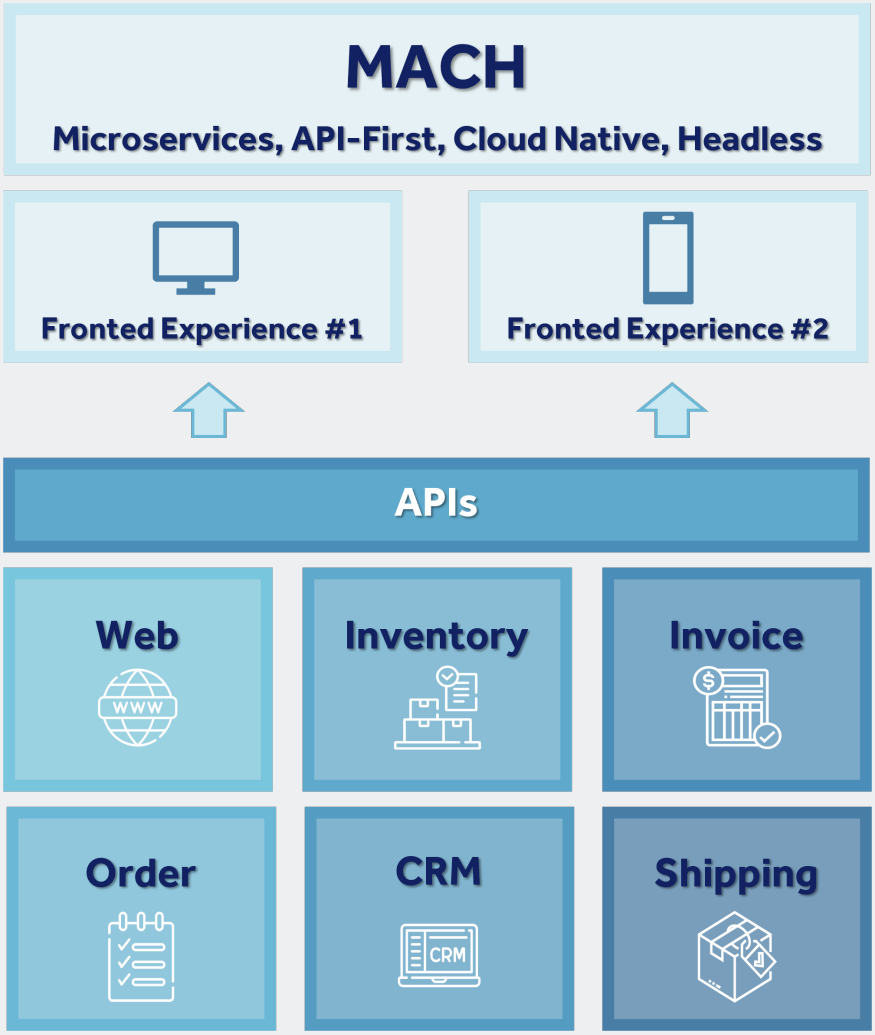
Organizations who take a best-of-breed approach to building their tech stack are able to harness the power of today's leading applications. In many cases, the ability to buy top products in specific application areas can save teams time and money building applications from scratch when it is not needed. The focus of best-of-breed applications is to do a single thing well, making them more robust, easier to implement, and tailored to the user's experience.

Businesses still running legacy architecture are often left settling for ineffective components, rather than adopting best-of-breed, simply because they are coupled to the entire system.

WHAT IS MACH ARCHITECTURE?

MACH architecture can be seen as a "plug and play" approach to digital management. Contentstack defines MACH architecture as "a composable enterprise in which every component is pluggable, scalable, replaceable, and can be continuously improved through agile development to meet evolving business requirements."

M	**Microservices** Individual applications that are loosely coupled and independently deployable, allowing you to make a change in one module without impacting another.
A	**API First** All functionality is exposed through an API, allowing for applications and services to interact with one another.
C	**Cloud Native SaaS (Software-as-a-Service)** Allows you to leverage the full scope of cloud services and capabilities, making it easy to scale and integrate with SaaS products.
H	**Headless** The storing, managing and delivering of content without a front-end delivery. **It enables a multichannel solution for publishing content across a variety of platforms and devices.**



BENEFITS OF MACH ARCHITECTURE

The biggest benefit of MACH architecture for ecommerce businesses is the agility it provides in responding quickly to customer needs, creating an improved (and competitive) customer experience.

Enables Agile CI/CD Delivery

Continuous integration (CI) and continuous delivery (CD) are a set of operating principles used by development teams to allow for frequent and reliable code changes. Decoupled architecture enables CI/CD, as it allows changes to be made to a single piece of the system without impacting the other services. The automated steps associated with the CI/CD practice free developers' time to focus on other key business priorities, such as security, code quality, or higher-level business goals.

Plug-and-Play Components

Switching to MACH architecture enables a range of cloud services that otherwise wouldn't be accessible. These services can help improve reliability and performance, help with scalability, and reduce cost.

Modern Architecture for Cloud

MACH's headless architecture allows developers to swap components in and out without carry-on effects. For an ecommerce business, this could mean quick and frequent price changes, image updates, etc.

Improved Time to Market

The plug-and-play nature of MACH architecture allows for the easy integration of best-of-breed applications. This means rather than being pigeon holed into a single vendor, organizations can pick and choose the specific capabilities needed and connect them as a group of microservices. In addition, the decoupled components allow organizations to make changes and adjustments quickly and securely. This allows businesses to shift focus to innovation, send products to market quickly, and worry less about tweaks and adjustments they'll need to make along the way.

Frictionless Customer Experiences

For ecommerce businesses, customer experience is a key area of focus. With the unprecedented acceleration of technology over the past few years, customers have come to expect top brands to deliver seamless and personalized omnichannel experiences. This means a consistent user experience across every single channel—allowing users to switch easily from desktop to mobile, for example, picking right up where they left off. This is all made possible in a headless API architecture approach, which allows for easy updates and integrations.

CONSIDERATIONS WHEN MIGRATING TO MACH

As you begin to develop a MACH migration roadmap for your company, there are a few considerations.

01

Digital Maturity

First, consider your company's digital maturity. If your business is relatively new to digital transformation, take it slow and lay out a roadmap that won't have you making too much change at once. Consider the learning curve your teams will face and ensure they are set up with the proper training and support required to be successful.

02

Project vs. Product Mindset

In a MACH architecture, your employees will need to move from a "project" to "product" mindset. While a project mindset focuses on activities completed in a certain period of time, a product mindset shifts the focus to long-term, business-wide goals.

Project Mindset - A Project Mindset is focused on the output. It requires estimating, timelines, schedules, and ultimately, delivery. Success is based on the ability to hit predetermined milestones.

Product Mindset - A Product Mindset is focused on the outcome. With the focus primarily on the overarching goal, specific timelines and tasks are not determined from the onset. Success is based on the ability to learn, adapt, and find solutions in close to real time.

Businesses who hold on to a project-focused mindset will have difficulty adapting quickly to customers' ever-changing needs, while the flexibility of a product-focused business will result in faster time-to-market, lower costs, and strategic innovation.

03

Microservices & Agile Development

Agile Development, or "DevOps" involves many small teams working separately on individual projects. Because teams are able to hyperfocus on specific projects, they often result in faster, more successful outcomes. In a MACH architecture, microservices can work independently from one another, with no worry of a single change impacting the entire system. This means once your company has moved over to MACH, you can begin to embrace the benefits of Agile Development, as individual teams will now be able to focus on specific services.

04

Finding Partners & Vendors Who Support MACH

With an accelerated move to online shopping, retailers are having to rely heavily on their e-commerce platforms. For many, curbside pickup, delivery, and mobile shopping applications are becoming the new normal. In the same way cloud architecture has adopted a decoupled, or headless model, ecommerce architecture has followed suit. According to MuleSoft, headless commerce "enables a flexible deployment with decoupled layers of commerce services, scalability to pivot quickly, and the speed to make accelerated updates." Through the development and use of APIs, brands are able to seamlessly integrate with other content management systems. One example, Salesforce Commerce Cloud, helps brands enable B2B and B2C experiences across multiple channels. If your organization is looking to expand your ecommerce, finding partners and vendors who support MACH architecture will be highly beneficial.

ENTERPRISE ARCHITECTURE & RCG

For ecommerce companies looking to re-architect their legacy architecture in the cloud, it can be smart to partner with an expert that can help lead and guide the transition. At RCG, we help organizations build scalable and versatile enterprise architectures that enable:

- increase revenue
- expansion into new markets
- improved customer experience
- improved data quality

To start, RCG lays out a phased approach in the form of a multi-month roadmap. The roadmap includes milestones and checkpoints for key areas, such as Cloud Platform and Trusted Data Foundation, Mobile Application Development, and Data and Analytics. At a high level, the approach involves building a scalable and future-proof modern data architecture, readying internal teams to be able to support the new architecture and process, and prioritizing units of work to meet immediate and strategic needs.

About the Author

Kurt Wysock

Kurt 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.

In addition, Kurt also evaluates technologies, vendors, and market trends and works with RCG customers to help deliver on their application modernization and cloud migration strategies and initiatives.

About RCG Global Services

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.