



## THE CLOUD SERIES

RICH CEFOLA, DIRECTOR OF TECHNOLOGY SERVICES

MOVING TO THE CLOUD.

# MOVING THE FUTURE FORWARD.

An overview on how to analyze and define the road map to achieve your organization's goals in a cloud environment.



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# DID SOMEONE ORDER A PEPPERONI PIZZA?

## INTRODUCTION

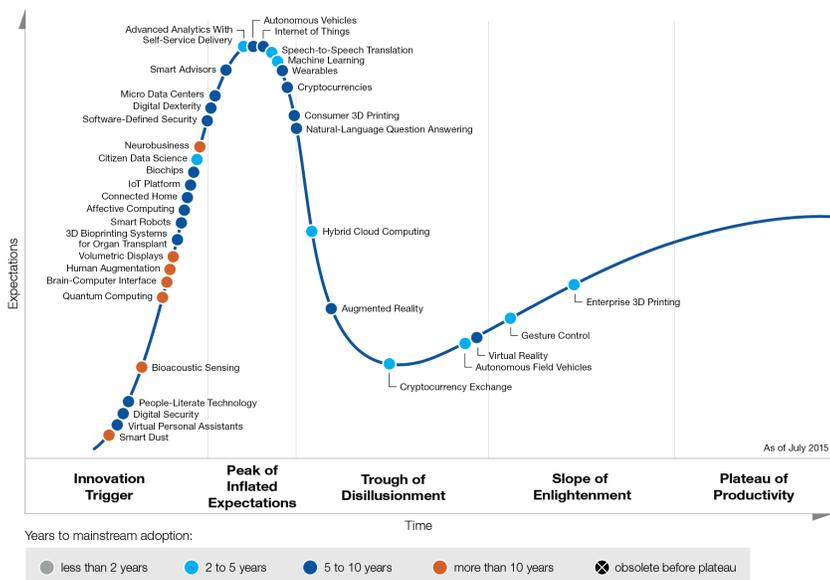
Several technologies are rapidly evolving, such as blockchains, machine learning, internet of things and SQL-less data, but nothing compares to the transformation and evolution of cloud architectures in the last few years. Cloud computing has impacted facets of both the business and professional life of people. Social media, online storage, applications that support banking, case management, ordering pizza all take place in the cloud. The significance of a cloud and digital strategy has reached the extent where agencies can no longer play the waiting game

as their legacy infrastructures become obsolete or require expensive service contracts to continue vendor support.

Organizations are no longer asking if they should move to the cloud. They are asking when they should move—and how to get there. A 2016 Morgan Stanley CIO Survey shows that by 2018, 30% of all business applications will be migrated to the public cloud. More telling, a colossal 91% of companies say they will be in public cloud by 2019. This paper provides an overview and the considerations and methodology on analyzing and defining the road map to achieve your organization's ultimate goals in a cloud environment. The value is real but the approach should be careful and deliberate to make the organization successful.

01 Gartner's Hype Cycle for Emerging Technologies, 2015

## Emerging Technology Hype Cycle



## CLOUD - WHAT'S ALL THE HYPE?

All new technologies go through the phase of hyped/inflated expectations, which can sometimes lead to the downfall of the technology. The Emerging Technology Hype Cycle presents a visual representation of the innovation, acceptance and maturity of new technologies as they develop in the IT industry. Some innovations as time passes may have inflated expectations until they stabilize, gain acceptance, inherit process and industry support. However, in the case of the cloud it has successfully passed the phase of "inflated expectations" and is in the stage where people have understood its real value and hence, are more optimistic in their planning. According to Forrester Research, the public cloud market is estimated to reach \$191 billion by 2020, a significant jump from \$58 billion in 2013. This is a clear indication of the pace at which the cloud industry is growing. The 2015 Hype Cycle published by Gartner illustrates this shift in expectations.

# MODERN ARCHITECTURE FOR TRADITIONAL DATA CENTER

## ATTRIBUTES OF A MODERN ARCHITECTURE

Understanding cloud based architectures in contrast to traditional data center models is an important factor in considering a move to the cloud. Whether it be Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) or Infrastructure-as-a-Service (IaaS), some of the key infrastructure attributes that define a modern state of the art architecture that should be translated to the cloud include:

**Security and Privacy** - It should offer a comprehensive mechanism to control security at various levels. The architecture should support multiple encryption techniques, and multi-factor authentication is a critical factor. The ability for vendors to adapt to necessary security and compliance certifications is very important.

**Availability and Reliability** - It should offer High Availability through multiple availability zones and it is advisable to have support in place for multiple regions so that when business expands, it simplifies scaling the architecture. The environment should also consider Disaster Recovery (DR) features for both data and compute resources.

**Scalability and Elasticity** - The architecture should support both vertical and horizontal scaling scenarios in an efficient manner. Vertical scaling deals with increasing the compute capacity in a single resource while horizontal scaling provides for adding additional capacity through additional resources. The environment should support resources on-demand and apply charges only for the hours used.

**Control and Flexibility** - Fine grained control over compute power, storage and network should be available and the flexibility to adjust and adapt at any layer should be considered.

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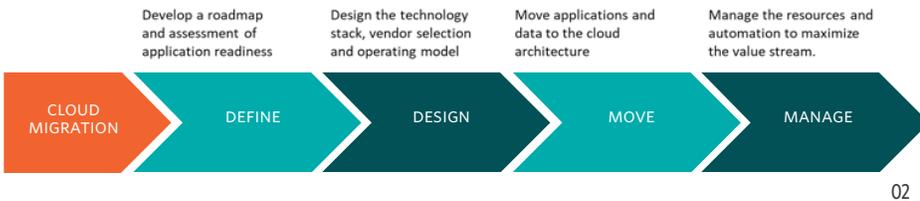
**Management and Automation** - The solution should offer a simple and intuitive way for managing the resources. It is also advisable to have simple and straight forward interfaces so that even power users can operate on the console. It should allow automation of steps/processes so that manual effort can be saved. While applications have been going through tremendous modernization it's equally important to have a modernized infrastructure to run those applications.

## CLOUD MIGRATION METHODOLOGY

Government organizations are redefining their businesses to deliver improved citizen services. According to the U.S. Federal Cloud Computing Strategy, the U.S. government instituted the CloudFirst policy with a significant portion of its annual \$80 billion in Information and Communication Technology (ICT) spending devoted to cloud solutions in the future and a strategy to accelerate the pace of cloud adoption. Some of the areas of focus include IT Consolidation, Shared Services and Citizen Services.

The benefits of cloud are simple—agility, speed to innovation and lower IT costs among them. But a cloud migration can be complex and disruptive. Agencies are facing other mounting costs and entanglements with legacy applications and infrastructure while budgets continue to shrink and pressure builds to improve IT efficiency. Cloud migration methodology should take a holistic view of all the aspects involved in meeting the business and technical goals of an organization. The four major phases in a cloud migration include Define, Design, Move and Manage. The following sections discuss these phases in greater detail.

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02 Cloud migration methodology

**DEFINE:** Define the roadmap

This phase is the most critical phase as major decisions are made in this phase, which sets the direction for the rest of the phases. The initial process is evaluating the business needs and the potential benefits that can be expected in moving to cloud. Based on the identified needs and benefits, Return on Investment (ROI) is calculated which can establish the cost benefit analysis in an objective way. Once the benefits and ROI are validated, a cloud migration strategy is defined. This strategy will encompass the challenges, technical risks and solution approach. Based on the cloud strategy a migration roadmap will be developed, which will provide details on the phases involved, migration approach, cloud candidate list, etc.

**DESIGN:** A new operating model and culture

The definition phase is followed by the Design phases where the cloud strategy and migration roadmap are put in to action. As a first step, parameters for identifying the cloud vendor are identified based on the business needs and cloud strategy. Potential cloud vendors are then rated against these parameters resulting in the ideal choice of cloud vendor. Assessing the Cloud readiness is the next key aspect in migration as this will help in unearthing the risks and challenges in execution. The technology stack is also reviewed to validate its fit with the cloud based model. As part of the cloud readiness the chosen application's architecture is analyzed for cloud suitability. This exercise could result in the list of changes that might have to be done in the existing applications to fit them for a cloud based model.

**MOVE:** Your applications and data

Based on the migration plan this phase can happen in an iterative manner. As a first step, cloud setup is done based on the finalized cloud

architecture. The network, security, storage and other base architecture level setup will be executed first. Once the basic cloud architecture is setup, resources will be moved based on the identified priority and applying the dependency constraint. Resources can include storage, tools, contents and utilities. Followed by resources, applications will be setup in a similar way by applying priority and dependency constraints. A thorough testing phase is executed to ensure the following cloud architecture aspects like security, scalability, DR, etc. are complete, stable and meeting performance objectives.

**MANAGE:** Maximize the value of cloud

This phase focuses on setting up the manageability aspects of the cloud environment. As a first step, automate as many steps as possible so that there is very minimal manual intervention involved. Automation will be done in the areas of auto scaling, configuration, back-up, DR and deployment. Cloud monitoring is another key area that is important for cloud management. Implementation of monitoring at both infrastructure and application level by leveraging both the inbuilt tools offered by the cloud provider as well as external monitoring tools like New Relic. It is advisable to do knowledge transfer to customer's team on the cloud deployment and management aspects.



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# HOW WE MANAGE THE HYPE



Our teams can help your agency manage the hype by delivering an end-to-end spectrum of as-a-Service solutions to help get you up and running quickly. Our teams approach your agency's issue by considering the human factors first and how migrating to the cloud can produce better results, provide the capabilities to implement solutions faster and providing better service to your staff and constituents. Our teams have real-world experience with cloud providers such as Amazon Web Services (AWS) and Microsoft Azure, using them to deliver strategies and solutions to government clients.

Moving to the Cloud with Cambria Solutions as a partner is a secure and smooth transition. Automated management and migration tools translate to an efficient migration process and deliver cost controls, governance and accountability in cloud consumption. Our DevOps approach helps your IT team adapt to the cloud environment to ensure your business maximizes its return on investment and continues achieving your goals as business evolves. Our cloud migration approach is centered on four core tenants.

## 1. CLOUD MIGRATION DESIGNED FOR OUTCOMES

Cambria Solutions approaches cloud migration by examining the most important business requirements. Our teams then help chart a course for an efficient cloud strategy and tailored solution to achieve those goals. Our team lays out a tactical approach to enable a results-driven cloud migration—our technologists work directly with your technologists in a collaborative environment.

## 2. RESULTS DRIVEN DATA MIGRATION

Data migration is the most critical component of an overall migration to the cloud. Cambria Solutions engineers develop an approach that efficiently and securely migrates your applications to the cloud using automated tools and proven frameworks to reduce the complexity of migrating or building new applications.

## 3. SCALE AND FLEXIBILITY

Since we understand that business requirements are constantly changing the notion of a steady state is no longer a valid assumption. Cambria Solutions has the flexibility to address your peak demands while offering flexible funding options to keep your applications performing at their highest efficiency.

## 4. TRANSFORMATION TO A DIGITAL ENTERPRISE

The Cambria Solutions team begins the journey to cloud by focusing on applications and required business outcomes. Our teams work with the leading cloud platforms including Amazon Web Services and Microsoft Azure. Our experience and proven delivery help get your business on the cloud faster.

What happens after your organization becomes cloud enabled? You can reduce the cost to serve and the organization can focus on increasing competitive capabilities and availability of instant, accurate and actionable insight. Your computing platforms become flexible, scalable and available to the degree necessary. Innovation is constant, and security is across the ecosystem.



# CAMBRIA SOLUTIONS HYPER CLOUD SERVICES

## CAMBRIA SOLUTIONS HYPER CLOUD SERVICES

Since cloud has been rapidly gaining pace it is important to be aware of the latest happenings and trends in cloud, so that the solution proposed is in-line with the future changes in

cloud technologies. At Cambria Solutions, we carefully assess your business objectives and apply our HumanGenuity® to transform the way your organization operates with the cloud as its foundation.

### HYPER CLOUD SERVICES

#### Strategy, Assessment and Roadmap

- Cloud Allocation Strategy
- Business Goal Assessment
- Application Migration and Assessment
- Planning Infrastructure Assessment and Planning

#### Cloud Transformation and Migration

- Cloud Infrastructure Transformation
- Cloud Native Custom Development
- Cloud Application and Modernization
- Cloud Migration Services
- DevOps Services
- Cloud Journey Management

#### Cloud Management

- Cloud Operations
- Security Operations
- Cloud Optimization Analytics
- Application Management
- Business Process Operations
- Culture Evolution
- Cost Controls



#### About the Author:

Rich Cefola is the Director of Technology Services with Cambria Solutions and a “hands on” certified Senior Technical Architect with over 20 years of experience in Enterprise Government Systems in several large States, the Federal Government and Major Metros including Florida, California, Massachusetts, Mississippi, the US Treasury Department and New York City. He is responsible for the technology strategy and delivery for several major state agencies across the US and leads the cloud innovation strategy at Cambria Solutions.

# ABOUT CAMBRIA SOLUTIONS

CAMBRIA SOLUTIONS HAS BUILT A REPUTATION FOR SUCCESSFULLY HELPING CLIENTS SOLVE THEIR MOST COMPLEX PROBLEMS. THEY HIRE US THE FIRST TIME BECAUSE OF OUR QUALIFICATIONS; THEY HIRE US THE SECOND TIME BECAUSE OF HOW MUCH THEY LIKE WORKING WITH US AND THE APPROACH WE BRING. IT'S SOMETHING OUR CLIENTS BRANDED FOR US AS HUMANGENUITY™ – BLENDING A HUMAN TOUCH AND INGENUITY.

## *HUMAN*



LISTEN FIRST,  
MORE COLLABORATIVE

## *INGENUITY*



INVENTIVE, CLEVER,  
RESOURCEFUL

## *MEANINGFUL CHANGE*



MEASURABLE RESULTS,  
IMPROVED TECHNOLOGY

Great solutions require  
a human touch.



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