THE CLOUD COMPUTING PROMISE:

HYPE OR PROMISE KEPT?

WHIRLWIND TECHNOLOGIES, LLC

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As the Information Technology (IT) field grew in sophistication, companies hastened to embrace the newest tools in hopes of increasing their competitive edge. Soon they found themselves contending with the increasing complexities of IT infrastructure, the enormous costs associated with hardware and software life cycle management, including datacenter operating expenses, and the amount of time required to provision new services from procurement to production.

A little over a decade ago, cloud computing emerged as a solution to mitigate this cost and complexity. In March 2006, one of the leading service providers and pioneer, Amazon Web Services (AWS) launched Amazon Simple Storage Service (Amazon S3)[1]. By the year 2010, Gartner Research classified cloud computing and private cloud computing as at the "Peak of Inflated Expectations[2]" in their 2010 Emerging Technologies Hype Cycle publication. The report illustrated that early publicity produces a number of success stories — often accompanied by scores of failures. Both private and public enterprise organizations were eager to leverage cloud technologies for all the benefits it promised. So, they took concrete steps to embrace and attempted implementation of cloud technologies.

Since then, the IT industry has placed significant hope, research, development, and capital investments into cloud computing, expecting to realize the promise of simplified, efficient, and lower-cost IT operations. This paper will explore the question: Was this promise kept or was it simply hype?

The National Institute of Standards and Technology (NIST) defines cloud computing as:

> "A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, three service models, and four deployment models."[3]

The five essential cloud characteristics defined by NIST are as follows:

- On-demand self-service
- Rapid elasticity

[1] https://aws.amazon.com/10year/
[2] https://www.gartner.com/technology/research/methodologies/hype-cycle.jsp
[3] *NIST Special Publication 800-145*

- Resource pooling
- Measured service
- Broad network access

The Cloud computing field has evolved to offer three models:

- Infrastructure-as-a-Service (IaaS)
- Platform-as-a-Service (PaaS)
- Software-as-a-Service (SaaS)

In this paper we are particularly interested in IaaS, which NIST defines:

> "The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls.)"

IT Infrastructure is one of the most complex and costly components of IT Services and is the foundation upon which all application and services are delivered. Cloud service providers of IaaS promised Enterprise organizations:

- Rapid provisioning and deploying of new application services within a few days to weeks (instead of several months to a year in traditional procurement to production timelines)
- Lower upfront capital investment (Capital Expenditures: CAPEX)
- Higher elasticity to scale up or down as needed on-demand
- Greater empowerment to keep up with their customer demands and business requirements

However, by 2013, many organizations realized that moving to the cloud came with many pitfalls. There were many failed attempts to move various computing workloads to private clouds and public clouds using virtualization products such as VMware, Linux Kernel-based Virtual Machine (KVM), Xen, and Microsoft Hyper-V. As pioneers, these organization discovered that moving to the cloud can be a very costly and complicated endeavor. As such, many abandon their cloud migration projects, though a few found success. Cloud Computing was now in the "Trough of Disillusionment" as reported in the 2013 Gartner Emerging Technologies Hype Cycle. In this phase, interest wanes as experiments and implementations fail to deliver. Producers of the technology can justify continued investments only if they improve their products to the satisfaction of early adopters.

Lessons learned from these early adopters highlight the necessity of:

- Strategic planning
- Security and Service Level Agreements (SLAs)
- Solid project management
- Highly skilled IT personnel experienced with cloud technologies
- A new set of monitoring tools to provide transparency and visibility into the environment

Looking back at the year 2017, where are we now with cloud computing? Promise Kept or Hype? According to Gartner's Emerging Technologies Hype Cycle, private cloud computing is still in the "Trough of Disillusionment" phase. However, several other cloud-related services have emerged, such as:

- IaaS Container Encryption
- Cloud Security Assessments
- Data Loss Prevention
- Identity-Proofing Services

Gartner reports these services are in the "Slope of Enlightenment." In this phase, instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology provider, and more enterprises fund pilots. This phase indicates an approaching "Plateau of Productivity" in 2-3 years.

Very recent examples of mainstream cloud services adoption include the Department of Defense, which has a large number of systems to process sensitive data. According to nextgov.com, the DOD has awarded a $950 million-dollar deal with REAN Cloud February 2018. Speed and agility were key factors that interested the Pentagon and DOD in cloud services. Other Office of Management and Budget (OMB) directives, as well, call for a "Cloud-First" policy to reduce the federal government datacenter footprint, which also significantly reduces costs.

The trend towards mainstream cloud adoption is reflected in the private industry as well. According to Forbes magazine, "74% of Tech Chief Financial Officers say cloud computing will have the most measurable impact on their business in 2017" and Gartner predicts "the worldwide public cloud services market will grow 18% in 2017 to $246.8B, up from $209.2B in 2016."

Conservative companies that still remain cautious at this point will risk costing their competitive edge. As more companies strategically position themselves in a cloud reality, CIOs will need to partner with facilitators, integrators and connectors. For most organizations seeking cloud services, IT consultants and contractors play an instrumental role in a successful transition to cloud services. The Return of Investment (ROI) on outsourcing the adoption and management

of cloud services to a third party is often high, since failure ends up being more costly. As you seek to identify the right company to work with in outsourcing your cloud transition, look for the IT consulting company that demonstrates:

- Strong IT project management past performance
- A team of highly skilled IT Cloud architects and engineers
- Partnerships with industry-leading cloud services providers like Amazon and Microsoft

Companies like WhirlWind help to accelerate the adoption of cloud technologies and smooth the transition. For even as the industry adjusts to the realities of cloud computing, other "disruptive" technologies are already on the rise, including Artificial Intelligence and its subsets such as machine learning, deep learning and more. Companies who want to remain ahead of the curve have to be willing to form strategic long term partnerships to empower them and help them continually transform themselves in an ever evolving landscape.

ABOUT WHIRLWIND TECHNOLOGIES, LLC

WhirlWind Technologies, LLC (WhirlWind) is an Amazon Web Services (AWS) Registered tier partner as well as an 8(a) certified company with a track record of clients in the government and commercial space. At WhirlWind, we empower our clients through technology by unlocking their opportunities, needs and challenges. We are conveniently located in the greater Washington DC area, and employ an expert team of professionals that provide technical solutions and nurture long term relationships with our clients. With our extensive knowledge and proven past performance, clients are assured custom designed technology and support with agility, speed, accuracy and quality.

For more details on the contents of this white paper and to discuss your cloud and technology needs, challenges and goals contact us:

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