Cloud Services Maturity Model and Usage

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Introduction

Market predictions for cloud services in 2014 span from $55B according to IDC [1] up to $148B according to Gartner [2]. Regardless of the exact number, the trend is double-digit growth for many years to come. In a 2012 survey by North Bridge Venture Partners [3] with 785 respondents, it is apparent that companies are much more comfortable with cloud computing offerings. A very low 3% of respondents consider cloud services to be too risky. Only 12% say the cloud platform is too immature and 50% of the survey respondents now say they have “complete confidence” in the cloud. The take away is that the cloud is becoming how we do things.

At AKF Partners our clients include startups completely hosted via a cloud service as well as companies completely hosted in collocation or data centers. Companies in all industries are actively discussing cloud services and how they should fit within their businesses. In this report we will share several different cloud maturity models that are being used to evaluate the readiness of companies to utilize cloud services. We will also share cloud usage data from our clients in order to understand which cloud services other companies are using. Finally, we will discuss some of the common motivations of our clients for using the cloud.

Before we begin, we need to define some terms.

A common definition of cloud computing is the delivery of computing and storage capacity as a service. A distinct characteristic is that users are charged based on usage instead of a more conventional licensing or upfront purchase. There are three basic types of cloud computing:

- **Infrastructure as a Service (IaaS)** – This is the most basic type of cloud service and offers servers (often as virtual machines), networking, and storage as services. Examples of this include Amazon’s Web Services and Rackspace.
• **Platform as a Service (PaaS)** – This cloud offering provides not only the hardware but a layer above, providing platforms to run custom applications usually specific to certain programming languages. Examples of these include Microsoft’s Azure and Google’s App Engine.

• **Software as a Service (SaaS)** – This service is an offering of a finished product hosted in a multi-tenant manner (many customers on a single implementation). Examples of this include Gmail, Sales Force, Service-Now, New Relic, and many more.

In this report we will focus on how to evaluate an organization’s readiness to adopt cloud technologies (IaaS and PaaS) and for those ready to adopt, which vendors are other companies using for cloud services. We will start by looking at different maturity models that are being used in the market place. Each of these models approach the problem differently and by reviewing them you will gain an understanding of the different lens through which one can view the challenge of adoption cloud services.

**Cloud Maturity Model**

Within the software industry, maturity is frequently related to the Capability Maturity Model (CMM) and its successor, the Capability Maturity Model Integration (CMMI). Several organizations have put forward Cloud Maturity Models that parallel this measuring cloud capability and readiness. Here we look at three models.

**Oracle**

The Oracle Cloud Maturity Model [4] identifies specific capabilities that are necessary for successful cloud adoption. There are sixty capabilities grouped into domains like Architecture, Infrastructure, Governance, etc. The maturity of the individual capabilities and the degree of adoption of such capabilities across the organization are measured and compared in order to rank them from ‘None’ up to ‘Optimized.’ These levels define the path an organization usually takes moving toward Cloud maturity. Cloud Computing by its very nature, requires coordination, cooperation, and a common vision to be successful; therefore, it is necessary to define the strategy before it is possible to be truly successful at repeating it and then ultimately optimizing it.
RightScale
This Cloud Maturity Model, found in RightScale’s State of the Cloud Report [5], is used to segment and analyze organizations on their level of cloud adoption. This includes four stages: Cloud Watching (17%), Cloud Beginners (26%), Cloud Explorers (23%), and Cloud Focused (26%). The claim is that as maturity increases organizations gain more value out of cloud implementations and experience less issues around governance, security, and compliance.
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Two researchers in 1943 discovered that the process of innovation adoption can be illustrated as a classical normal distribution or "bell curve"[6]. This discovery became the basis for the Technology Adoption Lifecycle model that divided the area under the curve into five groups, each with a distinct label. The first group is called “innovators” for these are individuals who are willing to take risk and adopt innovations sooner than anyone else. Next is the "early adopters" followed by the “early majority”, the “late majority”, and finally, the last group to adopt an innovation is called "laggards."

The Technology Adoption Lifecycle model supports a theory to explain the conditions that must be met in order for an innovation to reach the critical tipping point that allows it to self-sustain [7]. To start with, decision makers in organizations face an innovation-decision that follows a 5-step process:

1. **Knowledge** – Individual becomes aware of an innovation and has some idea of how it functions
2. **Persuasion** – Individual forms a favorable or unfavorable attitude toward the innovation
3. **Decision** – Individual engages in activities that lead to a choice to adopt or reject the innovation
4. **Implementation** – Individual puts the innovation to use
5. **Confirmation** – Individual evaluates the results of an innovation-decision already made

The innovation-decision is made through a cost-benefit analysis where the major hurdle is uncertainty. Individuals will likely adopt an innovation, if they believe that it will yield an advantage over a previously implemented innovation taking all the costs into consideration. These costs include monetary amounts as well as difficult to quantify notions such as the amount of uncertainty. Because of the risk-averse nature of many organizations, the larger the uncertainty involved with a new technology, the more likely they will postpone the decision until more information is obtained. There is, however, a
small group of organizations that are very risk-tolerant. These are the “innovators” who want to try out new things despite the risk.

AKF Partners believes that the Technology Adoption Lifecycle model explains a significant portion of the adoption of cloud services. Five years ago “innovators” began experimenting and adopting cloud services despite all of the risk and uncertainty involved. Fast-forward to 2013 and we are seeing the “early majority” organizations adopting cloud services.

Cloud Usage
Usage of cloud IaaS and PaaS services can mean different things to different companies. Some companies consider themselves using cloud services if they are running a single development environment in the cloud while others only consider themselves using the cloud if a portion of their production environment is in the cloud. Below is data from two sources that categorize usage differently but result in similar vendor usage statistics.

RightScale
In a survey conducted by RightScale with 625 respondents ranging from technology executives to practitioners, representing organizations of varying sizes and industries, the statistics in the figure below were gathered [5]. The respondents categorized their activity as either “running apps” meaning that they were running production environments in a cloud IaaS or PaaS environment or “experimenting” meaning they were running development, testing, staging, or other non-production environments. This survey included services provided by Amazon (AWS), Rackspace (RAX), Azure and Google (GCE).
AKF Partners
At AKF Partners we gathered data from engagements with over 36 technology clients including online retailers, healthcare service providers, financial institutions, publishers, etc. Our numbers are very similar to RightScale but we actually included their service in our analysis. The use of IaaS is much greater than the use of PaaS (Azure & Google App Engine).
Motivations
In the early days of cloud services, the interface was command line and not a graphical
user interface (GUI). System administrators who were familiar with Linux shells and
scripts were just about the only technologist comfortable with this interface. For most
others the learning curve was steep. At this time most companies viewed the use of IaaS
and PaaS cloud services as a cost savings from purchasing hardware.

During this period at AKF we often counseled clients that the break-even point for
moving from a model of purchasing servers to renting them from a cloud provider was
about 18 months. If you ran a server 24/7 for more than 18 months it became more cost
effective to purchase it. This drove many of our clients to conduct spreadsheet exercises
to determine whether they should consider the cloud and if so how much of their
environments could cost-effectively be hosted in a cloud environment.

Over the past five or so years the IaaS and PaaS vendors have matured and the interfaces
are almost all simple, point-and-click. This change has allowed software developers to
manage cloud infrastructures with little or no help from infrastructure teams. This change
has manifested itself in fundamentally changing the motivation and rationale for utilizing
IaaS and PaaS cloud services. Today many companies are considering the use of cloud
services not for cost savings on servers but rather for software developer efficiency. If
developers can deploy environments themselves without waiting for infrastructure teams
they are more efficient and the organization needs less engineers dedicated to supporting
environments.

Conclusion
Whether your company is utilizing IaaS or PaaS cloud services or not, it is well worth the
time to evaluate your cloud maturity utilizing one or more of the models. Not every
company needs to be an “innovator”. Based on the company’s business model, determine
which level of a technology adoption best fits.

It is also well worth your time to evaluate or reevaluate your motivation or cost rationale.
Make sure to look at software developer efficiency and not just the cost of hardware or
the tradeoff between capital and operating expenses.

Most importantly, continue to watch and keep abreast of cloud technologies. These are
still very young technologies and services, with significant changes happening rapidly.
References

1. International Data Corporation, http://www.idc.com