



Cloud Computing & SaaS: When Old is New, Domain Expertise Reigns

A MapleWorks White Paper

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INTRODUCTION

Put Jimi Hendrix on the record player and soothe the sting of the bill for “time” to complete your computer science assignments. If you can’t relate to this, you’re new school. If you’re déjà vuing, you’re old school. What’s old is new again in cloud computing and both demographics have valuable experience to contribute.

There’s been many computing models over 40 years. In Jimi Hendrix’s time, the centralized model saw enterprises paying for “use” because many couldn’t afford their own data centers. As costs came down though, we saw a shift from a centralized model to a distributed [desktop] model. Then, as servers took on more and more computing intensive tasks, we moved to the client-server model. However, as servers became more and more powerful, they exceeded the demands of applications. This is where we see the first step back in time—unused processing power is wasteful, so virtualization takes root. Cloud computing is the second step back as it sees us, once again, paying for usage.

There is no doubt that the time is ripe for cloud computing. Expanding bandwidth and advancements in virtualization technology coupled with enterprises’ needs to cut costs and do more with less, mean that organizations are giving cloud computing serious consideration. In fact, IDC forecasts that by 2012, customer spending on IT cloud services will grow almost threefold to \$42 billion (source: <http://blogs.idc.com/ie/?p=224>).

Where this white paper offers an interesting angle is that just because cloud computing offers compelling benefits, developers—and purchasers—of cloud computing services and infrastructure need to determine if the cloud is the best computing model to achieve specific objectives. This paper puts forth that organizations will choose on-cloud and off-cloud services and infrastructure. We call this a “post-modern computing paradigm.”

There’s much to consider if you’re developing an application to reside on-cloud and attract some of that \$42 billion—and that’s the topic of this white paper. And, if you’re an organization looking to outsource work to a developer, you’ll find valuable tidbits in this paper as well.

WHAT’S THE DIFFERENCE BETWEEN PaaS, IaaS, and SaaS?

Platform-as-a-service, infrastructure-as-a-service, and software-as-a-service are all cloud service delivery models. This website provides an excellent definition of each:

<http://rationalsurvivability.com/blog/?p=1150>.

CLOUD COMPUTING VS. SaaS

Before we go any further, we need to define cloud computing and software-as-a-service (SaaS).

There's been much debate over whether cloud computing and SaaS are interchangeable terms. They aren't. Cloud computing is a model where any authenticated device can access infrastructure and services offered by a service provider on the Internet. And, SaaS is one of the delivery models of cloud computing.

As an aside, if you are interested in reading additional points of view, here are two resources:

- This site talks about cloud architecture and provides links to the National Institute of Standards and Technology (NIST), appropriate Wikipedia pages, and more: <http://sites.google.com/site/cloudarchitecture/home>
- And this site gives an in-depth discussion of the cloud computing architectural framework: <http://rationalsurvivability.com/blog/?p=1150>

POST-MODERN COMPUTING PARADIGM: DUALITY OF THE OLD AND THE NEW

Cloud computing is revisiting centralized computing concepts that date back to the mainframe era. Today, instead of everything being centralized on one computer, it's centralized using a group of computers accessible through the Internet. Hence, "post-modern computing paradigm" is the returning of traditional centralized computing (old school) but with the twist of modern distributed computing (relatively new school).

The difference today is that the dumb terminal that interfaced with the mainframe is replaced with a powerful device capable of achieving computation autonomously. Hence, in a post-modern computing approach, one of the first decisions that has to be made is: under what circumstances does it make sense for certain functions to take place in the cloud or on the device?

Enterprises look to deploy on-cloud SaaS applications for many reasons. Here are just a few of the value propositions that make SaaS desirable:

- Operating cost versus capital expenditure;
- Proactive maintenance versus reactive maintenance;
- Scale up or down quickly and easily versus one-size-fits-all; and
- Simplicity versus complexity.

The best way to ensure that your SaaS applications meet the expectations of buying customers is to understand that just because a customer desires a SaaS application, it must also achieve their end objectives. Once the due diligence has been completed, the customer may decide that an on-cloud application is desirable for one aspect of their requirements and an off-cloud application is desirable for an alternative aspect of their requirements. Enterprises will continue to live with a mix of on-cloud and off-cloud applications for years to come.

REAL-LIFE EXAMPLES OF CLOUD COMPUTING

- Google App Engine and Amazon EC2
- [Ooma](#) provides peer-to-peer Internet connections for phone services.
- [SoundBite](#) provides a multi-channel communications service to deliver voice, text, and email messages.

REAL-LIFE EXAMPLES OF SaaS

- [Salesforce.com](#) provides customer relationship management applications that reside in the cloud. Salesforce is also a great example of PaaS and cloud computing.

TOP 10 TECHNICAL CONSIDERATIONS WHEN PLANNING A SaaS PROJECT

Enterprises turn to the cloud to deliver against their expectations for reduced IT infrastructure costs, decreased maintenance costs, on-demand scalability, and utility pricing. As part of their due diligence process, your answers to their questions about scalability, functionality, and reliability will turn this into an on-cloud purchase decision or off-cloud purchase decision. It is therefore imperative that developers design their SaaS applications with the following technical considerations in mind.

1. Latency. In typical circumstances, SaaS applications work fine. However; as a hypothetical scenario, if two to four seconds of delay are introduced into the connection, and 100 requests are normally handled, will this affect quality or usability? What will be your target customers' threshold for latency?

2. Reliability. The Internet is still not as reliable as circuit-based networks. But it's still essential to make sure that reliability is high. This is especially important for mission-critical applications. What will be your target customers' requirements for reliability?

3. Redundancy. One of the value propositions for SaaS is proactive maintenance versus reactive maintenance. In the same vein, customers look to SaaS as their disaster recovery plan. Redundancy and recovery is the responsibility of the SaaS vendor. How sophisticated will your redundancy and backup services be?

4. Scalability. Scalability is a key point of moving to the cloud. As an enterprise grows—or shrinks—a cloud hosted SaaS gives them the ability to scale appropriately. Has scalability been designed into your SaaS application?

5. Compatibility/standards. Standards are a challenge. While it's impossible to future proof the SaaS application that you develop, at least try. Look at trends and think five years in advance.

6. Partitioning. When there are many users sharing the same resource, logical partitioning helps to guarantee security. Can your SaaS application be partitioned?

7. Security. Confidentiality is a consideration in SaaS applications—and typically entails a high degree of complexity. It's essential to ensure that you offer the appropriate level of security. And, this is especially important for mission-critical applications or sensitive data. What level of security will your target customers require of your service?

8. Data migration. Customers don't want to be handcuffed should they wish to move their data elsewhere. There's been plenty of sad stories on this topic. How will you deal with data portability?

9. Usability. Let's think in terms of old school and new school again. If everyone in the enterprise is to adopt your SaaS application, it must be intuitive and easy to use. Will a usability expert test your SaaS application?

10. Total cost of ownership (TCO). This section began with the fact that enterprises turn to SaaS to deliver against their expectations for reduced IT infrastructure costs, decreased maintenance costs, on-demand scalability, and utility pricing. We conclude this section with this important consideration: Will your SaaS application enable your target customers to lower their TCO?

CONCLUSION

Customers are getting more demanding; competition is increasing. Designing in reliability, security, and redundancy is making it tougher to bring differentiated SaaS applications to market at the lowest possible cost.

Over the past 40 years we've had practical work experience through the full spectrum of computing models. As the author of this paper, we can speak with nauseam on the topic because many of us are "old school". We also have plenty of "new schools" balancing out our thinking. The point, though, is that as old becomes new, we have the solid experience that is necessary to execute properly.

Just because cloud computing professes to be the next big thing, it's more important to develop SaaS applications that achieve the goals of the end customers. Because of the diversity of our experience, we can offer you options that ensure the SaaS applications that you develop widen your market.

Put on your iPod buds, turn up Jay-Z, and raise the bar so that you get a chunk of the \$42 billion to be had over the next few years.

THE AUTHOR OF THIS WHITE PAPER

The author of this white paper, MapleWorks Technology, is an experienced source of **software development services** for developers of **networking and communication products** for both the service provider and enterprise markets.

MapleWorks offers clients the following value:

- Rich communications DNA
 - o Average of 15 years experience in the network communications domain
 - o Located in Silicon Valley North, their staff has experience from Nortel, Mitel, Siemens, RIM, etc.
 - o Staff is technology focused and invest in staying on top of emerging technologies
- Factors contributing to MapleWorks' proven track record of bringing products to market on time and on budget are the company's expert engineers and a proprietary **fluid, hybrid development processes called MapleWorks OnTrack™ and Agile OnTrack™**
- Business practices
 - o IP protection is respected and is the same as in the USA
 - o Onshore service provider; therefore, visas are not required
 - o Face-to-face knowledge transfer at client's site
 - o Management philosophy is one of minimal handholding, operating in a fluid environment, and successfully adapting to each client's development processes
- Business environment
 - o Development culture is the same as the USA
 - o English is the primary language
 - o Close proximity to the Ottawa International Airport enables day trips or single overnight stays
 - o Similar time zone
 - o Geopolitical stability means no risk to client projects
- Variable development cost is 30-40% less than in the USA

MapleWorks holds membership with each of the following industry associations:

- Massachusetts Technology Leadership Council (MTLC) – www.masstlc.org
- Massachusetts Network Communications Council (MassNetComms) – www.massnetcomms.org
- Canadian Advanced Technology Alliance (CATA) – www.cata.ca
- Ottawa Centre for Research and Innovation (OCRI) – www.ocri.ca

If you have questions about your outsourcing project, we invite you to contact us by phone at 781.897.1727 or send email to info@mapleworks.com



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