

NOT ALL CLOUDS ARE CREATED EQUAL

An Expedient Communications White Paper In Cloud Computing Services

January, 2010

Alex Rodriguez
Vice President, Systems Engineering
Expedient Communications

<http://www.expedient.com>



Not all cloud service providers are created equal. Learn the differences that could affect your cloud computing success and the questions you need to ask your potential cloud providers.

INTRODUCTION

In the past 3 years, cloud computing has become a common practice for the outsourcing of data and compute centric applications to virtualized technology service providers. Throngs of cloud computing providers have sprung into being, each offering services that while on paper differ slightly, vary greatly in actuality. As organizations from small startups to large global enterprises look to the cloud provider for services, there are key areas which should be reviewed and questions which should be asked to ensure a successful cloud service experience. This whitepaper will provide an overview of those areas and define a list of questions that every client should ask of their prospective cloud provider.

CLOUD BENEFITS

The cloud offers many benefits – low to no upfront infrastructure investments, just in time deployment, and a more efficient resource utilization model are all benefits of the cloud. It's these drivers which are creating a significant demand for cloud based services.

WHAT TO LOOK FOR IN THE CLOUD

There are 6 key areas to consider when selecting a cloud provider. These general areas need to be reviewed with each cloud service provider to make sure they have the appropriate platforms and processes to support the technology, data and applications being migrated to them.

1. UNDERLYING HARDWARE & SOFTWARE PLATFORMS

Rule #1: Inspect what you expect of your cloud provider.

A key element of the cloud provider is the underlying technology platform supporting the cloud service. Just as a prospective client would inquire about facility specifications for colocation services, the same types of questions need to be asked of the cloud provider. A prospective client should inquire about the software, hardware and underlying facilities that are utilized in providing the service.

The provider may defer to their SLA, explaining that information is confidential and isn't the client's concern. The problem with accepting this response is that even the richest of Service Level Agreements ("SLAs") typically are capped at the monthly service fee – an amount far less than the cost to the business if the service becomes unavailable or if the data is lost.

Providers are unlikely to dramatically realign their SLAs to cover the business loss in case of outage, so it's important for the client to ensure that the environment is built properly using enterprise grade platforms, in addition to having a strong SLA.



2. ABILITY TO INTERMIX PHYSICAL AND VIRTUAL/CLOUD PLATFORMS

Rule #2: Not everything can fit in the cloud, so make sure you can put things right next to it.

Not all platforms can live in the cloud. Organizations may have platforms running on hardware such as an IBM AS/400® or SUN UltraSparc® system that they're not ready to migrate off. Additionally, there may be x86 elements in the environment which can't live in the cloud: platforms such as Oracle RAC® implementations or databases which require sub-second data tracking.

Due to this need, it's important to ensure that the cloud provider has a physical colocation facet of services in conjunction with their cloud services. If platforms in the cloud need to speak to applications on other platforms which can't be in the cloud, it's important to have the flexibility of physical colocation to ensure successful interoperation.

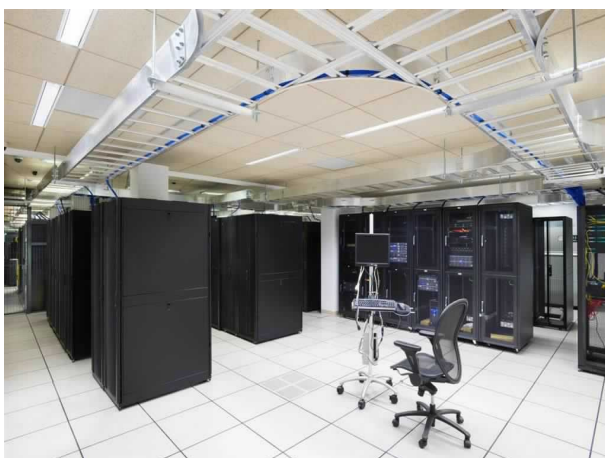
3. PERFORMANCE METRIC CRITERIA

Rule #3: You can't manage what you can't measure – that still holds true in the cloud.

One aspect of cloud computing that is still being developed is performance criteria metrics for the cloud. When one looks at server resources in the cloud, there are typically 5:

- Network Capacity (Mbps)
- Memory Capacity (GB)
- Disk Capacity (GB)
- Disk IO (IOPS)
- Compute (Varies)

Cloud providers can easily articulate the first 3: Network, Memory and Disk Capacity. However, the last 2, which have a significant impact on performance, are much harder to describe. Disk IO and Compute specifications vary widely (or are sometimes non-existent) amongst cloud providers and can often vary as clients use wax and wane.



To safeguard against poor performance, clients should make sure the cloud services come with a monitoring package that details the amount of each of the 5 resources being consumed. Clients should test their workload in the cloud provider's environment to ensure the environment meets the workload's needs and monitor the resources consumed as a baseline. That baseline should be captured and used as a reference point later, if performance degrades.

It's important that the client understand how the cloud provider deals with CPU and Disk IO and what happens when the client needs more than usual (spikes) and, more importantly, what happens when other clients sharing the same physical resources spike as well.

4. ENTERPRISE GRADE SERVICE & SUPPORT

Rule #4: Handoff points can be major headaches for both processes and for technology. This is no different in the cloud.

There's a demarcation point of what the cloud provider is responsible for and what the customer is responsible for, but as in any service, there's always a little bit of gray. This is where the majority of the support and service issues arise.

It's important for the client to know that the cloud provider has a skilled service and support staff that understands the operating platforms (and even the applications) being run and that there are a clear set of engagement rules for troubles which may or may not be cloud related. Without this understanding, when a gray area issue comes up, the troubleshooting is all the more painful.

5. STANDARD APIS & ACCESS INTERFACES

Rule #5: Management automation is great, but it needs to be portable.

As cloud environments grow in complexity, the use of Application Programming Interfaces ("APIs") will start to become the norm to manage and maintain the cloud environment. Today, many cloud providers have published APIs and other access interfaces to manage their services, and customers are beginning to interact with them.

It's important for the client to understand that this can later create a barrier to transition to other cloud providers. If work is done to integrate with proprietary interfaces that development effort on behalf of the client will need to be duplicated to move to another provider. While today it is not a significant issue, this will move to the forefront as the cloud and cloud based services develop.

6. AUDIT SUPPORT

Rule #6: Auditors still need to audit, even in a cloud.

New regulations and standards are being created as information technology environments continue to contain more personal, private and sensitive data. This ultimately means information technology environments will be more and more subject to both internal and external audit.

The notion of accepting only a SAS-70 accreditation won't be enough to satiate auditors in the future, so it's important for the client to understand what regulations are coming, how they affect the IT environment, and what the cloud provider will do in support of the client's audits. It's important the client present to the cloud provider the audit standards, scoped to their involvement and ask for commitment in writing as part of contract to ensure a positive audit experience.

One critical element which has come up often is the location of the data. Many cloud providers either do not disclose where the data lives, or may move the data about their data centers in the course of normal operations. If this is an audit concern of the client's, it's important to address this upfront with the cloud provider.

CHECKLIST OF QUESTIONS FOR THE CLOUD

The following is a non-definitive list of questions which should be asked of any cloud service provider. This list is meant as a starting point and should not be considered a complete list of questions.

Ask that the potential cloud service provider provide answers in writing and where applicable in contract.

1. UNDERLYING HARDWARE & SOFTWARE PLATFORMS

- ✓ *Describe the physical and logical architecture of the cloud environment.*
- ✓ *What are the hardware & software components?*
- ✓ *Describe the facility that the technology hosts the technology.*

2. ABILITY TO INTERMIX PHYSICAL AND VIRTUAL/CLOUD PLATFORMS

- ✓ *Can clients colocate the system they don't want in the cloud?*
- ✓ *What are the cloud provider's limitations on power and space?*
- ✓ *What are the interconnect costs for bandwidth between the colocation and the cloud?*

3. PERFORMANCE METRIC CRITERIA

- ✓ *What performance metrics are monitored by the cloud provider? Does the client have access to view those metrics?*
- ✓ *What happens when the client or other clients in the environment need more CPU or Disk IO?*
- ✓ *How are the individual environments protected from one another for these variable resources?*
- ✓ *Is the SLA written to address performance issues as well as availability issues?*

4. ENTERPRISE GRADE SERVICE & SUPPORT

- ✓ *Describe the technical talent that is available to support issues.*
- ✓ *What support is provided if the client feels an issue may be cloud related?*
- ✓ *Is the SLA written to address performance issues of the support organization?*

5. STANDARD APIS & ACCESS INTERFACES

- ✓ *Does the cloud provider make available APIs to manage the cloud environment?*
- ✓ *Are those APIs standard and can any other providers use them?*

6. AUDITS

- ✓ *What will the cloud provider provide in support of audits that the environment is subject to?*
- ✓ *What are the audits that the provider has completed in the last year? What was the outcome of those audits and are those records available for review?*

ABOUT THE AUTHOR

Alex Rodriguez is the Vice President of System Engineering and Product Development for Expedient Communications, a US-based technology services company providing telecommunication, data center and managed hosting services to Fortune 500 and smaller organizations across the medical, manufacturing, high technology, education and government verticals. Expedient Communications operates data centers across the United States as well as an award winning, all-Ethernet national telecommunications network.

Alex directs the architecture and platform teams at Expedient Communications, developing services like the Virtual Instance and Virtual Colocation cloud services.

Alex brings with him over 15 years of data center, information Technology and telecommunications experience. Previously, Alex held several leadership positions in large scale Internet Service Providers (ISPs) and Competitive Local Exchange Carrier (CLECs) in the Boston, Massachusetts and Pittsburgh, Pennsylvania metropolitan regions.

Alex maintains significant relationships with industry leaders and is a regular speaker at events such as the prestigious Massachusetts Institute of Technology CIO forum.



Copyright Continental Broadband Pennsylvania, LLC 2010