

CLIENT BRIEF

Cloud Computing - Hybrid & Private Enablement

SCOPE OF PAPER

IT Strategies Group (ITSG) presents client briefs periodically, these are short one to four page summaries of key technologies our clients have indicated they have an interest in.

This client brief focuses on a question we receive a great deal from our clients. "What enabling technologies must be in place or be part of a companies move to either a hybrid or private cloud.

OPPORTUNITY STATEMENT

There is a great deal of hype surrounding cloud computing and infrastructure as a service (IaaS), which has led to a great deal of confusion about what these terms mean (ask three vendors and you will receive four definitions). The generally accepted cloud paradigm consists of three distinct service offerings: Software as a Service (SaaS); Platform as a Service (PaaS); and Infrastructure as a Service (IaaS). The diagram below illustrates, how they relate relative to flexibility and optimization.

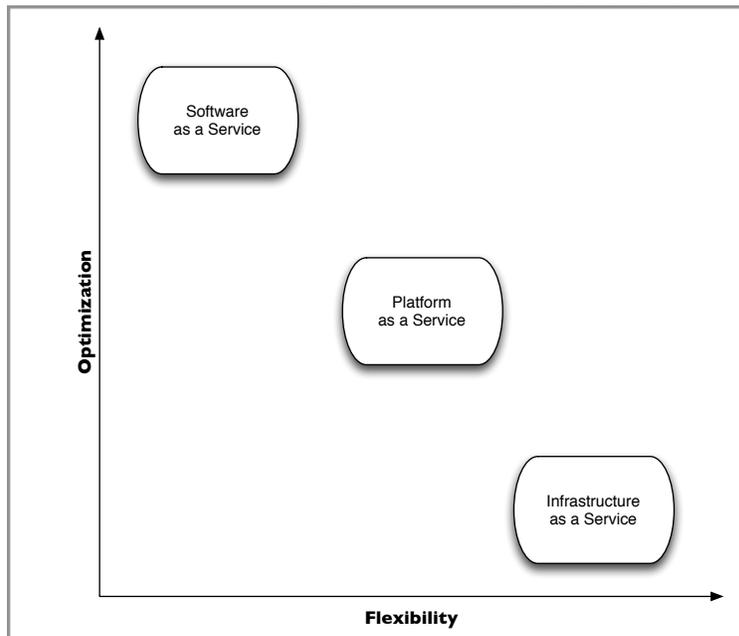
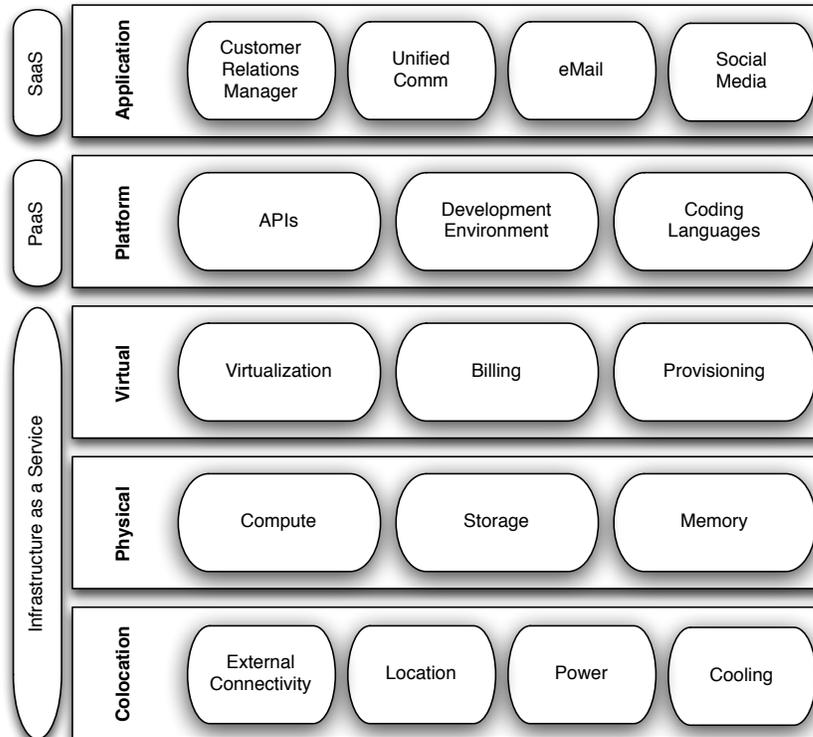


Figure 1: Cloud Computing - Optimization versus Flexibility

It is important to note that each successive layer is built on the offerings of those below it (you need IaaS, to enable PaaS and both IaaS and PaaS present to enable SaaS). The following diagram illustrates this:



An example of SaaS within the public cloud is Salesforce.com, an example of PaaS within the public cloud is Google App Engine, Amazon's Elastic Compute Cloud provides an example of IaaS.

All the examples above share three capabilities:

- Provide clear levels of service the client can choose between
- Ability to monitor performance and capacity, scale or contraction depending on need and bill against that usage
- Ability to automate new service request, provisioning of resources and common problem resolution

These three functional capabilities form the basis of cloud computing. While present in public cloud offerings, they must already exist before or be implemented during an organization's private / hybrid cloud initiative.



LEVEL OF SERVICE DEFINITION (FOR PRIVATE / HYBRID IAAS)

ITSG recommends that clients meet with major customers / stakeholders to determine what categories of service are needed. At its most simplistic we have seen clients create a minimum of three service levels:

GOLD

For applications that require maximum performance and need the entire IO chain optimized towards performance

SILVER

For applications that are balanced between the need for performance and capacity

BRONZE

For applications that require more capacity than performance

These are very general categories meant to illustrate the concept. With each service level, key options must also be defined as add-ons: Site Replication, Backup Type, High Availability, etc. . Some clients have standardized to the point of requiring set configurations of these add-ons to each service level. After the definitions for the service levels are defined, they need to be married to the technologies that will provide them.

PERFORMANCE / CAPACITY - MONITORING & REPORTING

The cost savings of a cloud are predicated on:

- Ability to share compute, network and storage resources across many applications / services, yet provide the same performance the client received on dedicated hardware
- Ability to dynamically grow or shrink resources based on customers immediate need or projected seasonal peaks
- Ability to charge client only for resources consumed

To provide these services the private cloud provider must be able to monitor key metrics within their infrastructure, including compute (CPU, RAM, NIC / HBA or CNA), network and storage resources at the Process ID level. This is different for each type of environment and must be architected at the start of the project.

AUTOMATION

Automation is key to cloud computing. Ideally automation includes:

- Submittal & authorization of resource requests
- Provisioning of compute, network, storage, backup and replication (local & remote) (where appropriate) resources
- Scale adjustments based on usage patterns and rules
- Application / data movement based on performance / capacity requirements, system loads or when resources are replaced / upgraded
- Decommissioning process



Cloud computing is about instant access to needed resources to facilitate a business need. The selling point for IaaS has always been the removal of the weeks long process when requesting and obtaining computer resources from IT.

SUMMARY

There is a great deal of activity in the cloud computing space. The space is still maturing, there is work to be done by the industry regarding security, federated data, and concern over two prevalent standards, AWS (Amazon) and the OpenStack group. All that withstanding, the value proposition of cloud computing is high, where it is appropriately applied.

ITSG' view of cloud implementations is that small and medium sized companies will be more likely to implement public cloud solutions as it reduces the cost barriers associated with leveraging their digital assets. Large and enterprise organizations, especially those that are heavily regulated, have extensive competitive data or are making strides in handling big data, will first move towards a private cloud solution. Over time, we see the large organizations segmenting their data / compute so that they can move noncritical data, archive data, etc to the public cloud. As the client moves to a hybrid, they will need to work on interconnectivity and integration between their internal (private cloud) and external (public cloud) resources.

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