



Cloud Computing Position Paper

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1 Management Summary



Cloud Computing or Software as a Service (SaaS) is now on everyone's agenda. Organisations from small to large enterprises, government, education and even military are investigating whether Cloud Computing can transform their IT infrastructure, not only to reduce cost, but also to ease maintenance, support and upgradeability.

Cloud Computing is the latest way to deliver most IT services via the internet, hence they are held in the "cloud". Most users of the internet take for granted that they can use email, IM and now most desktop services such as spreadsheets and word processors for free. Cloud based services are rapidly becoming attractive to small, medium and large enterprises as alternatives to traditional applications run and maintained in-house. These applications are business quality but are either free or on a pay-as-you-use basis.

A plethora of IT companies have embraced the cloud computing opportunity as a way of providing additional services to their existing and potential customers. Traditional names such as IBM and Microsoft are in a battle with the newer players such as Google, along with names from the consumer market like Amazon and AOL to gain market share of this new way of purchasing software as a service rather than software as a product.

IBM has seen loss of market share to Microsoft during the last few years, where large enterprises (typically an IBM stronghold) have consolidated their supplier base by moving away from IBM, often to Microsoft, who has a wide range of products and services to enable enterprises to unify their communications under one umbrella. However, IBM is now clawing back customers with their leadership role in enterprise-targeted cloud services.

Some analysts are predicting the global cloud computing market is expected to grow at a compounded annual rate of 28% from \$47 billion to \$126 billion by 2012. Gartner estimates \$150 billion in 2013.

Nearly 50 years on, we have seen the growth of mainframes, networked terminals, networked computers, client server, the internet, ASPs and now Cloud Computing; each a stepping stone on the path to achieving true utility computing. The emergence of cloud computing is the first large-scale implementation of public utility computing.

While all this seems ideal to enterprises, there are some bear-traps along the way. This is borne out by the fact that cloud computing adoption has not been too popular with large enterprises, as they are at the biggest risk; large enterprises have taken 20+ years to recover from unstable and unsecured hardware, software and networks. Are they about to return to this era by adoption of cloud services? What happens if the service levels between enterprises and their service providers are not met? What happens if your secure data inadvertently falls into your competitors' hands, as you are sharing the same service? These

and many more concerns are all things that enterprises should look at, rather than just potential cost savings.

INTUG's position is that it fully supports the move to Cloud Computing, but anyone considering it for their company should be fully aware of the pitfalls.

A six point action plan checklist of major areas of concern needs to be followed:

1. Build a sound financial business case, as with any ICT project. Be sure of the real "type A" benefits of saving hard cash rather than softer benefits that are harder for CFOs to quantify.
2. Tailor your approach to your IT infrastructure and applications. The concept of "one size fits all" is not appropriate to everyone. Even enterprises in the same sector have different philosophies. See chapter 5 for more details.
3. Identify a clear migration path, with all the interdependencies between in-house and new cloud based applications.
4. Safeguard service levels to ensure the minimum your business requires. Access to the cloud is predominately internet based, where there are little or no service level guarantees. Enterprises should consider the pros and cons of moving from an environment of high, generally in-house, service levels to those offered by internet service providers.
5. Consider the legal issues resulting from your corporate or personal data being held offsite, potentially in another country, which may create problems. Cloud computing, as its name suggests, means that your data can be held anywhere.
6. Secure the data you hold, particularly personal information, as it is unlawful not to. Make sure your service provider is not putting your data integrity at risk.

2 Cloud Computing Summary



Cloud Computing has been around for a number of years. With cloud based services, little or no software is installed on the premises of the purchaser. Access to applications is provided on demand over the Internet and it is the vendor who manages the whole process from a secure central location. This model has led one of the leading proponents of cloud computing Salesforce.com, to adopt the slogan "death of software". What this actually means is the end of software installed on the customer's premises - apart from the web browser, of course.

For Google, cloud means office tool applications: calendars, spreadsheets, word processors etc. These are all delivered on-demand via a web browser from one of Google's data centres. This is a direct challenge to Microsoft's Office products, which are primarily deployed on-premises.

Other vendors offering infrastructure cloud services such as WebEx, Microsoft Live Meeting, Citrix Online and iLinc, all specialists in online conferencing, provide their applications on-demand but only once a local agent has been downloaded and installed.

One of the most widely used CRM service from the cloud that has seen widespread adoption has been salesforce.com. This is a sales force application adopted by over two million users in more than 67,000 companies worldwide to manage their sales operations. This manages the whole sales process from account contacts and lead generation to maintaining a content library. All these services are cloud based with no management overhead to the enterprise customer.

Cloud Computing is exactly what the enterprises are looking for, as their license costs are spiralling out of control. Organisations have typically purchased Microsoft Windows, Microsoft Office, SAP, and telephony licenses far in excess of their actual requirements, but have no real control on usage. As a result, many new service organisations appeared offering expense management software, with a number of these specialising in telecom expense management.

At an infrastructure level, as enterprises moved to adopt technologies such as IP Telephony, the idea of building the license costs into the handset cost initially seems to have resolved the purchase of excess licenses, but in many vendors' adoptions of this approach, it made the maintenance of an IPT environment very difficult. As a result, license management for telephone additions or deletions became an administrative nightmare. In reality, this was not a dynamic process as each addition or deletion of a device required manual intervention from both the vendor and enterprise support to regenerate the necessary licenses.

Microsoft was one of the first to promote unified communications as a service when it started talking about software plus services. However, there was much market cynicism when Microsoft originally entered the Software as a Service market, especially from its proponents, as they were suspicious that Microsoft was only using it as a way of protecting their desktop revenues.

Unified Communications is the latest challenge for enterprises. Most enterprises have adopted the components that make up the new UC portfolio, but the main vendor community is pushing enterprises into unifying their communications by providing a single interface based on presence. This philosophy is supported by the new entrants from the consumer space into the enterprise world such as Skype, Google, Yahoo and AOL, as well as today's new workforce of Generation Y graduates who want the same experience and toolset as they have during their leisure time.

The two giants, who are traditional rivals, Microsoft and IBM are now finding a whole plethora of other companies vying for an enterprise's business.

Given the complexities of migrating to IP coupled with transitioning to UC, along with recent successes in the SaaS market, significant interest is emerging in trying to add unified communications as another Software as a Service component.

Although Cloud based services are either available or becoming available across all business areas, many of the examples in the rest of this position paper use the core infrastructure components of UC as an example of where it can be potentially used. I have performed analysis on its adoption in the enterprise and potential cost savings by doing so. Other Cloud applications will follow a similar path to adoption.

Cloud Computing is here to stay and although the cost savings are questionable, I am sure once there is more widespread adoption, the business model used by suppliers offering these services will make this more and more financially attractive.

3 Driving Forces Toward SaaS



Although there are a number of driving forces for buying software as a service, the primary driver is total cost of ownership. Enterprises are looking at cloud services as a way to lower the total cost of deploying a software solutions to their employees. Clearly, there are additional drivers, but TCO is the fundamental driver, particularly for the SMB enterprise. There are additionally other drivers, as discussed below.

Total Cost of Ownership

Cloud Computing has the promise of offering a fully-loaded desktop solution to enterprises at a lower total cost because the expense of managing the network and services is spread across the service provider's entire customer base. The latest offering from many vendors is offering Unified Communications as a service (UCaaS). Most service providers are currently targeting the SMB space, where smaller companies have neither the will to own nor the people to operate a full UC solution. Yet, these companies want the benefits a UC solution can provide. Not surprisingly, some large companies are also looking into hosted UC services due to the complexity of configuring and rolling out such a service themselves. Determining whether a hosted UC solution will really cost less in the long run requires a careful look at a number of variables, including the network costs, router/switch costs, personnel costs, training costs, hardware costs, software costs, endpoint costs, energy costs, facilities costs, etc. UCaaS may, but will not necessarily, deliver lower TCO than a premises-based solution.

No Upfront Capital Expense

In a cloud solution, the service provider delivers all of the IT capabilities the enterprise needs including the network, switches, routers, IP phones, soft clients, IM/presence engines, email, shared workspaces, desktop services and business applications. Customers pay a monthly fee only for the services and service components they use. There is no equipment to buy and no capital outlay.

Small Risk of Obsolescence

Voice and email systems used to be updated only rarely. With voice moving to software, it is clear that there are more updates required to stay current. Furthermore, as more pieces get added to a UC solution from different vendors with different software release cycles, the difficulty of upgrading becomes onerous. This is clearly a hassle to enterprises. With a hosted solution, the service provider applies all the patches and software upgrades required and keeps the server equipment regularly updated as well. Given the current rapid change in the various components of a UC solution, some customers will appreciate the small risk of obsolescence with a hosted solution.

Totally Hosted versus Self Owned and Managed

Some companies are willing to pay a premium for a good hosted service if it provides the service quality and the features they need. Cloud services are fully managed by a single vendor who is responsible for the complex integration and service set delivered to the end users. In some offerings, service providers can provide best-of-breed solutions from multiple vendors, integrate them for the enterprise, and provide all of the management required to deliver the service more economically than a single enterprise can. Some companies will choose to pay more to avoid the hassle and complexity of tying complicated applications together. This can free up internal personnel to focus on enterprise-critical applications and services that the hosted provider cannot offer.

Buy Services à la Carte and Service Expansion

While some vendors offer desktop services only as a bundle that includes every capability that service provider offers, most providers structure their offerings so that customers can choose only those services that they will use. Consequently, companies can create capability profiles of their employees, giving each employee only those capabilities that a person will regularly use, thus cutting down on service and licensing costs. In addition, as a company grows, it is easy for the service provider to add additional users, and if a company determines that an additional capability is needed, it is easy for the service provider to deliver the additional capability because it is already built into the solution.

Business Continuity

One of the big, non-tangible benefits a hosted provider offers is business continuity in the event of a major disaster. Most service providers have multiple levels of redundancy built into the solution with no single point of failure. A cloud vendor can provide redundancy that would be very difficult for a company, particularly an SMB, to obtain, such as redundant telecommunications equipment, network and circuit diversity, backup power, and geographically diverse data centres. Most cloud providers have redundancy and business continuity as fundamental pillars in their hosted offerings.

Tighter Vendor Relationships

While vendor lock-in is an issue often discussed in the press and among analysts, more and more companies are looking for longer term relationships with vendors. Being aligned with a vendor is not a bad thing. Any company that has had to change vendor solutions realises that vendor changeover costs can be huge. Given all of the pieces that comprise a cloud solution, a robust offering by a reputable vendor will engender a sticky relationship, and provided the solution remains cost effective and reliable; then closer vendor relationships can be a very positive development.

4 Cloud Computing – three types



With the exception of endpoints, remote survivability equipment, and routers/switches, it doesn't really matter where the rest of the infrastructure components comprising an IT system are physically housed. Consequently, both end users and vendors of communications capabilities and services are contemplating where within three available clouds they might wish to physically deploy their future services infrastructure:

1. The enterprise cloud,
2. The hosted cloud, or
3. The computing cloud.

Enterprises may choose to host components of their solution themselves while using a service provider to host other elements; in some instances, the elements of a solution may span across one or all of these clouds.

The Enterprise Cloud

Most users are familiar with enterprise clouds. These are typically one or more company-owned regional data centres networked together to provide centralised resources and redundant services in the event of a services outage. One of the distinguishing features of a premises-based cloud is that in most instances, the enterprise both owns and operates the equipment and provides the services. Obviously, there can be other models, such as leased equipment and managed services, but by and large, the premises-based cloud is user owned and user operated.

Enterprise clouds may incorporate virtualisation technology in the data centre, but some vendors (notably Microsoft) do not support real-time media (voice/video) in a virtual environment. Consequently, most enterprise clouds support dedicated physical servers for the various elements in their solution, which will vary depending upon the vendor components chosen.

Cloud Computing solutions which are gaining significant traction in the enterprise cloud include those offered by the telephony vendors wherein the vendors sell the enterprise customer a telephony system and overlays this critical voice component with other UC components such as a presence/IM engine, unified messaging, web/audio/video conferencing capabilities, etc. A second major thrust in the enterprise UC cloud includes UC offerings by Microsoft (OCS) and IBM (Sametime), where the UC capabilities are centralized into "pools" or clusters of servers located in a data centre and these then integrate with existing voice and UM solutions deployed either centrally or distributed, as needed, throughout the organisation.

The Hosted Cloud

The hosted cloud is similar to the enterprise cloud in that the hosted service provider places all elements into the service provider's cloud. A significant difference is that the hosted service provider will try to offer as many capabilities as possible in a multi-tenant configuration and often in a virtual configuration. Some service providers have developed software fixes to make products like Cisco Unified Communication Manager multi-tenant, but vendors offering OCS, for example, will usually provide a dedicated server pool for OCS.

The Computing Cloud

Cloud computing is different enough from simple hosted services that needs to be handled separately. From the user perspective, cloud computing looks like a hosted solution, but under the hood, it is a very different environment.

Wikipedia defines cloud computing as follows:

“Cloud computing is a style of computing in which dynamically scalable and often virtualized resources are provided as a service... Users need not have knowledge of, expertise in, or control over the technology infrastructure ‘in the cloud’ that supports them.”

Hosted services will be moving to cloud computing environments over the next few years. Microsoft has clearly stated that its Online Services will be moving to its Azure cloud.

5 One size doesn't fit all



Enterprises need to be aware that not all are the same. Even, with direct competitors in the same industry sector, the way IT infrastructure, services and applications are managed can be completely different. Figure 1 shows six areas where companies will differ. A careful review of what is important to an organisation is critical to understanding how Cloud Computing can best fit.

Some companies will sweat their assets and not adopt new technology readily, whereas other will be early adopters and seek advantage through being on the leading edge. Some companies may have strict rules about what technology is adopted (e.g. MACs in addition to PCs and allowing the workforce to load their own PC software, whereas others will be very strict and “lock down” their IT environment).

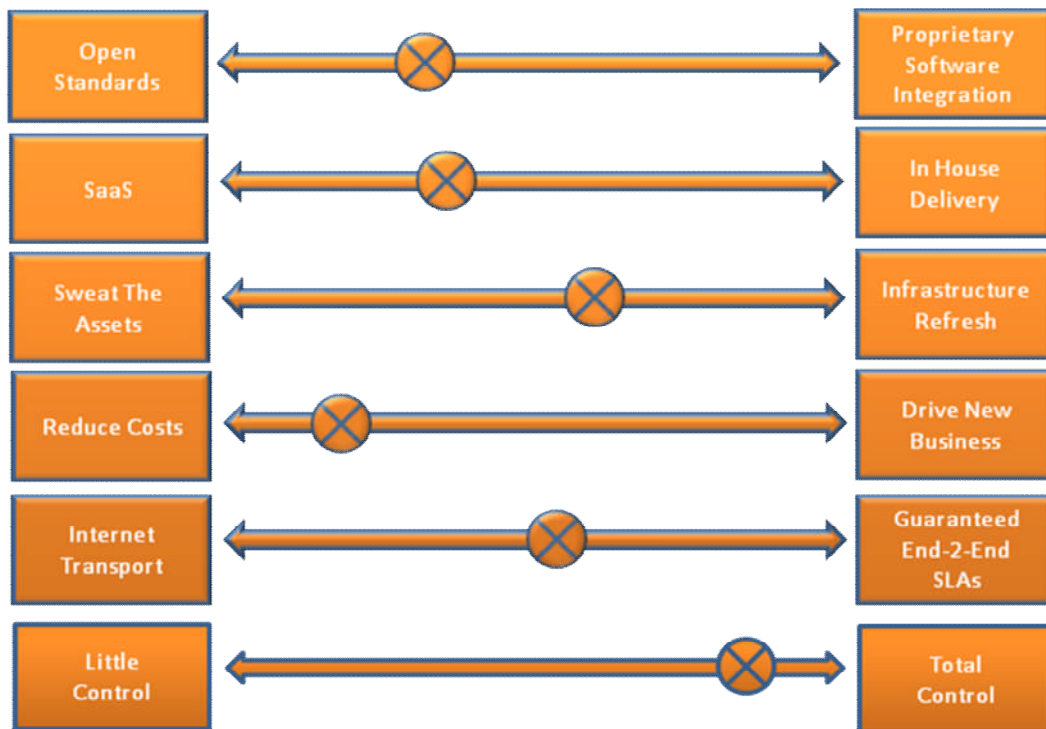


Figure 1: Assess each environment, as one size doesn't necessarily fit all

6 Conclusion



Cloud Computing is here to stay! With the economic downturn, enterprises will use Cloud Computing as a way of controlling their costs as well as simplifying their IT environments. From the start with Google apps and salesforce.com we now have many of the IT functions, traditionally managed internally, now offered through the cloud.

For the telcos, this is a double edged sword; while most are looking to offer these cloud based services as part of their offering to enterprises, they should also be aware of the potential effect it will have on their core networks and the additional bandwidth required by enterprises, large and small.

From an enterprise point of view, as with any other innovative ideas to change practices, a business case is essential. Savings made in hardware and software costs may not be sufficient to offset the increase in management costs. A recent study of the vendors offering UC from the cloud, by Wainhouse Research, suggests that if service providers want to compete with a premises-based solution from a cost perspective, they will need to provide the fully-loaded UC solution, including the cost for the network, for under \$50/user/month. Of all the service providers interviewed for this paper, only two gave pricing nearing \$50/month.

Buyers of any cloud based services should consider the downside to possible compromises in service levels and security.

Larger companies should be mindful that moving their entire workforce to a radically different cloud approach requires significant planning and project monitoring, as the migration path could be long and compatibility between old and new is difficult to guarantee.

Over time, processes will evolve to make this transition easier, but today the larger the company the more challenging will be the migration.

7 About the author



Jon Neville is the General Manager of the Enterprise VPN Users Associations (www.evua.org) The EVUA is an independent, non-profit, global ICT network user group for multinational companies. User membership is exclusively Fortune 1000 global companies. It was formed in 1992 and has evolved into an effective ICT industry platform for global users and global suppliers. The EVUA has excellent working relations with leading ICT network service and technology providers. The EVUA industry network includes independent industry partners, working links with regulatory organisations and links with other user groups. EVUA is a full member of INTUG, the International Telecommunications Users Group, a global organisation representing business users of telecommunications worldwide.

Mr Neville is also a Practice Consultant at Wainhouse Research (www.wainhouse.com) where he provides consultancy in the area of IP Telephony and Unified Communications, in particular assisting enterprises with their business cases for deployment using an extensive modelling system, a unique vendor selection and management process and also brings his practical guide to successful implementations. Mr Neville has recently been elected to serve on the INTUG board. He is based in Europe, with more than 25 years experience in the IT industry, 10 of which were at a major multi-national company specialising in telecommunications; particularly the deployment of IP networks, IP Telephony and more recently Unified Communications. Mr Neville has considerable commercial experience having negotiated contracts with various large telecommunications and other IT vendors. Mr Neville is a regular speaker at telecommunication industry events in the European, US and Asia Pacific regions and runs his own IT Consultancy company (www.voilex.com).

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