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White Paper:

Developing on the Cloud

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Disclaimer

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Introduction

Cloud Computing has dominated the media headlines and attracted the enthusiastic attention of the industry analyst for some time now. But how far does Cloud Computing realistically impact on the corporate IT agenda? Are C-level executives making serious buying decisions based around new systems in the Cloud? Or is this just another hype-cycle event that will fail to break into the mainstream?

Is there a revolution going on out there in the market or an evolution? According to Forrester Research, the market for Cloud Computing is still in its early stages of development, while Gartner reckons that Cloud Computing will "hit the mainstream" within the next few years. In other words, it's all a bit uncertain. The tide has certainly turned in the direction of the Cloud, but the point at which it can be regarded as an integral part of mainstream investment strategies is unclear.

So what should the response of the Independent Software Vendor market be to this? Business as usual or a whole new approach to applications development to tap into a burgeoning new market opportunity. Consideration of these and other questions is now essential. If your customers are following analyst advice and asking themselves questions about the suitability of Cloud Computing then as a software vendor you need to be asking yourself the same thing.

What does it all mean?

Let's start with what we do know and that is that there's a lot of confusion out there about Cloud Computing, going right back to first principles of what the term actually means! According to a recent study by Rackspace, some 57% of UK firms surveyed did not understand the idea of Cloud Computing.

When it came to defining Cloud Computing, the most popular response among UK respondents, with 43%, was: 'remote and multiple servers accessed via the internet', followed by 'applications via the internet' (31%). 'Virtualisation' (14%) and 'online storage' (8%) also figured in the responses from UK companies.

But despite this level of ignorance about what Cloud Computing means, over a third (36 %) of businesses in the UK are either "planning or considering spending money on it". That's a big enough percentage for any software developer to want to sit up and pay some attention to what's happening and to formulate some form of response.

What if we just ignore it?

One of the most notorious figures in the history of the software market – and a chilling lesson to everyone who has followed in his footsteps – is John Cullinane who in his day was the Larry Ellison of his time. Cullinane was the founder and CEO of Cullinet Software, the market leading database provider before the emergence of firms such as Oracle.

Cullinet's database was based on flat-file technology and essentially designed to run in enterprise data centres on mainframe computers. This was extremely lucrative for a long time, but the technology tide changed. Relational database technologies moved from being an academic concept into a commercialised offering from start-ups such as Oracle and Relational Technology Inc (later Ingres) at the same time as attention shifted towards the new wave of client server computing.

Cullinane's response was to ignore the way the market was moving and stick to what he knew best. In so doing, he cleared the way for Oracle's Larry Ellison to move in and take away his market share. Like King Canute, Cullinane tried to hold back the relational tide; like King Canute, he failed and simply got his feet wet!

The software industry now potentially faces a similar tectonic shift. The traditional methods of developing and deploying software applications grew out of the self-same client server revolution that supplanted Cullinet. But now that client server approach, once seen as cheaper and more effective than its mainframe predecessor, is itself being openly questioned. For many it's too costly. It's too laborious. It is associated with inflexible and unfriendly licensing terms. The track record of failed high profile applications roll out is too prominent. The list of complaints goes on and on.

Can you feel your feet getting wet yet?

OK let's start with a definition then!

If you want an answer to the question of what Cloud Computing is, it's important to bear some provisos in mind. For a start, a lot of the leading IT vendors are rapidly adjusting their marketing strategies to give a Cloud Computing lick of paint to their existing product offerings. Many of these overhauls are purely marketing and PR initiatives and stand up to very little close scrutiny.

There are also approaches to application deployment and management that border on being Cloud Computing, but don't fit the most rigorous and precise interpretation of the term. For example, hosting applications might be said by many managed services provider to be Cloud Computing, but Cloud purists would take exception to that. There's nothing wrong with the hosted approach, but it's not Cloud Computing in its truest sense.

Let's have a go at a very high level definition. Cloud Computing involves vendors supplying computing services to lots of customers over the internet. These services can range from applications, such as customer relationship management, to infrastructure, such as storage and the provision of development platforms. *Applications are multi-tenant in nature — multiple instances of the same package that can be executed on the same machine — so system resources can be shared among a large pool of users, which in turn reduces costs.

Generally services are provided by massively scalable data-centres running hundreds of thousands of CPUs as a single compute engine, using virtualisation technology. Workloads are distributed across multiple machines and capacity can be allocated or scaled back according to a customer's needs.

Another key aspect of cloud computing is the use of a pay-as-you-go subscription model for customers.

Cloud Computing can be broken into three main categories for consideration: Software as a Service, Infrastructure as a Service and Platform as a Service. All three have significantly implications for applications developers.

Software as a Service (SaaS)

SaaS is an applications delivery model, characterised most notably to date by firms such as Salesforce.com, NetSuite, SuccessFactors. It's a delivery model that has found particular favour with the small and medium enterprise (SME) customers who find themselves with no hardware or software to have to manage in-house. Instead applications functionality – such as CRM or accounting - is accessed via a commodity web browser.

Platform as a Service (PaaS)

An alternative term might be 'Development as a Service'. PaaS is a paradigm for delivering operating systems and associated services over the Internet without downloads or installation. PaaS also provides the platform on which third party software developers can create a new generation of applications and build a Cloud ecosystem around a particular platform. By tapping into PaaS, the entire software lifecycle can be supported on the same computing environment, dramatically reducing costs of development and maintenance, time-to-market and project risk. Developers can spend their time creating great software, rather than building development environments and wrestling with configurations. Examples of PaaS would include Salesforce.com's Force.com, Google's App Engine and Microsoft's Azure.

Infrastructure as a Service (IaaS)

IaaS provides the underlying hardware and operating system resources to do anything developers need. IaaS offers CPU, memory, storage, networking and security as a package. With IaaS, developers choose from a range of operating systems (usually some flavour of open source), a size for your hardware (number of CPUs and CPU power) and an amount of storage. By moving infrastructure to the Cloud, companies are able to scale as if they owned their own hardware and data centre but keep the upfront costs to a minimum. Given that for a startup or small business, one of the most difficult things to do is keep capital expenditures under control this is clearly an important consideration. The largest of the IaaS providers is Amazon with its Amazon Web Services offering.

PaaS and IaaS are often confused, but the distinction between them is clear and a decision needs to be made as to which one best suits your organisation's needs. Do you need your Cloud provider to offer you a way to host your applications or an infrastructure allowing you to host your applications (without restrictions) the way you want? In general, IaaS will mean more work for the software developer, but puts them in charge of the virtualized infrastructure, allowing them potentially to deploy more complex applications on the Cloud. On the other hand, deploying and developing a web application using PaaS is typically going to be easier to do than deploying and managing a complete infrastructure.

Private Cloud v Public Cloud

Public Cloud

Public Cloud - or external Cloud - describes Cloud Computing in probably its best known form. Resources are dynamically provisioned on a fine-grained, self-service basis over the Internet, via web applications/web services, from an off-site third-party provider who shares resources and bills on a fine-grained utility computing basis. The best examples would be the likes of Amazon's EC2.

Private Cloud

Private Clouds are offerings that emulate Cloud Computing on private networks. Users still have to buy, build, and manage private Cloud infrastructure technology and as such do not benefit from lower up-front capital costs. But private Clouds are likely to be more appealing to firms that prioritise or have concerns about security and data protection. Research firm Gartner predicts that until at least 2012, more investment will be put into private services than public Cloud providers, although it sees a significant role emerging for such public offerings over time.

Hybrid Cloud

In the short term, the hybrid model will likely prevail. A hybrid Cloud environment would consist of multiple internal and/or external providers with private Clouds built on top of public Clouds.

Cloud claims

Cheaper, quicker, more efficient, more scalable, greener – the claims for Cloud Computing made by evangelists of the model are self-evidently appealing.

In the light of the current economic downturn, the main reason why IT people have been adopting Cloud Computing is cost, most notably the move away from Capex to Opex budgeting. Instead of having to buy computing resource up front that may sit unused for large periods of time, customers pay as they go and pay as they grow. When demand is high, they pay more; when demand falls off, they pay less.

In financial terms, this facility allows a company to move much of its infrastructure costs from capital expenditure (capex) to operating expenditure (opex). Capex costs are often tightly controlled since they involve depreciating assets. The advantage of using opex is that you can increase or decrease spending much more quickly and carefully.

Being able to scale up or down according to need means increased agility, enabling users to rapidly and inexpensively re-provision technology infrastructure resources.

Sustainability comes about through improved resource utilization, more efficient systems, and carbon neutrality. Nonetheless, computers and associated infrastructure are major consumers of energy. A given (server-based) computing task will use X amount of energy whether it is on-site, or off.

The Cloud applications opportunity

Cloud Computing has not entered the mainstream in every business market, but there are hot spots where SaaS has taken a strong grip. If you're a software company operating in one of these areas, it's all the more urgent for you to be evaluating your SaaS strategy now. If you're not in one of the current areas of intense activity, then you should be evaluating your options and potentially looking to see if there's an opportunity to take a lead in your home space.

Overall, customer relationship management (CRM) is the still most popular SaaS application ahead of enterprise resource planning (ERP); content communications and collaboration (CCC); and supply chain management (SCM). This is partly attributable to the high profile of firms such as Salesforce.com which has become the poster child for SaaS business applications. But there are strongholds in the Human Resources market – with firms such as Taleo and SuccessFactors – and finance and accounting with firms such as FinancialForce.com.

Forrester Research has catalogued the current most popular markets for SaaS applications and made some predictions about which are the emerging opportunities. Its findings were:

CRM

CRM remains the most mature market segment with a number of clearly established market leaders. The two main questions for the CRM space are (a) how much room there will be for new entrants coming in, especially with the on premise CRM vendors moving into the SaaS market as well and (b) how far customers will still want to add to their existing on premise investments. The market for on premise CRM applications has however slowed while the on demand market has rapidly accelerated.

Human Capital Management/Talent Management

HCM has been a strong niche category for SaaS applications to date, although this is rapidly changing. The move towards self-service HR policies is entirely applicable to the SaaS delivery model. There are some strong contenders in the SaaS HCM market, including Workday, Taleo and SuccessFactors. The latter company has scored the world's biggest SaaS deployment to date at Siemens, rolling out applications to 420,000 people, across 80 countries and in 20 languages.

Collaboration

Forrester predicts that SaaS collaboration could be one of the hotter areas of SaaS adoption, with the potential to significantly impact the collaboration market. IBM has recently delivered a Cloud version of its Lotus Notes offering.

Online backup

This sector is reckoned by Forrester to have particular appeal for SMEs. Offerings such as Apple's MobileMe are likely to be replicated by other vendors as they seek to tap into this market space.

Business Intelligence/Analytics

This is potentially a massive market opportunity, reflected by the efforts of market leaders such as SAP (with Business Objects) and SAS Institute to put in place their Cloud infrastructures. To date however there are only a few examples of successful BI Cloud vendors, such as QlikView, while it also boasts examples of companies that failed to make their mark, such as LucidEra which wound down its operations earlier this year.

Making the move

Making the move to the Cloud is not a simple process. In the past it has been costly, complicated and time consuming; however advances in IaaS and PaaS are making the move into the cloud considerably easier and less costly. There are various differences of approach that must be taken into consideration when attempting to move from an installed on premises customer base to a new Cloud model.

Revenue implications

The old way of selling software licences to customers is to ship a disk and take your money up front. The customer then has to install the software, potentially spending up to 3 times as much on that as they did on the licence itself. Finally, you continue to charge for providing maintenance and support for years to come.

With the new model, the provider bears the responsibility of managing the application for the customer. The customer pays on a subscription basis, according to their specific needs at any given time. They no longer buy 50 seats from you and that's it. If they need 30 seat one month, then 60 the next, that's what they pay for. This has a number of implications. For the customers – or, as they must now be known, the subscribers – it means they have the flexibility to pay 'per drink'. For providers in the early days that flexibility makes it harder to predict revenue lines. If the subscription use goes up or down based on external circumstances, then so too will the revenue stream. In other words, your bottom line is no longer as predictable in the short-term; however as you build up your customer base your revenue streams should become more predictable.

This is a major pain point for many providers attempting to make the transition to the Cloud. If you are a vendor used to the upfront payment model, then moving to a model where you get paid over a ten year period can be painful. You don't get paid on day one; you get paid over time.

Start up costs

In the past it was probably more expensive to get a SaaS firm up and running than a traditional software company. NetSuite CEO Zach Nelson has talked about costs from $20 to more than $50 million, and NetSuite itself cost $125 million. However, that need not be the case, particularly with the emergence of IaaS and Paas, which can dramatically speed up the development of a SaaS solution and keep costs to a minimum.

Of course with a subscription-based pricing model your revenue will climb slowly over time so it may take some years for you to cover your day-to-day operating costs let alone to move into profit. And that is not to forget the costs of taking the solution to market, though even here cloud vendors are starting to exploit lower cost methods of marketing and sales.

So in summary, vendors have to be aware that this is a long game, not one that will produce instant returns.

Different financial metrics

Once you are up and running, the metrics for measuring success as a SaaS vendor are slightly different. Initially it will be all about reducing the cash burn. How many long term deals can you sign to reduce the burden? Are you geared up to manage this? Secondly what does your annual recurring revenue rate look like? This is your new business. You need to know this in order to tie it in with your subscriber renewal rate in order to give your company a degree of financial predictability.

The need to love the customer

In a Cloud model, there is a greater need to place great emphasis on customer service. The old model of giving the customer the software and then waiting for them to come to you if they have any problems will not be sufficient. In a subscription model, the only way to retain customers is keep them happy. You need to be geared up to renew your relationship with each customer on an ongoing, basis. If the customer feels neglected or unhappy, then you risk them churning to an alternative provider. This is not the seamlessly simple process that the more fervent Cloud evangelists would have customers believe of course, but as more companies operate from the Cloud and the range of alternative providers becomes more extensive, this is an issue that will only become more prevalent.

The need to build from scratch

You are going to have to start again. Attempting to retro-fit your existing products into the cloud will have limited or no success. Think back to the transition from the mainframe enterprise applications of the early 1990s and the vendors who tried to screen-scrape a client server front end onto them. It worked to a degree, a very limited degree, and provided a modicum of 'good enough' functionality for some customers, but overall such efforts were doomed to lose market share to the pure play client server generation. You need to build a product from zero. In an ideal world, a Cloud architecture should be built from the ground up as a multi-tenant environment; this contrasts with the single-company orientation of most on-premise software. For many companies, you're looking at a substantial redesign of your software platform, so you need to be fully up to speed on your market opportunity and the needs of your particular customer base before you start. The development in the areas of IaaS and PaaS are making this transition substantially easier.

Think service, not software

Software vendors making the move to the Cloud need to think in terms of services as well as software. As we've seen, it's not just a case of write the software and ship it, You need to be geared up as an organisation to provide the ongoing level of support and attention more usually associated with services firms. Service means 24/7/365 attention. The focus needs to be on uptime and availability. If the system is unavailable or there is a security issues, the blame will land fairly and squarely on your doorstep. Achieving and maintaining top levels of service is crucial.

Iterative development and enhancement

In the old model of software development and delivery, years can pass between significant functional upgrades to the product. From a customer's point of view, such upgrades become major milestones that need to be planned for and scoped for well in advance and are often approached with considerable caution. Many customers will actively delay making such upgrades due to the complexity and cost of the upgrade process itself. This can have a negative impact on the software provider itself which finds that customers are reluctant to move up onto the latest release which in turn impacts on the revenue stream. In a Cloud model, enhancements and upgrades occur on a regular basis, every quarter or three times a year. To the subscribers, such upgrades are seamless and invisible. They come into work on Monday morning, switch on their browser and the latest version of the application is in front of them. The burden of managing the upgrade is placed on the provider, not the customers. To keep up with the regular upgrade schedule, providers must change development methodologies and adapt to an iterative mode of development.

Adapting to a new 'go-to-market' model

For traditional on premises software vendors, sales models are predicated on long sales cycles executed by highly compensated, direct sales teams of account executives, sales engineers, and services consultants. The resulting deals are larger, the targets are typically fewer, and the customer evaluation demographics more extensive, often slowing down the sales closure. For the Cloud model, demand generation is more akin to those of carpet bombing than precision air strikes. The focus is on high-volume, low-cost demand generation like that of the SMB markets or desktop software markets.

Word of mouth, including customer references, will count for a great deal as will brand awareness so maintaining as high a profile as possible is vital. Marketing pushes are as important as sales drives. The market leading Cloud applications providers of today have high marketing spends as a proportion of overall budget. Cloud adoption will often be driven by ad hoc subscriptions made by line of business people rather than a managed process going through a central procurement operation. While there is still a need for direct sales presence, selling Cloud offerings often involves ad hoc sales as well as the more formal practices. Be aware that when selling to such line of business people, be aware that the sales message needs to be different. Such people will not want a technical sales pitch;

they need to know how quickly they can be up and running to realise demonstrable and measurable business benefit. The sales vocabulary must shift from tech specs to product functionality and usability.

Think about spinning-off into the Cloud

One approach that might be most appropriate is to set up a separate Cloud operation rather than trying to manage a hybrid approach. Have separate and distinct engineering teams for on premises and on demand. Dedicate different sales and marketing resources. Set up the Cloud operation as a different costs base and a separate revenue line. The transition to being a Cloud provider will be a long term process. It's not going to be achieved overnight. It's also the case that there will undoubtedly be a segment of your installed customer base that will not want to make the move to the Cloud and are perfectly content with their on premises applications.

You don't want to neglect your existing customers. Having distinct Cloud and on premises operations may help you manage both camps most effectively.

About BASDA:

www.basda.org
BASDA is the Business Application Software Developers' Association, a member-driven not-for-profit organisation where members benefit by sharing knowledge and expertise and working effectively as one voice to address strategic issues and evolving legal, political and technical influences that affect the business software industry. BASDA's members range from small, medium and large national & international software & service providers, primarily to businesses.

The BASDA's Cloud SIG Aims and Objectives

This Specialist Interest Group has been set up to raise the profile of business Cloud computing applications, exploring ideas around standards and best practice and producing deliverables that benefit both members, partners and end users.

- Ensure that members of BASDA understand both the potential and the implications for developing Cloud business applications.
- Inform and educate end users about Cloud business applications – the potential benefits and the considerations for implementation.
- Communicate with the wider industry and bodies that influence the future of Cloud computing

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