

White Paper



# The Journey to Hybrid Computing

Part 2: Making it real

An independent report commissioned by Attenda

**Attenda**  
Business Critical 

## Contents

Executive summary: making it real .....	2
1. Finding the right platform: commodity IT versus core IT .....	3
2. The factors in IT directors minds as they select the platform for an application .....	5
2.1. Performance and latency .....	5
2.2. SaaS or IaaS .....	6
2.3. Security and availability .....	7
2.4. The 'I' words: integration, interoperability .....	8
3. In production: lessons learnt from real life deployments .....	10
3.1. Migration .....	10
3.2. Ongoing management .....	11
4. Conclusion: Right supplier for the right company .....	13
5. About Attenda .....	15

## Executive summary: making it real

In the first whitepaper in this series, we looked at the business reasons for moving applications to the cloud, using insights and examples obtained from a series of interviews with a wide sample of IT directors across multiple vertical industries.

In this second paper we will focus more on cloud deployment. The clear conclusion from the first paper is that cloud services are used not as a unique solution, but as part of a whole raft of platforms. Once an enterprise has decided to include cloud in that portfolio, how does the IT group go about selecting the right platform for the right application? We will also look at issues that are vitally important in a cloud deployment such as integration, availability, security and performance, before taking a closer look at the issues involved in putting a deployment into production such as migration and on-going management. Finally we will draw the threads together and conclude with some observations on selection.

*'Which applications should we move to the cloud? That's really not how we look at it. Firstly we look at applications, we assess the risks, costs and benefits of the different options; and only then do we select the right platform.'*

Oil and Gas CIO

# 1. Finding the right platform: commodity IT versus core IT

Given the massive choice of platforms out there how to choose the right one? Many IT directors start the process by dividing their estate into commodity IT and core IT. Commodity IT is the kind of 'have to have' IT which has to work but is not core to the business and doesn't give the company any unique competitive advantage. Commodity IT, it 'just has to work'. When it comes to vendor selection the deal will more likely than not, be awarded on price, once certain service levels are felt to be met.

The other side of the coin is 'core' or 'business' IT. Booking engines, billing platforms, financials, these are the crown jewel applications that are critical to the business. For these, availability, security, monitoring and performance are paramount, and as our Financial Services CIO pointed out earlier in Paper 1, finding a true partner is key.

For applications of this kind there is a widespread reluctance to shift them to a public cloud. Enterprises seem happy to outsource them and place them in a hosted or private cloud environment, but it seems widely felt that the public cloud is not mature enough to offer the wide range of features that are available in managed hosting.

Each budget holder we spoke to felt much the same way, although the reasons in each case varied quite widely.

For some it was the lack of control. For others it was the shared nature of the platform, and the lack of support. For a third group, it was integration issues and a need for the application to be constantly repurposed and changed. But the overall view was unmistakable. Business Critical IT for now is not headed for the public cloud.

Finally the one size fits all nature of public cloud does not suit all applications. Where there are hosting companies of all different shapes and sizes and the more enterprise focussed ones can offer bespoke services and offerings, there can be no such flexibility in the public cloud.

It should be emphasised that the differences between commodity IT and business IT are not black and white. There are shades of importance to the business. One CIO we spoke to had divided up his platforms into gold silver and bronze, and awarded vendor contracts accordingly. Also for some companies (such as for a mobile operator) functions like billing might be mission critical and for many others, email whilst commodity IT would still be deemed as business critical..

### Commodity IT in practice

A good example of a piece of commodity IT is email. Almost every IT director we spoke to has outsourced IT to a hosted environment or the cloud especially with Windows Server 2003 reaching its end of life. Exchange Server notoriously clunky and difficult to run piece of hardware. For a 2,000 seat organisation will typically absorb the labours of ½ a Full Time Employee. The exceptions were those required for regulatory or legal reasons to keep data on premise.

Here are some examples of what users perceived as 'commodity IT'

- Email
- Unified communications
- Video conferencing

Here are some examples of core IT

- ERP (SAP, Oracle)
- Data analytics
- Billing platforms
- Scheduling/booking/shift platforms

## 2. The factors in IT directors minds as they select the platform for an application

### 2.1. Performance and latency

With the excitement over cloud services, it often feels as if the network part of the infrastructure piece is forgotten. But it's still vitally important for many applications. As one CIO told us 'our partners don't like the potential latency of the public cloud. In our data centre everything is connected with fibre. But if we put in a connection to an external third party there would be a latency issue.' In this case the CIO opted to host the application in a hosted environment.

Latency is also a problem outside the data centre. The scale and reach of modern communications mean that even small companies can operate in multiple geographies. Several of the enterprises we had spoken to had located back office functions thousands of miles away from corporate HQ. Sharing files over thousands of miles has proven to be a technical challenge, leading IT to set up a shared storage platform on a public cloud with a global network of nodes.

A further use case where latency affects the choice of platform is data transformation. Data transformation is emerging as a hot topic as the volume of bits and bytes grows ever larger. 'Understanding how the data is transformed, is going to become more and more of an issue as applications unbundle' says an education CIO. 'Moving data sets from our application A to our partner's application B is not easy. To take a simple question: who is the master and where is the slave? How you couple and decouple your systems?'

As terabytes start giving way to petabytes, transport problems arise. 'We could never place an unbundled analytics application in the public cloud or on shared infrastructure: we need that fibre connection!'

Performance limitations of this kind mean there still seems to be a great deal of scepticism among IT directors when it comes to cloud vendors' claims about performance and latency in a shared medium. How could it ever be proved empirically?

## 2.2. SaaS or IaaS

The choice when it comes to cloud adoption though is not restricted to a choice between hosting and cloud services. There is also the option of handing over all control beneath the data layer and using a Software-as-a-Service platform like Salesforce. How does this option fare as compared to hosting or IaaS?

The numbers to a certain extent speak for themselves: SaaS is universally used in the enterprise particularly for what IT views as commodity type applications such as mail, CRM and virtual desktop. But has not achieved dominance in the workplace, and doesn't suit every company or every need.

Many see the functionality is not quite where they would like it to be so the only option is to keep the application on premise. An Oil and Gas CIO said 'With SharePoint as a SaaS there are quite few limitations. I wanted to integrate it directly with our ERP through our Intranet which is based on SharePoint. It isn't possible in public cloud now, so we keep it on premise.'

Another issue with SaaS is latency. One IT director had looked at Google Apps but had found the latency an issue for users, particularly those in remote locations. But SaaS latency is not always a deal-breaker. Another CIO tried Oracle as a Service and found latency a problem, but it did not matter as 'we don't need the back end to run that quickly'.

*'Don't tell me you have guaranteed performance on your cloud. That doesn't mean anything – prove it with your architecture.'*

Logistics CIO

Finally, vendor lock in is a problem for SaaS users just as much as it is for software and systems integrators. After two years of use of a SaaS ERP, it is difficult to pull all that data off a platform. Some vendors have also stated to charge what are viewed as excessive amounts of money for integration work, with six figures being mentioned for simple integration work.

*'When it comes to looking at SaaS or IaaS, the two key deciders are cost and flexibility'*

Hotel and Leisure CIO

## 2.3. Security and availability

Security is often held up to be the major reason not to go to public cloud. How can data be secure in an environment that is no longer under company control? Similarly, availability is often cited as a deal-blocker when it comes to public cloud. To put it bluntly, clouds, particularly at the commodity end of the scale have established a reputation for themselves as flaky.

The attitude of IT towards availability and the public cloud is ambivalent. On one hand it is known and generally accepted that public clouds have frequent outages. Consequently mission critical applications as discussed earlier are rarely migrated over to public cloud. Applications that are migrated over generally don't have to run in real time and don't use or contain sensitive data. On the other hand we frequently heard that IT directors were impressed with the reliability of public clouds, and there was no way the IT department could achieve such an SLA internally. We also heard the same comment made about security. As a CIO said 'I think public cloud is more secure than on premise. Global organisations such as Amazon Web Services and Microsoft have armies of people devoted to security. Moving to public cloud gives you better security.'

### Loss of control a problem for public cloud

The major worry for users coming to public cloud was loss of control. A leisure industry IT director pointed out 'if I have an application sat on my network which can only be accessed via my network, and it is insecure, I can probably get away with it; but if it's on the public cloud, I probably can't.' But generally he agreed that the cloud is not inherently less secure, it's just that 'you cannot afford to be cavalier, shall we say.'

Another specific security concern is the change from a hosted or on premise environment when only a few individuals have access identity to systems internally to the public cloud where ID is shared widely.

Public cloud does have its advantages though. Its shared nature and scale means (at least in theory) there is potential for pooled resources on topics such as threats and malware. The scale of public cloud platforms should also translate into a greater spend on security vendors and benefits such as zero day releases.

### Hybrid cloud is attractive

Public cloud's multitenant aspect brings it great advantages in terms of scale and cost savings but the shared nature of the platform can be a problem for many enterprises particularly those in financial services. As a CIO in this sector says 'The issue for us from a regulatory point of view with a shared application is making sure the data doesn't leak out. We have a regulatory and legislation framework we have to work under. You have to be absolutely sure that there is no route to the data for a third party so we do a lot of testing



to make sure our systems are secure. That is why hybrid cloud is attractive, it would seem to provide benefits. ‘

*‘We’ve only been hit by one twenty minute outage since moving our messaging to the cloud in the last two years; there is no way I could commit to an SLA of that kind internally. If I tried to build the same level of resilience and performance, I could never achieve it. Our internally hosted messaging used to go down all the time.’*

Oil & Gas CIO

### **Different verticals have different requirements when it comes to security**

Views on security vary from industry to industry, and even within industries. In financial services, the issue is the perimeter and ‘as little traffic goes beyond that security in a way becomes less of a problem’. Similarly with the proliferation of devices in the workplace or BYOD. If the organisation is a charity with little that sensitive in email, does it matter than a handset is lost? Most IT directors seem to regard security as one of the less enjoyable parts of their role. They receive little credit when all is well, and protecting every part of the company against a breach is a near impossible and thankless task. With threats so hard to predict, the business is always reluctant to spend on security, and the bare minimum is more than often the default setting.

### **2.4. The ‘I’ words: integration, interoperability**

For enterprise IT, integration is essential. Few have time and the resources for extensive re-writing of applications and integration work, and they are painfully aware that ‘free’ open source software can end up more expensive than off the shelf commercial software. This, however puts the organisation in the hands of a few key vendors, and such long term relationships inevitably do not always run smoothly. Complaints about Oracle were the single most common feature in the interviews, with complaints about Microsoft running a distant second.

*‘Open source, standalone looks cheap until you try and integrate. We looked at Google, but the cost of integration was massive and you can’t integrate into Active Directory. People think open source is cheap!’*

Education CIO

Whatever problems this trade-off causes it is clear that alternative Open Source Software has a long way to go in terms of enterprise adoption. The key advantage commercial software and particularly commercial software stacks have is integration. It all works together across a variety of business functions and doesn't require an army of specialised expensive engineers to integrate and support it. Microsoft was highly popular in the group for just this reason. Cutting edge open source technologies such as Hadoop, Chef and Puppet have great potential but the costs of hiring an engineer to do the integration work far outweighs the cost advantage of the free distribution.

There are signs, though, that this status quo is changing. Interoperability and standardisation is coming on apace and not just in the open source software world. In the example of cloud innovation in hotels mentioned earlier in the paper, for example, the IT Director told us it was easy to write a workflow application on Android to capture the picture of hotel room, but it would have been valueless had it not been possible to integrate it with the hotel chain's Property Management software.

*'Building Information Modelling is a 'hot topic' our industry and interoperability is a large part of that It's a kind of information management, they pioneered it at Heathrow Terminal 5. The issue we run into continually, is when a contractor from outside produces a document in a format we can't read, and therefore it's useless to us.'*

Building and Construction IT Director

We also saw in Paper 1 with our Oil and Gas sector company 'Four Pillars' strategy, that the third pillar was standardisation. As companies become more and more global, and IT teams smaller, it becomes less possible to support different operating systems, applications and file formats. IT Directors are aware of the benefit common languages and file formats can bring. The promise is probably mainly in the future then. But it is hard to under-exaggerate its potential.

## 3. In production: lessons learnt from real life deployments

Once the business case has been won and the right platform selection, execution now comes to the fore. We asked our group what lessons they could share from their individual experience of moving applications to the cloud.

### 3.1. Migration

Migration is the flash point for any deployment. It is fraught with risk and can have severe implications for the business if it goes awry. The group came up with a number of useful suggestions for those faced with a migration exercise.

#### Communicate with end users

##### Before and after

One CIO was forced into a major migration exercise when their leased data centre was shut down by its owners. The CIO who inherited what must have been a baptism by fire comments 'one lesson we learnt is showing the before and after. When it works no one notices, when it doesn't the world is going to end. We have done a bit of post migration measurement. We have had no unplanned outages and fewer planned. We used to have planned outages every two or three weeks'.

##### Managing the chain

Managing the chain of vendors and support is also critical: 'hosting companies are not always the best at project management, it's not a core competence; there seems to be some confusion about who does what and we would advise anyone who is undertaking a large scale migration to lock this piece down' (from the same CIO).

##### Having a roll back plan

But the main lesson during this migration seems to be the importance of a roll back plan. 'Migration of the data was actual migrated fine, but we did have a loss of operation for that team. The distributed file sharing replication process failed and not only did it stop replicating but it started replicated old files so the newer files were wiped out. This could have been solved with roll back plans. Snapshots that could have been taken that we could have rolled back to weren't taken.'

*'This is very important. Our CIO took personal responsibility for communicating with the end users. We had a lot of discussion about how to communicate with people, and tell them we were moving from one version of Windows and Office. We put up the documents on our document management system, but I think only 15% read it. We knew who had and who hadn't, we're the IT department! A bit of an eye opener as to the range of ability, shall we say? We give them a standard suite of apps, but we have some people who are scared. We had to prise XP desktops from some people's hands.'*

Building and Construction IT Director

### **There are bigger problems than migration**

While migration remains a headache, the pervasive attitude is 'this is a problem that has been solved'. As a CIO from an education client remarked, 'Migration doesn't bother us, the bigger problem is moving data from legacy applications.' Similarly 'Our major concern now as applications unbundle, is data transformation'.

## **3.2. Ongoing management**

Once everything is up and running, how to keep those business critical applications running smoothly? The advent of the cloud has bought many great advantages to the enterprise, but the market for services is fragmented, and that brings management and monitoring challenges of its own. As the old adage goes 'if you can't measure it you can't manage it'.

### **Monitoring is critical to agile IT**

With multiple applications running in different places reactive support is no longer quite enough. Enterprise IT departments no longer wish to be in fire-fighting mode, a key part of the 'agile IT' model outlined in part 1 of this series was the ability to be proactive. The engaged IT director want to hear if the CPU has maxed out and needs additional resources sooner rather than later. The information only has a value at a point where it is possible to provision seamlessly.

### **Patching is no longer enough, customers need one throat to choke**

'One of the classic challenges you have in a cloud deployment is the management of multiple players' says an Oil and Gas CIO. 'You have the provider, your internal infrastructure and the application. If there is a problem, whose problem is it? Is it an application problem, a provider problem or an internal infrastructure problem? It's essential to pick a provider that can have support up to the application layer. You need someone who is your eyes and ears and giving early warning of what is

going on with in an application. It helps you pin point the problem. I hate it when you have one problem, you go to one person in the chain and they say its' not us and finger point. In a time of a crisis you really don't want to do that.'

**End of life issues such as deletion of data are an issue for SaaS and public cloud**

As we have already mentioned there is difficulty in removing company data from a SaaS platform such as Salesforce. Deletion of data is also an issue for public cloud providers. While contracts are short and resources can be scaled up and down easily, few public cloud providers offer deletion of data certificates, or guarantees that other users on the shared platform do not have access to the instances.

## 4. Conclusion: Right supplier for the right company

We concluded the first paper in this series by noting that IT leaders are taking a hybrid approach when it comes to distributing new and existing workloads. Again and again we heard ‘the right platform for the right application.’ In the course of the second paper we have seen this approach in practice. No IT estate is the same and every organisation or enterprise will have its own unique requirements and its own group of stakeholders all with differing requirements. These make this group very demanding! And also difficult for a one-size suits all SaaS or IaaS platform to satisfy.

What then are IT directors looking for in a vendor? Several IT directors spoke of the importance of being an appropriate size when compared to your vendor. ‘We always like to be in our vendors top twenty customer list so if the worst comes to the worst we can have senior executive attention.’

For commodity IT, the relationship is perhaps less important than price. But when it comes to business critical IT, the verdict was universal, finding the right partner is key. The Financial Services IT Director with only three on staff says ‘We really look for partners because we rely so much on outsourcing. I am wary of big vendors. The goal is to make our partners to be self-sufficient.’

His colleague in logistics adds ‘The rate of change here is high, it’s an entrepreneurial organisation. We need a technology partner who can provide us with services you can scale, to allow the internal team to deliver real business and support the workflows and so forth. We want to focus on design, rather than plugging in extra hardware.’

While every IT estate is unique, that complexity gives rise to broadly similar requirements. To help other IT Directors and their teams in the vendor selection process, we will finish with a short summary of the key features the group wanted to see in a supplier:

- A full roster of platforms from colocation to hosting to IaaS and the ability to broker this breadth of pre-integrated choice
- A solid track record and proven ability to deliver transformation projects
- The ability to monitor and manage critical infrastructure seamlessly across the stack from the physical layer up to the application layer
- A partner rather than a supplier, with flexibility in approach and methodology
- A vendor large enough to provide wide range of services but not so large that the client is unable to have any influence

These research findings support the BroadGroup market view that not all IT infrastructure will transition to public cloud and the future for mid-size

enterprises will be a mix of workloads, with applications and data spread across public and private clouds, as well as traditional on-premise infrastructure. Business critical applications with performance and security demands would be best hosted on a private cloud and integrated with less critical services on a public cloud. It is recommended that organisations engage with the right specialist provider, who has the expertise to define, design, build and manage a complex and effective hybrid computing environment.

Finally we would like to thank once more the IT teams for giving up their time and for sharing with us their thoughts and future plans. We found the conversations instructive and enjoyable and hope they did too.

## 5. About Attenda

Attenda is one of the UK's leading managed service and cloud platform providers, specialising in running business critical applications. Our Business Critical IT approach combines business outcome focus with a structured engagement methodology and supporting services and infrastructure.

Our role is to provide cost effective ways to overcome the barriers to cloud adoption to enable migration of business applications to a hybrid environment. Our Consulting services can help to guide clients in the selection of the appropriate hybrid combination of private cloud, dedicated infrastructure and leading public cloud services; we can then create and run this unique hybrid computing environment – delivering the same peace of mind and exceptional service quality as for solutions designed and deployed solely in our data centres.

We are starting to see more and more of our clients assessing the distribution of existing and new workloads across hybrid architectures and we recognise that provisioning hybrid platforms for Business Critical IT requires business-class service levels. A key component of this is the direct connection of our London-edge data centres to public clouds, removing the uncertainty of Internet performance. Today, we offer multi-tenant, dedicated and self-service options in our data centre estate and an almost two year track record of success with managed services for Amazon Web Services (AWS) public cloud.

We have built up a commanding market reputation, with the industry's leading accreditations and an unrivalled portfolio of UK enterprise Clients. Attenda is ISO9001, ISO27001, ISO20000 and ISO22301 accredited, is a HP CloudAgile Partner, a Microsoft Gold Hosting Partner, VMware Premier Service Provider, a SAP Partner, SAP Certified in Hosting and Cloud Services, AWS Advanced Consulting Partner and a Citrix Service Provider partner.

For further information on any aspects of this White Paper please contact us:

T: +44 (0)1784 211 100 E: [info@attenda.net](mailto:info@attenda.net) W: [www.attenda.com](http://www.attenda.com)