Companies that use an on-demand supplier are also buying access to highly secure enterprise datacentre facilities, skilled staff specifically trained to support given applications and infrastructure, scheduled back-ups, built-in redundancy and easily shared applications for supporting cross-organisational business processes, to mention just some of the benefits. Cloud platforms also provide relief for in-house test-and-development teams with resource constraints. This seven-page Buyer’s Guide to Cloud Computing details the kinds of cloud offering that CIOs and senior IT professionals will need to take into account as they plan future outsourcing, hosting and application strategies.

Contents

Putting platforms in the cloud  page 2
Cloud computing is not just about applications. Cliff Saran looks at the maturity of infrastructure as a service.

Can cloud computing push up profit?  page 4
James Staten explains what to look for in infrastructure-as-a-cloud services and how they can boost your business.

Cloud computing and the benefits of elasticity  page 6
Corby Borough Council is using Amazon’s EC2 virtualised server architecture for its online portal application to save on IT investment and reduce the cost of interactions with customers, writes Arif Mohamed.

The realities of cloud formation  page 7
Bob Tarzey, director of analyst firm Quocirca, gets to the bottom of the industry hype on cloud computing.

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Putting platforms in the cloud

Cloud computing is not just about applications. Cliff Saran looks at the maturity of infrastructure as a service.
Changing the way enterprise systems are put together

Jeremy Roche is CEO of FinancialForce.com, which has developed an enterprise accounting application natively on the Force.com platform. The software is derived from the CodatoGo software, which Coca originally built on top of Force.com. Although the company only started in September 2009, FinancialForce.com has customers in 14 countries and is used in companies with between seven and 70,000 users.

Roche says, "Force.com provides us with a new way of building applications. The product uses Salesforce.com infrastructure, which gives us access to the hardware, networking security infrastructure, up through the data layer, to services we can consume on our own platform. It’s an entire ecosystem."

Playing to strengths

He says FinancialForce.com is an applications company. The company understands how to build financial software. But moving into the cloud is not a trivial matter.

“We are an applications company, not a technology-stack company. How do we build the platform, the infrastructure, control the multi-tenancy and security? This was the highest risk we faced in building the product for the cloud. We knew how we wanted to build the financial application in the cloud."

Without Force.com, he says the company would have needed to build the cloud platform speculatively. "We don’t want to worry about infrastructure, or scalability because our application runs on the same infrastructure as Salesforce.com."

Platform dependence

This may seem that FinancialForce.com is tied to Salesforce.com, but Roche believes even traditional software development is effectively tied to a single platform. "If you build your own infrastructure on a Java and Oracle stack you won’t change that infrastructure. Force.com gives us the toolkit Salesforce.com users to build its own application. We consume Salesforce services like Workflow," says Roche. "You code on the platform in the Apex language, a Java-like Salesforce.com proprietary language."

So the company has been built on Force.com and it is now opening up its own services to other Force.com developers. "We publish services, just like Salesforce.com services, that run natively on the Force.com platform."

These FinancialForce.com services can then be consumed by other developers.

One could argue the approach Roche has taken with FinancialForce.com is analogous to the idea of a service-oriented architecture (SOA), without all the standards and complex implementation required for a SOA strategy. "It is a practical example of SOA. We code our own applications in an SOA-like model."

Development teams

He believes this SOA-like approach to software development will lead to a new breed of enterprise software that caters for businesses that want to buy cloud-based software applications that require zero implementation time.

"There is a growing, complementary partner system. We have teams of developers who share best practices. Moreover, through the partner network on Force.com, developers are taking the APIs in FinancialForce.com to build complementing applications."

This is changing the way enterprise systems are put together, according to Roche. He says, "There is a new sort of ERP. People are looking at fast deployment of products and point solutions that work together."

Software companies building this component-style ERP on Force.com include LessSoftware, Ascent and Gliiaro. Roche says these offer different styles of ERP that integrate with FinancialForce.

“People need to discuss the business value and identify which areas of infrastructure can be virtualised in the cloud”

Cloud computing offers businesses a perfect opportunity to offload expensive IT resources into the cloud. The Open Group’s Business Return on Investment from Cloud Computing whitepaper describes it as the move from IT- to business-centric services across a wider services continuum, with utility services for infrastructure at one end, and with business-centric software and business processes delivered as a service from the cloud at the other.

The main author of the paper, Mark Skilton, director at Capgemini and member of the Cloud Business Artefacts Project at the Open Group, says, “Cloud computing can be a quick way of getting into trouble. People need to discuss the business value and identify which areas of infrastructure can be virtualised in the cloud.”

In the whitepaper he warns that while utility-based pricing is attractive, it has inherent risks.

This type of billing can be construed to help with cash flow, but the subscriber will only benefit from usage-based billing if bill amounts are predictable and controllable. If not, then neither the subscriber nor the provider can budget effectively and, consequently, the subscriber pays a premium for bursting capacity, and/or the provider (and thus the subscriber) oversubscribes to resources and runs the risk of a capacity shortage, says Skilton.

If the cloud model does take off, businesses will have thousands of service providers to choose from, making the selection process difficult, and risky.

Cloud code of practice

Andy Burton is the chairman of the Cloud Industry Forum (CIF), which developed from the Federation against Software Theft to address the growing concerns of businesses that want to buy online services. He says, “Businesses cannot be sure where they go to a website to buy an online service who is behind the site.”

As such, businesses could be exposed to unknown financial, security or resilience risks of a third party. CIF’s goal is to address these issues by educating the sector and developing a credible resource that can be validated and demonstrated by service providers.

CIF is developing a code of practice which will offer a self-certification process for service providers, allowing buyers to compare different cloud services providers based on a common set of criteria, covering transparency, capabilities and accountability.

Burton expects thousands of service providers to sign up.

While CIF will not check every submission, there will be a quality control process where about 10% of service providers will be checked by the forum’s team.

IT directors will need to take into account the different styles of cloud offering as they plan future outsourcing, hosting and application strategies. The cloud will affect next-generation IT.
It seems as if every CIO comes back from a conference cocktail party demanding IT “move to the cloud”. While this can mean many things, including using software-as-a-service, managed hosting, or application service providers, the demand often centres on moving applications out of the business’ own budget-sucking datacentre and up to an infrastructure-as-a-service (IaaS) cloud platform.

It is certainly possible for most organisations to use IaaS – the real question is how to do it and when.

Forrester interviewed more than 60 organisations that are leveraging IaaS clouds. They have found that it is best to use cloud platforms as temporary capacity, because although the rates of eight cents per CPU per hour may look enticing, they can add up fast.

The best places to start are with testing and development of new applications, web applications, and high-performance computing. Forrester advises clients to get their feet wet with these applications first, but plan to move on to more advanced uses, such as cloud bursting and leveraging cloud-resident services and management tools, and then progress to cloud-native services such as Hadoop and Microsoft SQL Azure.

Infrastructure costs are under fire and with the global recession entering its second year, infrastructure and operations professionals, like all corporate leaders, are being squeezed to drive down costs even further and to drive up efficiencies. If you can do both, you stand to be a hero.

This imperative has created renewed opportunities for outsourcing options that differ enough from the offerings of the late 1990s to promise dramatically greater efficiencies.

But remember: if it sounds too good to be true, it probably is. Cloud services promise real flexibility, with instant capacity, no long-term contract, and on-demand use. They also promise compelling economics, with pay-only-for-what-you-use and pay-nothing-when-you-aren’t-using-it. Enterprises cannot match economics such as eight cents per CPU per hour.

But not so fast: while the economics are true, they are a tease, and this is where the costs begin, not end.

Research over the past seven months among enterprises, consultants with cloud practices, and independent software suppliers show that cloud, while truly compelling, should not be viewed as a replacement for the datacentre, but rather as yet another portfolio option in your IT quiver.

Costs can mount quickly

Cloud permanence is more expensive than traditional hosting. Where a small virtual server in Amazon Elastic Compute Cloud (EC2) may cost just 10 cents per CPU per hour, once you turn it on you start consuming storage and bandwidth as well, which carry charges of 10 cents per gigabyte per month and 10 to 17 cents per gigabyte respectively. Convert these into typical monthly charges and you can ring up bills well above $100 (£69) per month, which exceeds many traditional virtual machine (VM) hosting offerings.

Then you have to look at the costs of migrating your data to the cloud. “If you have to load a ton of data and have a unique format, it could take 10 days to upload,” says Ed Goldberg, who runs myCloudWatcher.com and has used Rightscale to simplify the deployment and management of more than 100 cloud implementations completed in the past two years.

“Sometimes it is cheaper to just ship discs to [the cloud provider],” he says.

But the value of IaaS clouds lies in developer productivity and time-to-market more than cost, as IaaS clouds let developers entirely control the provisioning, configuration, and deployment of the VM themselves. And since they do not have to commit to more than an hour or so at a time, they can tap into these platforms on demand.

But what is the best way to use such a platform, given the high costs of permanency? The key is deploying the right kinds of applications, for the right types of uses, with the right business model behind this practice.

A promising start

Since public IaaS clouds are still a very new concept, it is too early to declare best practices, but we do have an early view into what are quickly becoming the more common uses. “Perhaps 25% of your enterprise applications today could fit in the cloud,” says Kim Shipley, an enterprise technical architect in Capgemini’s cloud practice.

“Any web architected application is what the cloud was built for, but now we are starting to see other types of applications that fit — those with a fatter front end or apps that do not have a front end at all, data conversion, raw compute tasks, and even quarter-end financial processing in batch mode,” he says.
“Cloud should not be viewed as a replacement for the datacentre, but rather as yet another portfolio option in your IT quiver”

Cloud outsourcing options

Renting multi-tenant applications via software-as-a-service (SaaS)
A range of enterprise applications for customer relationship management, human resources, accounting and security can be simply rented rather than deployed and administered.

While the maturity of these offerings varies, many claim a stable of enterprise customers and proven means of corporate systems integration. SaaS offers economies of scale through multi-tenancy and standardised functions, while providing enterprises with customisation options to suit these services to their business processes.

Pushing new application development up to an IaaS cloud platform
Few outsourcing options have garnered the attention IaaS cloud computing has received in the past 12 months. These new hosting options let you sign up for virtual machine resources with the click of a mouse, with no long-term commitment, and pay only for the resources you consume. A lot of the credit for this attention goes to Amazon Web Services (AWS), the first to deliver compute capacity for as low as 10 cents per CPU per hour.

Passing commodity services to an application service provider
When multi-tenant SaaS is not available, a second option is to outsource a single application or service to a provider with specialised or optimised skills in this area. Good candidates are applications the business consumes but does not specialise in or customise greatly.

Replacing in-house services with remote-managed services
If there are functions inside your IT department that you are not that good at, you may find service providers that can deliver them to you as a remote service. Managed security services, data protection, disaster recovery, and desktop management are all common candidates for this type of solution.

Public cloud
Public IaaS cloud computing is the delivery of compute (virtualised servers, storage, and networking) on demand as a shared service and per the above definition. IaaS clouds promise a new type of compute capacity that seems too good to be true.
Cloud computing and the benefits of elasticity

Corby Borough Council is using Amazon’s EC2 virtualised server architecture for its online portal application to save on IT investment and reduce the cost of interactions with customers, writes Arif Mohamed

Last September, Corby Borough Council went live with an online portal application that runs on Amazon’s Elastic Compute Cloud (EC2) infrastructure. The EC2 virtualised server architecture can be accessed over a secure network, allowing organisations to operate applications and other computing resources remotely, ramping up and shrinking their usage as required and paying accordingly.

The online portal, MyCorby, enables the town’s 53,000 residents to access information and council services, such as council tax, benefits, housing, waste collection and leisure services, at their convenience and around the clock. Corby chose cloud computing because it offered the flexibility to support growing demand from the town’s ballooning population, which is expected to double by 2030.

George Jenkins, corporate development officer at Corby Borough Council, says moving to self-service means fewer face-to-face meetings with council staff, and this helps to cut costs. Public sector IT professionals association Socitm has calculated the cost of a face-to-face meeting at £6.56, as opposed to just 27p for the same interaction over the web.

Jenkins adds that the subscription-based cloud platform also saves the local authority a hefty initial IT outlay, allowing it to reinvest money in other service improvements for customers.

At the moment, the portal is primarily accessed internally by council staff working in one-stop-shop service bureaus, but Corby expects the demand for self-service to grow rapidly among its citizens.

The online portal was developed in conjunction with Firmstep, which provides web-centric IT systems to one-third of local authorities. It was also the pilot for Firmstep’s cloud-based government portal software.

Giles Mitton, Firmstep’s chief technology officer, says Amazon’s EC2 offers scalability and reliability, allowing users to ramp up or shrink IT resources as required.

Amazon also has a data centre in Ireland, with two additional fully redundant facilities. This makes EC2 accessible to local authorities, which are not advised to send data outside the EU.

Virtual servers

The infrastructure behind the Corby customer portal is based on eight virtual server instances, the heftiest of which are two 64-bit “extra large EC2 instances”. Each of these has four virtual server cores with 15Gbytes of memory and runs Windows Server 2003.

Firmstep operates encrypted SQL Server 2005 databases for Corby, and uses Amazon’s loadbalancing capability. Static files are hosted on Amazon’s Simple Storage Service facility.

The system also includes several Linux-based servers running applications written on the Ruby on Rails web application framework, and Apache for additional load balancing. An important part of the cloud infrastructure is Firmstep’s local integration module (LIM), which enables it to link directly and securely through the council’s internal network and into its internal systems.

Among these are the council tax database and the Local Land Property Gazetteer database, which holds addresses and postcodes used to identify properties.

“The LIM allows two-way communications, and we are able to push data into their back-office systems as required. It is fully encrypted and authenticated, and the LIM component can be operated from the cloud, which tackles the problem of not being able to move Corby’s entire infrastructure into the cloud,” says Mitton.

This level of integration allows, for example, self-service portal users to check when their bin collections are due, and also get access to their council tax balance or benefit information, says Mitton.

Security

Amazon’s EC2 has various levels of security built in, but Firmstep added further intrusion detection and security measures. For example, it configured the firewall so that only the ports that need to be open to certain hosts are open, and set the system to authenticate users as soon as they log in, attaching permissions and restricting access as required.

From Corby Council’s perspective, it sees cloud computing as the future, and is convinced that it can be used securely to run council services in a cost-effective manner.

Robert Hinde, customer first manager at Corby Council, says, “Attitudes towards customer service within local government are changing and technology is now seen as a key enabler in offering enhanced interaction with citizens,” he says.
The realities of cloud formation

Bob Tarzey, director of analyst firm Quocirca, gets to the bottom of the industry hype on cloud computing

Salesforce.com’s recent announcement of its VMforce platform for deploying Java applications is the latest in a long line of announcements from a wide range of IT suppliers of such on-demand (or cloud-based) offerings. IT departments may be confused about the range of products and the terminology used to describe them. They may also be unsure of the risk and benefits.

Essentially there are three levels of on-demand offerings. These mirror the way IT is increasingly deployed internally.

The lowest level is infrastructure-as-a-service (IaaS). This is where pre-configured hardware is provided via a virtualised interface or hypervisor. There is no high-level infrastructure software provided such as an operating system, this must be provided by the buyer embedded with their own virtual applications.

IaaS is particularly useful for organisations that are running virtualised applications internally, but may want to make use of additional capacity when their own resources are stretched. On-demand storage is also considered as IaaS.

Platform-as-a-service (PaaS) goes a stage further and includes the operating environment with the operating system and application services. PaaS suits organisations that are committed to a given development environment for a specific application but like the idea of a supplier maintaining the deployment platform.

Software-as-a-service (SaaS) goes the whole hog, providing fully functional applications on-demand to deliver specific services such as e-mail management, CRM, ERP, web conferencing and an increasing range of other applications. Many independent software vendors (ISVs) are turning to the SaaS model and making on-demand versions of their applications available. To do so they often use IaaS or PaaS for deployment.

Service providers

Much of the coverage of on-demand products focuses on a few high-profile IT companies and it is easy to think the market is limited to them. This is simply not true; many managed hosting providers are now providing IaaS and PaaS as an alternative to their traditional dedicated infrastructure hosting services. Add to this the number of ISVs now offering full or partial SaaS and the aggregated market these organisations represent is as big as that of their higher profile counterparts.

Choosing a supplier will depend on the type of platform required, the service levels on offer and the guarantees that can be provided on security and governance.

Perhaps the most high-profile IaaS platform is the Amazon Elastic Compute Cloud (EC2). Other examples are Attenda’s KTI and Rackspace’s Cloud Servers (currently in beta). PaaS suppliers include Microsoft with its Windows and .Net-based Azure and Google with its Java-based AppEngine. Some PaaS offerings have a particular focus; Force.com (the original Salesforce.com platform) only supports applications developed using its proprietary Apex language. It was mainly aimed at customers wanting to extend their Salesforce.com CRM deployments and ISVs wanting to sell their applications to existing Salesforce.com customers. The new VMforce product allows them to do that with Java as well. Rackspace’s Cloud Sites is used primarily for websites, although some use it for applications.

SaaS includes a wide range of products including enterprise applications such as CRM and ERP, utility services including e-mail, web conferencing and content security. The range of suppliers is huge.

Working out the benefits

So why all the fuss? What is actually in it for the buyer? If you focus on the cost of the platform, it does not seem to add up. If you buy your own hardware and software after eight quarters it is quite possible that the cumulative spending on an on-demand subscription could outstrip that of an on-premise deployment.

But this only looks at hardware and software costs. The point is that by using an on-demand supplier you are also buying access to highly secure enterprise datacentre facilities, skilled staff specifically trained to support given applications and infrastructure, scheduled back-ups, built-in redundancy and easily shared applications for supporting cross-organisational business processes, to mention just some of the benefits.

Add all this in and for many the cost is easily outweighed by the reduced risk and added value of on-demand services. And don’t forget, at some point all that on-premise hardware and software will need replacing; with on-demand providers that is part of the service, or at least it should be.

For many smaller businesses the business continuity option offered by on-demand services should be irresistible. For many enterprises, running utility IT applications via on-demand services also makes sense, freeing IT departments to focus on the applications that deliver unique value to their businesses.