Vendor Insight
Inside IBM's Cloud Computing strategy

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It can be no surprise that IBM, as one of the very largest suppliers of IT infrastructure to industry, has lost little time in embracing Cloud Computing and laying out its position for customers and prospects. One of the company's big challenges now actually stems from the speed with which it has moved: it seems that every part of IBM has a Cloud Computing story, and so it's sometimes difficult to see the whole picture in relatively simple terms. Nevertheless customers should have no doubt that IBM is taking a proactive role in developing Cloud Computing research, ideas and products.

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Summary

IBM has embraced Cloud Computing wholeheartedly

IBM formally announced its intention to play in the emerging market for Cloud Computing related technology and services in November 2007, with an initiative called Blue Cloud. However, this was hardly the start of IBM's experience in delivering products and services with relevance to the Cloud Computing proposition.

The most obvious experiences that IBM brought to the table as it sought to flesh out a Cloud Computing strategy were those around its long-running and successful mainframe technology and services business.

However, its mainframe experience isn't the only thing that IBM has been drawing on to catalyse the execution of a Cloud Computing strategy. There are three other key business lines that IBM has had in place for some time that all contribute: application and infrastructure outsourcing services, Global Financing, and high-performance on-demand services (HiPODS).

Driven by the relationships it has with its customers IBM has placed bets on multiple different IT capability delivery models, and will continue to do so

IBM positions Cloud Computing as providing a set of IT capability delivery and consumption models that enable IT organisations in industry to become more focused on supporting business outcomes and delivering IT services and less on playing the role of infrastructure provider. It's not pursuing an evangelical approach that excludes any one style of Cloud delivery model. It pitches both public and private Cloud delivery models as part of its portfolio.

Instead of highlighting the different roles that these models play, IBM's approach is to offer customers choice as makes sense on a workload-by-workload basis. The chief workloads IBM is targeting are collaboration, desktop computing environment delivery, analytics and information management, software development and test management, business process management, storage, and infrastructure service management.

IBM provides many products and services that help customers start exploring opportunities with low risk

IBM's commitment to Cloud Computing is beyond doubt. 'Public Cloud purists' will decry IBM's characterisation of some of its offerings as being part of a Cloud Computing portfolio – but even if you take that extreme position, it should be clear that the company is still doing an awful lot of work to make its products and services available to customers wanting to explore the benefits of Cloud Computing. With this in mind, any enterprise with a significant investment in IBM technologies should start to explore IBM's offerings 'on the IBM Cloud' as well as its 'Smarter Systems' programme now, to understand the 'art of the possible'.

For companies without significant investments in IBM technologies, there are still some elements of the portfolio that are worthy of exploration.

From mainframes to 'Blue Cloud'

IBM formally announced its intention to play in the emerging market for Cloud Computing-related technology and services in November 2007, with an initiative called Blue Cloud. However, this was hardly the start of IBM's experience in delivering products and services with relevance to the Cloud Computing proposition. The most obvious experiences that IBM brought to the table, as it sought to crystallise a Cloud Computing strategy, were those around its long-running and successful mainframe technology and services business. It's been highlighted many times by numerous commentators that conceptually, the mainframe computing model – based around high availability and reliability, deep virtualisation, management automation, multi-tenancy and metering and billing, echoes the underpinnings of the Cloud Computing model.

IBM has of course been adding capabilities steadily to its mainframe stable to help keep mainframe servers as a viable strategic platform, even before it went public with a Cloud Computing strategy. In 2000 IBM added the ability to directly support 'open systems' workloads – specifically those based on Linux – and further enhanced this shortly after through the ability to deploy speciality processors for Linux (IFL) and Java (zAAP) into mainframe systems. Since then enhancements to its CICS and IMS mainframe application servers have added native support for Web Services integration protocols too. Earlier this year, IBM took a further significant step, with the launch of its new zEnterprise generation of mainframes and associated extensions – which together enable mainframe-hosted management tools to manage virtualised computing fabrics spanning not only mainframe systems but also selected POWER- and x86-based server systems.

The company hasn't made much publicly of how its mainframe experience sets it up to succeed as a Cloud Computing technology and services player because it doesn't want to be seen as a dinosaur harking back to its glory days. However, that knowledge is still absolutely there – and IBM is using all its experience to drive its strategy forward.

However, its mainframe experience isn't the only thing that IBM has been drawing on to catalyse the execution of a Cloud Computing strategy. There are four other key business lines that IBM has had in place for some time that all contribute: Application outsourcing services, managed infrastructure services, Global Financing, and high-performance on-demand services (HiPODS).

Application and infrastructure outsourcing together represent over a quarter of IBM's business, and IBM has a long heritage of delivering a range of services to multinational clients through an annuity revenue model.

IBM has a long history of offering its customers finance on big hardware purchases, and of course historically much of its mainframe business was delivered through leasing contracts. But over the past few years IBM's Global Financing business has expanded its scope significantly, offering loans and leasing options for a wide range of hardware and software products – and even for fixed-price projects including professional services commitments. IBM's well-established ability to enable customers to convert capital expenditure to operating expenditure through Global Financing means that it can offer customers many of the economic benefits commonly associated with public Cloud usage, even where the technology deployment follows a private Cloud model.

IBM's high performance on-demand services (HiPODS) capability has been in place since 2002, providing supercomputing resources and consulting services to clients around the world. In 2008 IBM started opening competency centres specifically oriented around Cloud Computing capabilities within these HiPODS centres, and they've since become a major channel for IBM to use to engage with customers and prospects to help them learn about the opportunities and challenges associated with transitioning computing workloads to Cloud Computing delivery models.

In addition to all these capabilities, IBM has also made acquisitions to support its Cloud Computing strategy – in particular that of assets from hosted email provider Outblaze (2009) and Cast Iron Systems, an integration technology vendor (2010). Acquisitions of Lombardi (2009) and Sterling Commerce (2010) also added significant hosted service assets to the company's portfolio.

Inside IBM's Cloud Computing strategy

Despite all this work, IBM didn't formalise an organisation to drive a coherent cross-IBM Cloud Computing strategy until 2009 – when experienced IBM managers Erich Clementi (former General Manager of its Business Systems Group) and Kristof Kloeckner (former VP of Strategy and Technology for IBM's Software Group and head of the Hursley research lab in the UK) were tapped to head up a specialist Cloud Computing Division.

Cloud Computing is now one of IBM's top-level company-wide initiatives, as set out by CEO Sam Palmisano (the others are 'Smarter Planet', business analytics, and development of markets in emerging economies). Palmisano and others have made a number of public commitments to developing Cloud Computing products and services around the world, and the company has made very significant investment in this area.

As one of the world's very largest providers of IT systems and as a company with a heritage going back over nine decades, it can be no surprise that IBM is taking an approach to Cloud Computing that is pragmatic and broad in scope. IBM understands that the current wave of interest in Cloud Computing plays to a significant shift in the market's expectations in how IT capabilities will be delivered and consumed. But it's also already seen a number of previous disruptions – as have its customers. IBM therefore has no option but to position Cloud Computing as an integral element of an overall multi-faceted approach to IT capability delivery and consumption that customers will need to take. The company wants to capture customers who are interested in using Cloud Computing models to transform the way they procure IT capabilities and build business capabilities on top of those, but at the same time it must avoid leaving its faithful customer base – which expects IBM to deliver rock-solid, stable and dependable services – behind.

A workload-based story

IBM positions Cloud Computing as providing a set of IT capability delivery and consumption models that enable IT organisations in industry to become more focused on supporting business outcomes and delivering IT services and less on playing the role of infrastructure provider. It sees Cloud Computing options as being particularly useful as a catalyst to enable IT organisations under pressure to meet rapidly rising demand to vastly increase their capacity for, and rate of, IT capability delivery to the businesses they work within. In line with IBM's overall approach to Cloud Computing, it's not pursuing an evangelical approach that excludes any one style of Cloud delivery model. It pitches both public and private Cloud delivery models as part of its portfolio:

- **Public Cloud delivery**. Here, IBM offers two sources for services:

    o   The "IBM Cloud" – using compute and storage resources deployed at IBM computing centres in various locations across the globe.

    o   Amazon Web Services – IBM offers a number of its popular middleware technologies as Amazon Machine Images (AMIs) for deployment on Amazon's public Cloud platform. Examples include its DB2 and Informix database systems, WebSphere Portal and Application Server, InfoSphere DataStage and QualityStage, and Lotus Forms.

- **Private Cloud delivery**. Here, IBM's offerings are deployed as 'Smart Business Systems' that are based on common platform elements (typically, but not exclusively, x86 hardware, a range of operating systems and virtualisation hypervisors, together with all necessary storage and networking components and an integrated self-service management portal).

Instead of highlighting the different roles that these models play, IBM's approach is to offer customers choice as makes sense on a workload-by-workload basis. For IBM, this makes absolute sense: explaining its portfolio in terms of workloads first and foremost – rather than in terms of delivery models – enables IBM to show how different Cloud Computing delivery options are an integral part of the delivery spectrum across its whole portfolio of products and services, rather than being seen as "something else" outside the core business.

An industry-specific focus

As well as taking a workload-based approach, IBM is now also readying a set of industry-specific propositions for:

- Organisations wanting to become Cloud Services Providers (offering end-to-end enablement through a combination of hardware, software and consulting)

- Consumer electronics providers wanting to deliver Cloud-based value-added services to customers as well as leveraging application services in the Cloud to engage better with customers

- Federal government agencies wanting to leverage Cloud-based resources to drive efficiencies and citizen-centric service delivery (offering specialised consulting services, hardware and software configurations and packaged application services)

- Municipal government agencies wanting to improve the services they offer citizens (offering packaged on-ramps to delivery of shared services via Cloud delivery models).

Current products and services

With this as background, IBM has built a dizzying array of products and services that have some affinity with Cloud Computing, and this array is set to get larger.

On-premise products and hosted services

Figure 1 overleaf shows IBM's current portfolio of Cloud Computing-related hosted services and on-premise product offerings that customers can use as the building blocks of private Cloud deployments. The chief workloads IBM is targeting are:

- Collaboration – principally through the Lotus Live family of publicly-hosted offerings

- Desktop computing environment delivery – where the same capability is available in both IBM Cloud and on-premise versions

- Analytics and information management – where different elements are available through public Cloud and on-premise delivery models

- Software development and test management – where the same capability is available in both IBM Cloud and on-premise versions

- Infrastructure service management – where different elements are available through public Cloud and on-premise delivery models.

Figure 1: An overview of IBM's current Cloud Computing portfolio		
	Public Cloud offerings	**Private Cloud infrastructure elements**
Application	Lotus Live Lotus Live iNotes Lotus Live Integrated Apps Blueworks Live	
Platform and infrastructure	Smart Business Desktop *InfoSphere Information Server, DataStage and QualityStage** *WebSphere application servers, Content Management, Portal; DB2** Smart Business Development and Test Tivoli Live Service Manager Tivoli Live Monitoring Services Vulnerability Management Managed Email and Web Security Hosted Security Event and Log Management Managed Backup	Smart Business Desktop Cloud Smart Analytics Cloud Smart Analytics System Smart Business Storage Cloud Information Archive Smart Business Development and Test Smart Business Service Desk Direct Tivoli Service Delivery Manager Tivoli Service Automation Manager WebSphere DataPower Secure Cloud Connector WebSphere DataPower Cast Iron appliance CloudBurst system

IBM's Cloud Computing offerings today span infrastructure, platform and applications; many are available either as services delivered 'on the IBM Cloud'. The company has also released a large set of on-premise products that provide the building blocks for private cloud deployments.

[*] NOTE: italicised items in the table above aren't hosted on IBM's Public Cloud, but they are offered and supported on Amazon's EC2 public cloud platform.

Consulting and integration services

As well as providing a large and expanding range of products for on-premise use and hosted services from its software and systems divisions, IBM has driven its services groups (Global Business Services and Global Technology Services) to create Cloud Computing offerings for customers too.

Between them these groups provide a set of offerings spanning business consulting and technology implementation assistance as follows:

• Strategy and Change Services for Cloud Adoption

• Strategy and Change Services for Cloud Providers

• Application Development and testing services for Cloud Computing (including application virtualization services and performance testing, and Rational Software Delivery Services)

• Infrastructure Strategy and Design Services for Cloud Computing

• Security Consulting Services for Cloud Computing

• Resiliency Consulting Services.

Creating a Cloud partner ecosystem

IBM initially launched its business partner programme for Cloud Computing – 'Cloud Connect' – in March 2010, and since then has added further partners. Partners include Linux distribution providers Novell and Red Hat, Cloud testing vendors SOASTA and iTKO, Cloud middleware and management technology providers CohesiveFT, RightScale and Akamai, and application services providers NetSuite and Dassault Systèmes.

IBM is working hard to provide all the necessary tools and services required to attract a world-class spectrum of partners that can help make the IBM Cloud a 'no brainer' platform for enterprises to invest in. It's paying specific attention to processes it uses to on-board new Cloud Connect partners by providing dedicated resources for Cloud Connect partners on its software development knowledge site developerWorks, as well as putting a business development programme place to drive collaborative marketing and selling with Cloud Connect partners.

Cloud Computing is an enabler for IBM's other strategic priorities

It's important to realise that as well as the development of a Cloud Computing business being a top-level corporate priority for IBM in its own right – as a way for IBM to continue to be seen as a long-term strategic partner to its customers – Cloud Computing is also a critical enabler of two of IBM's other strategic priorities: emerging markets and the 'Smarter Planet' programme.

The importance of IBM's Cloud Computing business as a key enabler for the company's plans for emerging markets can be easily seen by looking at the way that IBM has piggybacked on its existing HiPODS centres to develop a global network of Cloud Computing Competence Centres. As well as opening these centres – which act as education centres for customers and prospects as well as collaborative research centres – in the US, Europe and Japan, IBM has also opened them in South Africa, Brazil, India, South Korea, Vietnam, and China. IBM has found that potential customers in these emerging markets are keen to explore new IT capability delivery models as a way to leap-frog previous waves of IT investment, building and rolling out new IT-enabled business capabilities with unprecedented speed and reach.

The link between Cloud Computing and IBM's 'Smarter Planet' programme – which IBM is using to engage industries in dialogue about how technology can be used to take drive value from our increasingly instrumented and interconnected world – is multi-faceted. Two particular links are:

- **Improving IT resource efficiency**. Through both its public Cloud ('IBM Cloud') and its private Cloud ('smarter systems') IT capability delivery options, IBM is seeking to help customers reduce the amount of resources (power, floor space, as well as physical assets) required to deliver and support IT capabilities.

- **Enabling instrumentation to power societal and business benefits**. By providing systems and platforms that can scale more efficiently, IBM is seeking to help customers deploy large-scale analytics platforms to make sense of data emitted by the instrumented, connected elements of today's national infrastructures and consumer products to develop new ways of dealing with today's grand challenges associated with trends like urbanisation and climate change.

What should you do?

IBM's commitment to Cloud Computing is beyond doubt. 'Public Cloud purists' will decry IBM's characterisation of some of its offerings as being part of a Cloud Computing portfolio – but even if you take that extreme position, it should be clear that the company is still doing an awful lot of work to make its products and services available to customers wanting to explore the benefits of Cloud Computing. With this in mind, any enterprise with a significant investment in IBM technologies should start to explore IBM's offerings 'on the IBM Cloud' as well as its 'Smarter Systems' programme now, to understand the 'art of the possible'. IBM's Federal Government customers will be particularly interested in what the company is doing to create government-specific resources.

For companies without significant investments in IBM technologies, there are still some elements of the portfolio that are worthy of exploration – where IBM has released offerings that really open up companies' options in terms of adoption of new computing infrastructure models. The CloudBurst appliance and Tivoli Service Delivery Manager, for those companies intrigued by private Cloud possibilities are two examples, as is the (clumsily-titled but very interesting) Rational Smart Business Development and Test on the IBM Cloud offering.