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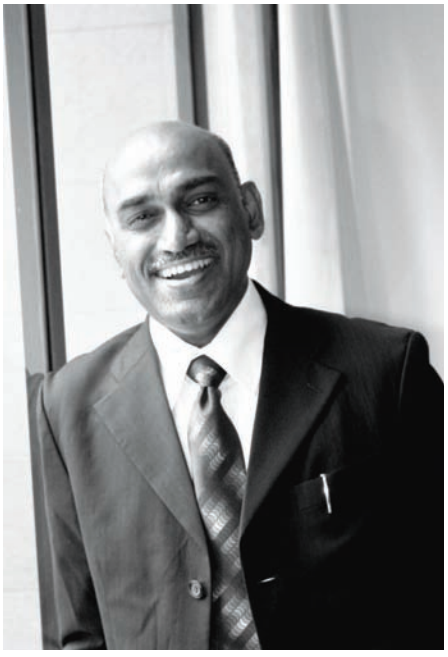
The Cloud Cometh.



Can cloud find favor in the banking and financial services space? There has been considerable debate over this question through the years, but never more so than now; when banks are slowly stepping into the cloud, one gingerly foot at a time.

While most banks still regard cloud with a rather skeptic outlook, several other banks have been brave enough to set foot and actually reap the benefits of this platform. In this edition of FinacleConnect we delve into the cloud story and bring you perspectives and facts around this much debated subject.

Our Feature this time is a powerful myth breaker that clears the haze around banking on the cloud, and discusses the pros and cons of public and private clouds. Taking the thread further is our Cover Story about what the best cloud strategy for banks is and why banks are looking to the cloud despite concerns about security and privacy.

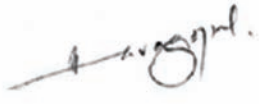
And in the Inside Talk section, find out how Currency Cloud is changing the game for currencies and payments as we talk to Michael (Mike) Laven, CEO of Currency Cloud. Then read about what makes Fidor Bank different in our interview with Matthias Kröner, Chief Executive Officer of Fidor Bank. Moving on, Vipul Shah, Gobal Head of Strategy and Business Development for J P Morgan's treasury services business tells us the J P Morgan cloud story.

This time we also have a guest article by T Srinivasan the Managing Director of VMware India and SAARC. Srinivasan shares with us, his opinion on cloud trends and the way forward.

Should Indian cooperative banks have a cloud strategy? What does the cloud hold for employees and customers? Find out in the People Perspective and Stratagem articles respectively. How can any cloud story be complete without touching upon security; the statute article this time gives you a glimpse into the possibility of extending traditional security models to the cloud. And to tell you where the cloud is headed, our Big Bet section outlines a bank's strategy to reach Cloud 9.

Well, there's all that and more in this edition of Finacle Connect. To put it in a nutshell, I hope you enjoy the cloud ride.

Happy reading!



Haragopal M
Global Head – Finacle, Infosys


BUSTING THE MYTHS OF
BANKING ON THE CLOUD

Cloud has been around for a while now and is predicted to rise to a $250 billion business by the end of this decade. As a concept, it's been around for over four decades and may be simply stated as being mainframe computing through the Internet. A simple statement but, if true, why is there so much debate, uncertainty and distrust of the concept of cloud amongst the general financial community. Chris Skinner takes a look at reality and the myths of cloud computing.

'Cloud' is a ubiquitous term for anything delivered through the Internet today, and dates back to the 1990s when most companies represented the Internet as a large cloud in their charts and plans. The typical dialogue about cloud within the financial community goes something like this however:

To keep it simple, cloud is where you rent technology and information services through providers on the Internet.

Q: "Hello, do you use cloud?"
A: "No, we do not trust cloud."
Q: "Oh, why not?"
A: "Because we do not want to give all of our data to someone outside the bank."

This shows a lack of definition of cloud, as the general perception is that it means a loss of control.

So the first thing is to define what we mean by cloud.

What is 'cloud'?

Cloud, as mentioned, is delivering information services through the Internet. These services may be hardware, software, networking or application based, and really represents any service that you use through the Internet on a pay-as-you-go basis. In other words, it is where you use technologies online rather than buy them in-house.

Just providing this definition shows that cloud has a wide remit from buying extra server capacity to running your customer database through salesforce.com. And it is confusing since cloud has developed so fast, from being simple compute power to everything from infrastructure, software and platforms to APIs and desktop virtualization.

The other reason why it is confusing is that the technology industry does not just refer to cloud, bearing in mind how broad and deep cloud can be, but refers instead to 'as-a-service' components of cloud. So you get Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), Infrastructure-as-a-Service (IaaS) and so on.

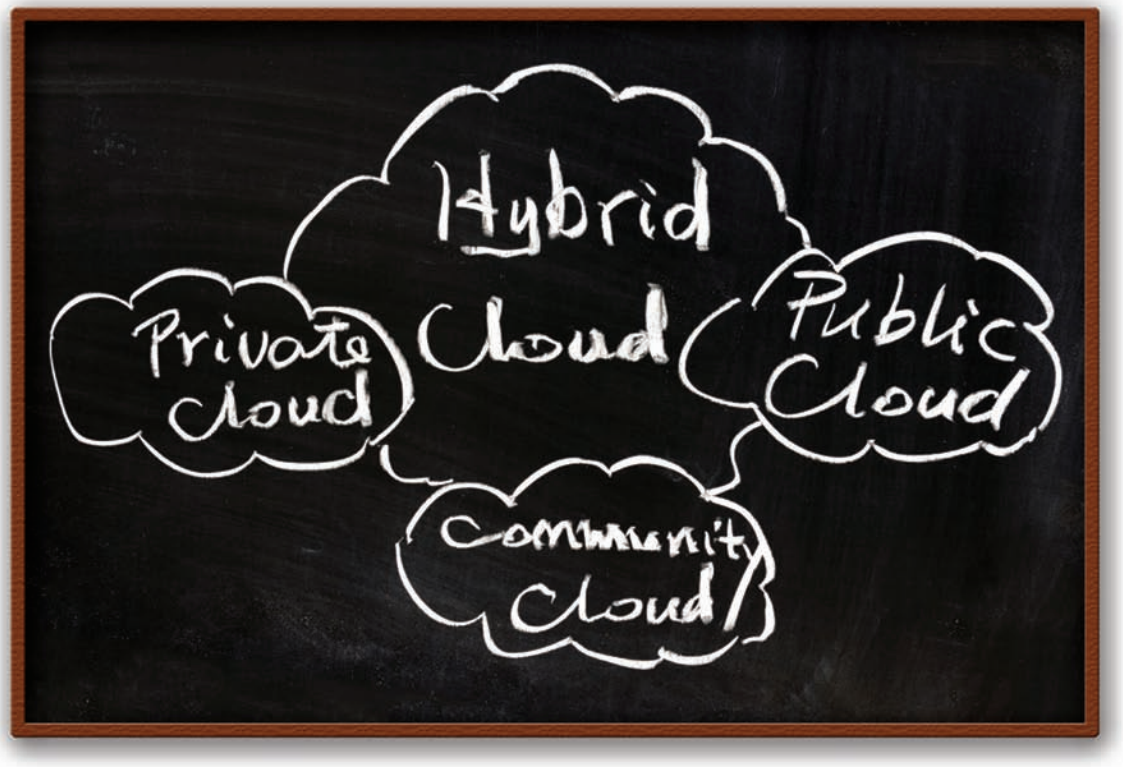
If you ever get confused about cloud, you can see why. So, to keep it simple, cloud is where you rent technology and information services through providers on the Internet. The services may be software, platforms, storage, infrastructure or any other form of service that you do not run in-house (or some say, on-premise).

Why would you rent technology services, rather than keep them in-house?

Primarily because the cost of computing can be prohibitive.

Even with the costs of compute power, speed and processing coming down so fast as to be almost disposable today, the speed of change in computing and the need to handle peak loads and unexpected traffic mean that no company can protect itself from potential outages.

For example, how do you handle a distributed denial of service (DDoS) attack to the bank's website? This is where a criminal or hacktivist underworld decides



to specifically target your bank to bring your website down. The DDoS spreads like a malignant virus and brings in hoards of PCs from around the world, or laptops and mobiles today, and bombards your website with requests to respond until the website simply cannot handle the load and goes down.

The only way you could handle such an attack is either by buying huge volumes of processors and parallel processors to handle the once in a lifetime attack that may never occur, or use cloud to help.

Cloud could allow your website to gain access to unlimited processing power, storage capacity and computing load should such an attack ever occur. It would form a backup to ensure that no matter how many hits, it could take the strain.

The aim of cloud is therefore to avoid the situation of building a Church for Easter Sunday, where you know the Church will be packed for a couple of days a year with people but, for the rest of the year, it's relatively empty.

The Church for Easter Sunday concept is how many compute operations were built in banks over the years, and this is the point of cloud: it doesn't have to be built that way.

Not everything needs to be managed internally, brought in-house, served on-premise and controlled internally.

It sounds simple, and to a large extent it can be, but the hard part is working out what to put in the cloud and what not to.

Instead, pieces of the operation that are critical to operate but only have a peak load once or twice a year, or areas of bank activity where the capital costs are so

high it would be far better to move such investments to operational costs, is where cloud can work.

It sounds simple, and to a large extent it can be, but the hard part is working out what to put in the cloud and what not to.

Where to use cloud

The first real discussions about cloud in the financial world took place towards the end of the 2000's in the investment banking community. Faced with issues over processing power, many of the large investment banks had built large data centres that could no longer cope. These data centres were requiring more and more processing power to handle high frequency trading, but there simply was no space left to host such power.

According to Forrester Research, the global cloud computing market will grow from a $40.7 billion in 2011 to $241 billion in 2020.

Bear in mind that most investment banks are located in high cost cities like London, New York, Hong Kong and Tokyo and you get the picture: more compute power needed, but no space left.

Hence there was a move to find new forms of processing, with blade and grid computing becoming critical to investment bank operations, along with virtualization and more.

These new hosted facilities meant that the compute power load could be met on demand by a new form of technology provider. Some offered colocation services, where you could locate your processing power near to the stock exchange, and others provided Software-as-a-Service tools to reduce latency, the speed of processing.

Over time, as demand for processing increased due to more and more automated trading, the idea of cloud became a true alternative to running the bank's own data centre. Hence, cloud became a discussion point as it would allow banks to scale their servers to unlimited capacity on an as needed basis.

The critical point that developed from this discussion is that cloud does not mean running the bank from Amazon Web Services or Microsoft's SkyDrive. It meant getting the bank's structure to reflect its needs, with some of the banks' operations run in a secure, private cloud, some in an open, public cloud, and some in a hybrid in between.

To be public, private or somewhere in between?

Most banks have resisted the use of cloud services due to concerns about security, reliability, resilience and trust. This is because there have been a small number of cases highlighted where Microsoft's Azure or Amazon's Web Services have failed to deliver services to their cloud users. Often, this has been because the cloud user did not sign up for some of the resilience services offered by these providers but, nevertheless, it has given a bank a bad feeling about cloud. After all, the idea of having a service fail to a client is unacceptable for a bank: if you are unsure of that statement, just look at the negative press the UK's Royal Bank of Scotland received when their payment services systems went down during summer 2012.

These concerns are valid, but still would not negate the use of cloud within a bank. First, there are three ways to use cloud: public, private or hybrid.

Public cloud services are those that run entirely off-premise; private run on-premise; and hybrid run a mixture of on- and off- premise as required.

That sounds confusing, but think of it as being like how you approach outsourcing. You outsource some operations and not others. In the same way, you will run some cloud outside but not others.

The former you could place in public cloud; the latter you would keep in private cloud, which means internally controlled.

So let's take two specific examples: Customer Relationship Management (CRM) and payments processing.

CRM is the knowledge you have about customers and world-leading applications like Salesforce.com provide an ability for all of your global teams to use one global platform to share information. This information is critical, but you have confidence in the application (SaaS) to support those teams and it saves the expense of bringing in your own global platform. Although you would be concerned if the information was leaked or lost, it is not mission-critical and will have backup resilience anyway. Therefore, it is acceptable on a bank's risk levels to move CRM to a public cloud service.

Payments processing is obviously different, as it is mission critical and core to a bank's operations. Any downtime in payments processing will be visible to everyone, and will cause the bank reputational damage. This is not something a bank would be willing to therefore run in a public cloud, but would maintain within the bank's firewalls under a private cloud. In reality, the private cloud purely means that if one part of the bank's operations strains for capacity to process, you have created a structure where the 'overflow' of processing for that bank's operations can be handled by systems and services elsewhere within the bank's technical infrastructures. In other words, you have created an operation where the excess can be handled by applications, services or hardware located elsewhere in the bank. That's all that a private cloud means in reality.

Finally, you may have some hybrid areas where a mix of public and private cloud is used. A good example may be accounts payable, where you run the service as a private cloud within the bank. This is a SaaS application you provide to all of your treasury people and, on occasion, it overloads. On those occasions, you use Amazon Web Services or another provider to handle the excess compute power needed to manage these peak times.

Therefore, the control and security is all managed internally, but the Church for Easter Sunday backup is provided by having capacity available on demand to manage peak load times.

Simple but effective

This has been a very simple outline of cloud as there are so many variations of what it really can mean in reality. For example, some cloud services are now companies like Currency Cloud, whose CEO Mike Laven is interviewed later on in this magazine. Sometimes you may not even know that you're using cloud services. Do you think of using Google or Apple's iTunes as cloud? They are, but you may not see them that way. Finally, you may want to investigate cloud in a lot more detail as it is expected to be a market worth almost a quarter of a trillion dollars by 2020. According to Forrester Research, the global cloud computing market will grow from a $40.7 billion in 2011 to $241 billion in 2020. That's pretty impressive and means that, whatever you do, you will not avoid cloud in your bank's business. Whether it's public, private or hybrid, you will be using cloud. The challenge is to work out what, where, how and when?

- What to move to cloud?
- Where to locate it: private, public or hybrid?
- How to move the operations across?
- And When?

About Chris Skinner

Chris Skinner is chairman of the Financial Services Club, CEO of Balatro Ltd. and comments on the financial markets through his blog the Finanser. He can be reached at cskinner@balatroltd.com.

BANKS TAKE

TO THE CLOUD

A recent IDC survey of 326 large companies in the United States, the United Kingdom, France and Germany revealed that financial services was among the frontrunners in cloud adoption, with 38% of respondents from that sector having a formal cloud strategy.

It's great to see banks and other financial institutions making real progress in their cloud journey. Although concerns regarding data safety and privacy remain, the industry is using these to secure – rather than abandon – the cloud agenda. And it's reaping the benefits.

Different strokes for different folks

That being said, each bank is taking a different approach. For the large established player, with infrastructure exceeding critical mass, the main agenda is to build and automate a private cloud, with pretty much the same functional, cataloguing and self-service capability as a public cloud. In its ideal state, this cloud would approximate a full-fledged offering, complete with characteristics, such as elasticity of compute and storage. The value of this to an institution, which processes humungous quantities of data gathered from different agencies and transactions, cannot be overstated; suffice it to say that the cloud enables banks to perform analyses, which were impossible in the past. This is driving both innovation and operational improvement, manifest as higher agility, shorter time to market, smarter decisions, and so on.

On the other hand, for the mid-sized or small bank, the cloud is their gateway to best-in-class technology and automated information management, minus the heavy investment. These banks can pool their resources to connect to industry benchmark software on a "shared services" public cloud, and start competing with their bigger rivals on a more equal footing.

Interestingly, some non-banking financial entities like the Nasdaq and NYSE have created clouds on a technology platform that can be used by their community as well as by other organizations that can pay as they go for the facility. NYSE's Community Platform, which is the first cloud of its kind, delivers platform services to capital market participants, providing access to flexible, low-latency trading infrastructure at lower cost.

The cloud, along with mobility, is also taking banking into new territory – to the domain of non-financial institutions like mobile operators or postal services, which are leveraging their extensive reach and consumer base to build a niche financial services business.

For the mid-sized or small bank, the cloud is their gateway to best-in-class technology and automated information management, minus the heavy investment.

Cloud applications, something for everyone

Although it looks unlikely that large banks will undertake a really bold move, such as migrating core banking to the public cloud, they are indeed transforming private cloud implementation in many ways. For one, they are changing traditional ways of working by delivering various functionalities as services to business users. They are also leveraging the analytical might of the cloud to transform different functions. Combining big data analytics and cloud computing to simulate historical data to identify typical patterns of fraud, and using that knowledge to spot suspicious

transactions, in real time, as they occur, is one example of this. Analyzing the transaction logs of activity on their websites to understand what customers are doing at that very moment is another.

Of course, one may argue that the cloud strategy of small banks – to access state of the art core banking software via a multi-tenant model off the public cloud – is even more transformational! This has not only shrunk their capital expenditure, but more importantly, also enhanced their agility, ability to take new products to market and overall competitiveness.

The cloud is a great leveler in other ways too. It has helped financial inclusion by enabling non-banks, such as telecom operators to offer accessible wallet services. Someday, it might also overturn other established practices – such as having a credit card or a steady state banking relationship.

The cloud has other uses as well. Large banks are shifting their testing and development environment, as well as applications involving interaction with external agencies, to the public cloud. Also, banks of all sizes are leveraging this medium to enhance their digital customers' experience in several ways – offering 24x7 connectivity through mobile or tablet banking, and highly personalized services, are just a couple of them. What's more, they are using the technologies of the cloud, such as big data analytics and "social" to tune into customer sentiment, manage brands, and in general, engage more closely with customers. In short, the cloud is enabling various technologies, from mobility to social to analytics to converge into banking strategy.

The cloud is a great leveler, it has helped financial inclusion by enabling non-banks, such as telecom operators to offer accessible wallet services.

Simplicity, ease, agility

From a technology standpoint, the key trends include standardization of technologies within organizations, and a move by large banks – which have stayed on the private cloud – towards an infrastructure

as a service (IaaS) model. True standardization and alignment with enterprise standards has encouraged cloud adoption, while the switch to IaaS has simplified the banks' infrastructure acquisition cycle and procedure.

It is logical that these trends would progress to a stage where banks enable business partners to migrate their applications to the same platform and internal users to use the platform as a service (PaaS). Banks will look to provide a standardized multi-tiered solution – a tier for the front end, middleware and database each – as well as a platform integrating with their administrative and development solutions, to their organizations.

All of these are bringing about more automation and change, not least of which is a move towards converged infrastructure, as financial organizations try to limit the hassle of dealing with hardware, storage and compute power separately.

Automation and efficiency apart, IaaS and PaaS are empowering end-users to procure cloud infrastructure, applications and services on their own. What's more, by giving organizations full visibility into such "self-service" activity, the platforms are enabling them to charge back the cost of cloud resources to the right user or department. Suddenly, a process, which would take weeks, is accomplished within minutes.

Life is also easier for the infrastructure and engineering teams. Thanks to the cloud and the right tool sets, provisioning infrastructure has become simpler, and is down to just two or three steps, from about a dozen previously. This is bringing a new efficiency and transparency to the cost structure. It's also forcing changes to organizational processes and structure, in line with the requirements of a leaner procurement to delivery cycle.

There's silver lining, there's also cloud…

In the days of on-premise software implementation, upgrades were few and far between, because they cost so much time and money. As systems became obsolescent, they compromised organizational agility. Today, upgrades happen seamlessly and automatically on the cloud, which is great for the user, but a bit of an issue for providers, who must ensure that their products are up to date and running at all times. This also raises the important – as yet unresolved question – of how to deliver the customized component of each bank's core banking software, on top of the basic cloud-based solution.

Thanks to the cloud and the right tool sets, provisioning infrastructure has become simpler, and is down to just two or three steps, from about a dozen previously.

The other challenges stem from security and governance issues. A small to medium-sized bank leveraging core banking from the cloud needs to ensure that its data and operational setup is secure in that environment, and must also establish the right policies from a governance and regulatory perspective, for each operational geography. Financial institutions are now mature enough in their cloud thinking to recognize these issues for what they are, namely impediments, not deal breakers. For instance, health insurers, which are fiercely protective about the confidentiality of electronic health records, are acquiring niche solutions to safely move these records to providers with whom they have to share this information.

One less-known consideration in cloud adoption is the loss of control over service providers as the organization progresses from on-premise infrastructure

to private to public cloud. Smaller organizations seem to deal with this more easily, whereas the larger ones find it hard to shake off regulatory or internal shackles. Which is understandable, given that they have much more to lose.

How cloud adoption will progress

The above arguments indicate that public cloud adoption will be patchy for some time yet; organizations are likely to use the services of a SaaS vendor like salesforce.com, before putting up their own data on the public cloud. Also, the pattern of cloud adoption will stay random, with different organizations aiming at different things, from standardization to automation to IaaS to PaaS.

A few large insurance companies are experimenting with "transformed outsourcing" to farm out the entire IT infrastructure of multimillion-dollar portfolios, comprising hundreds of applications, to an external vendor. Maybe others will follow.

In the next five to seven years, an increasing number of banks and financial institutions will graduate to the hybrid cloud model, combining public and private cloud and a host of SaaS offerings. Since the ecosystem will be part in-house, part virtual and part "pay by the drink", it will raise the demand for seamless integration. It will also throw up challenges of managing and governing a multivendor environment. An experienced partner with a strong track record of successful implementation across industries can ease this transition.

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What makes

Fidor Bank different?

An interview with
Matthias Kröner,
Chief Executive Officer of Fidor Bank.

Fidor Bank was launched in Germany in 2010 with a full banking license to offer a new style of banking. Completely different to any traditional bank, Fidor Bank is purely online and tightly integrated with social media to enable customers to merge their social lives online with their financial well-being. The number of Facebook Likes the bank receives, for example, sets interest rates, and value can be stored in the form of money and commodities are even virtual gaming currencies! Lending takes place in both traditional form and via peer-to-peer capabilities, whilst money is moved by mobile transactions globally. To find out more about the bank's background, how it got started and its use of cloud services, we talk to Matthias Kröner, Chief Executive Officer of Fidor Bank.

Q: Hello Matthias, can you tell me a little about Fidor Bank, and how you got started?

A: Back in 2005, we were looking at innovations in social media and related areas. We saw that there was a lot of movement going on that changes the world of retailing, publishing, distribution and so on, and felt that we could do the same in banking. We realized that you could not pretend that there was nothing happening in this space and felt that this was actually a great opportunity to open a new form of retail bank. Therefore, we applied for a banking license in 2007 and received the license in 2009, just after the credit crisis had started in Germany. We had to wait eighteen months to get the banking license and, in that time, we had a look at how financial institutions were reacting to the crisis, how they communicated, what were the problems they faced and the reactions of the public. We saw that the loss of trust in these institutions was a big issue and, coming out of that scenario, we felt there was the need for a completely new way of running a bank. We could combine the social aspects of banking we wanted to launch with the opportunity created by the loss of trust in banks, and this is where Fidor Bank started.

Q: How are you different from traditional banks?

A: We think banks are very much black box and not customer-centric on the one hand, and that banks do not cope with the new way of living the digital lifestyle on the other. This is what we have tried to improve and this is how we differ from traditional banks by combining the developments of Web 2.0 and the Internet on one side and trust on the other. Fidor stems from the Latin word fidere meaning to trust, and we create and encourage trust through our community building focus.

Q: How would you summarize your approach to technology?

A: We have concentrated on the parts that we believe to be key differentiators for the bank, and then we partner or buy off-the-shelf the areas we view as commodity. Core banking, for example, is something that has to run and be reliable, but it is a commodity area we can buy off-the-shelf for this reason. On the other hand, the building of a financial community on a social platform is a key USP (unique selling point) for Fidor and so we needed to develop that ourselves. We also wanted to provide other key enablers like mobile or global money transactions, and for these areas we operate partnerships with firms like Hyperwallet and others to come to provide best-of-breed servicing. So we combine commodity, best-of-breed partnerships and our own bespoke developments to deliver the ultimate Web 2.0 experience for our customers and community. We call that a 'global financial services star alliance approach!'

"We could combine the social aspects of banking we wanted to launch with the opportunity created by the loss of trust in banks, and this is where Fidor Bank started."

Q: Do you have many partnerships?

A: We are very much relying on partnerships. We identify these partners by constantly discussing what is a core competency and what isn't for our bank. This is important as the total number of employees at Fidor Bank is 27 people including the board, and with this number we are serving something like 200,000 registered users in our community and related platforms like brokertainment. Half of these customers connect with our payment services and one in five is a full banking customer e. g. holding deposits of currently over 140 Million Euros, so we have a lot of work on our hands for a small number of staff. This means we are very dependent upon cooperating with partners due to that fact, and it makes us very willing to look at partnerships.

> "We feel that cloud it not that secure for financial servicing and we are careful about, and possibly distrust, the use of cloud."

Q: How do you choose these partners?

A: We cannot be the sole drivers of quality and innovations, so we like to team with customer-centric innovators and services.

As we have seen in Osaka, there are not many, but there are finally some! It is a small community that drives innovation on this planet within financial services and we are proud to be a part of that.

The platform example I would use to illustrate this is the FidorPay Account, which is a very open ecosystem. The ecosystem incorporates and adopts offers from partners in what we call 'apps', as in the Apple app style. The customer can then setup the way in which their payments account works for them, in the same way you would set up your iPhone. It's totally flexible and unique to them. This can only be achieved through collaboration and partnership however and we, as a company, develop these capabilities and then ensure that they conform to the rules, which is the regulation to maintain our banking license.

Q: Within these partnerships, do you use cloud computing?

A: Our technology people philosophically think cloud is potentially relevant but, in fact, we are not using cloud computing today for four main reasons. First of all we feel that it is not that secure for financial servicing and we are careful about, and possibly distrust, the use of cloud. We clearly prefer to know where the data is stored and security is crucial to a bank, so this is why we stay out of any cloud discussion today. Second, we do not feel it is necessary to use such services today. Ignoring our banking status I would say, we are way too small to require this sort of scale of service right now, but when we scale we may consider this then in particular areas or segments – if useful. Third, what would happen if you are in the cloud as a company and suddenly your cloud partner has a security or political problem and cuts you off? I would not want to see that situation and having a customer caught in a position where they can get hold of their bank data in the cloud. Finally, for our back office operations, we focus upon resilience and security and we need it to be approved by our auditors. I am not sure they would be happy if I came up with a cloud offer today.

Q: But you have a lot of partner relationships where you let your partners' process on your behalf, such as the Currency Cloud for cross-border payments. Is that not the same as using cloud?

A: But in the context of those relationships, *we* are the cloud. Together, we are something like a 'global cash cloud', a project that we – by the way – execute with our partners and shareholders at Anthemis. But, it's not something where we are putting our bank services in a cloud computing operation like Amazon.

Q: So it depends how you define cloud.

A: Yes. There are very many ways of talking about

cloud, and I am referring here to placing my operating systems and bank data in the cloud. I would never place my bank data in the cloud, but classical outsourcing to defined partners is clearly different.

Q: Do you not think cloud is just like outsourcing?

A: We are using outsourced services, but the difference between outsourced relationships and cloud is that we use outsourcing for very specific reasons. For example, if I outsource the running of my machines I know who the companies are, I know where they are, my auditors have approved them and they are working according to the requirements of a German banking regulator and could be visited by the regulators. To my knowledge, we don't have that today with cloud computing. The quality and security standards are not there yet, and a typical cloud provider is not able to give those to us.

Q: So you don't believe cloud is appropriate for a bank?

A: I can see some positive aspects of cloud, but the problem comes if you have other people's money, as we do as a bank. Then there are dangers. For example, if you are running your systems with a third party cloud service, then there could be an issue any day for them to cut off the service to the customer. That is our danger and fear and is the reason why we do not want to go down this route.

I always try to think about the direction of our customers, and am cautious about doing this unless our customers need or want it. I really know that our customers want to have a relationship with the bank and social media offers that capability for example. But they are very much concerned about security, and even if it is just a feeling of insecurity it is not a good thing. So the customer has to feel 100 percent secure using our bank.

Q: Yet you open source a lot of your community building to the crowd?

A: Technology-wise we are more like an open sourced development of services for our customers and this facility provides a philosophical bridge between crowd and cloud. We are thinking about how to set up a structure of more and more community services that are open sourced. We would not provide this open source structure without security however.

Q: I like the open source analogy, as it puts cloud in context. What this means is that we won't be talking about cloud in the future per se, just about how to provide improvements to the customer experience.

A: Absolutely. I get fed up with people going to conferences and coming back with the latest buzzwords like cloud. We need to be thinking far more about how to improve customer service first and foremost. That should be the one guiding light. It should always be how to lighten the work of our back office and improve the experience in the front office, not about the latest buzzwords.

Q: Finally Matthias, looking at the bigger picture, how do you see Fidor Bank developing in the future?

A: We are about to launch a separate IT company, which totally underlines the importance of IT and technology for our business. This will provide the technology related to the bank and to our customers, and to other organizations that are looking for similar capabilities. Talks are also in progress with partners to franchise and white label the Fidor Bank offering into other markets as mentioned before with the 'global cash cloud' project. This provides a huge change to leverage our capabilities. On the other side, we are focusing our efforts on integrating services from our partners into a much more seamless integrated offering for our customers. These are the two technology areas we are focusing upon for the near-term.

About Matthias Kröner

Matthias Kröner has been CEO of Fidor AG since 2006, responsible for investor relations, corporate communications, strategic development and communities. Prior to founding Fidor AG, he built DAB Bank, the first continental European online broker and in 1997, at the age of 32, he became the youngest director of a German bank at Direkt Anlage Bank AG.

The J P Morgan **cloud story**

A talk with **Vipul Shah**, Global Head of Strategy and Business Development for J.P. Morgan's Treasury Services

As more and more banks consider the use of cloud computing for core services, we talk to Vipul Shah, Global Head of Strategy and Business Development for J.P. Morgan's Treasury Services business, about the implications and opportunities.

Q: What do you see as the relevance of cloud being for banking?

A: We are thinking about this from a very client centric perspective. Clients have indicated to us that it is hard to receive transaction bank services, particularly as services become more software and data oriented in nature, and as clients globalize. The integration burden for clients, including the development and management of required technology, is quite high. Our interest in cloud stems from the ability to make our clients' lives easier, and to be able to provide them with capabilities and services that simplify the workflow for them.

> "For starters, we have been delivering more internal services in a cloud model and have realized significant efficiencies in our IT operations."

Q: What sort of things is JPMorgan doing in the cloud?

A: For starters, we have been delivering more internal services in a cloud model and have realized significant efficiencies in our IT operations. Now we are thinking about how to take those experiences and enable those efficiencies externally for our clients.

We recently launched the next generation of J.P. Morgan ACCESS®, which is an online banking solution for our corporate clients to be able to transact and access key information related to their treasury services. This is the first step into the cloud for J.P. Morgan Treasury Services. ACCESS features include the ability to originate transactions in a secure manner, up to date information on cash positions, visibility into transaction activity, and alerts to allow a client to be more in control of their treasury. Information availability and 'transactability' via the ACCESS portal is the first step for transforming the client experience from 'heavy' desktop on-premise based applications to 'light' accessibility of capabilities in the cloud in a fast, easy, secure, and low burden way. With ACCESS Mobile, we further extend online banking to executives anywhere and at any time. Going forward, we are evaluating other services we may migrate to the cloud across our core cash management, liquidity, and trade offerings.

Q: Previously you were with PayPal, and PayPal have opened up their processes for all to use through open APIs. Do you think banks will follow this example?

A: There will be a thoughtful and prudent opening of processes via APIs over a period of time. Efficiency, cost, and accessibility benefits of cloud are now better understood, but I don't think it will be a question of opening everything. There will be things that make sense to open up and things that need to stay on premises. Factors to consider include the level of performance that is needed (e.g. latency) and the level of control over the data and application. Where these factors are a priority, services are more likely to remain on premises as they are today, but other services and capabilities will be good candidates for opening up.

Q: There are always questions raised about privacy, security and risk with cloud. Is that a valid concern?

A: Yes. It is completely appropriate for banks, as trusted agents for our customers and stewards of the financial system, to be very careful about information security and privacy. We are seeing more and more instances of cloud, SaaS, PaaS, IaaS and all these other variants emerging and being successful, and we need to continue to interrogate these areas and assure the

level of security, reliability and control expected by our customers. We are developing better knowledge in these areas and expect to bring the benefits to our clients as the technology and model matures. But, we will be careful in leveraging the new model.

Q: What about the idea that cloud might be used in the extended value chain? For example, I know of some organizations that do not even realize they are using a cloud-based service provider.

A: We hold a position of trust with our clients, and it is up to us to make sure that the value chain does not extend into places we do not understand or influence or control. We invest heavily in the security of our systems, so we have to make sure that we understand the flow of information and who is touching it. With the right due diligence in the process and the right end-to-end view of the process, we can achieve that level of protection for our clients.

> It is completely appropriate for banks, as trusted agents for our customers and stewards of the financial system, to be very careful about information security and privacy.

Q: Bearing in mind that your role is based around R&D, what sort of things do you think will also be changing in the future?

A: We sometimes characterize the future with a simple acronym, DISC, which stands for Digitization, Intelligence, Simplicity and Connectivity. These are not mutually exclusive or collectively exhaustive planks, but they help frame the opportunity.

We see the future being digital, replacing expensive paper-based processes and enabling greater safety and security. In the retail domain, we are developing innovative credit cards and mobile services. We have rolled out the ability to deposit checks by taking a picture of the check on your smartphone. Last year that took around $3 billion in deposits and this year we expect to double that. We also offer a mobile payments service for person-to-person payments that uses email and mobile numbers. Last year, this solution enabled around $300 million in payments and again we expect that to double this year. These solutions are just examples of the digitization of payments driving value for our customers, making it safer to transact and also saving them time, money and effort.

In the wholesale banking space, there are plenty of opportunities to replace physical transactions with digital ones. For example, if you take a food and beverage distributor, they receive cash, coins and checks as payments via truckers in the field, a process which the mobile phone could digitize and make safer and more efficient. Similarly on the disbursement side, we believe mobile has a great opportunity to allow our corporate clients to deepen their relationships with their customers by accompanying a value transfer with context relevant information. Digitization will thus drive efficiency, reduce cost and allow for transactions to create more value for clients.

The future of money will also be more intelligent, leveraging the information that goes with that exchange of value. We are investing a lot of effort into mining transaction information to deliver insights to our clients so that they can do business smarter, safer, easier and more cost effectively.

Then there's simplicity. While globalization has been a boon, it has also introduced a significant amount of complexity for consumers and corporates. Is a payment high or low value? Domestic or cross-border? Does it have a BIC and IBAN or UTM? What are the implications

of myriad rules/regulations globally? …And so on and so forth. We are looking at how to simplify that customer experience. The brave new world is a customer simply identifying what they want to do and indicating priorities (e.g. cost, speed, risk) and the bank executing the instruction in an optimal and seamless way evaluating the various options and requirements. We want to open up the world to our client, making global commerce easy and safe.

Finally, we are thinking about a more connected world of payments. There is a multiplicity of systems globally and our clients want to be able to transact seamlessly. We act as a universal adapter for clients into global payment systems, driving their growth. Additionally, we have the opportunity to drive improvements in payments for our clients leveraging our global client network and that is another aspect of connectivity that we are working on.

Thus Digitization, Intelligence, Simplicity and Connectivity can drive great value for our clients.

About Vipul Shah

Vipul Shah is Global Head of Strategy and Business Development for J.P. Morgan's Treasury Services business. In this capacity, he is responsible for developing new opportunities for value creation, including the assessment of new business models, technologies and partnerships. Prior to joining J.P. Morgan, Vipul spent several years in the Silicon Valley with PayPal, leading the expansion of a new global payments system. As a group product manager at Wells Fargo, he created new value propositions for corporate clients through the digitization of payments. Vipul started his career designing aircraft engines for GE and also had stints doing basic research on the brain and consulting with biotech and pharmaceutical companies. His education includes a B.S. in Mechanical Engineering from University of Massachusetts, Amherst; an M.A. in Medical Sciences from Boston University School of Medicine; and an M.B.A. from Carnegie Mellon.

Currency Cloud is changing the game for **currencies and payments**

Mike Laven engaged in a conversation with us to look at the future world of currencies and payments.

Cloud computing has been around for a while, but still suffers from some extreme views with some considering cloud to just be Amazon Web Services whilst others see this as a way of leveraging new forms of business models. Michael (Mike) Laven, CEO of Currency Cloud is one of the latter visionaries, and is changing the game in cross-border payments by building a cloud-based offer for currency movements and offering this as a low-cost, transparent service to consumers and small businesses. To find out what this means in practice, Mike engaged in a conversation with us, to look at the future world of currencies and payments.

Q: What is the Currency Cloud?

A: There is a huge volume of cross-border transactions that are well served for the large, multinational firms, but a major, untapped and underserved market for the cross-border payments needs of smaller firms. The Currency Cloud is a start-up company in the world of cross-border payments that addresses these companies' needs. We believe that the need to make cross-border payments has become globally ubiquitous. There are more and more firms that need transactions across borders than ever before. Meanwhile, the companies and systems to serve those firms have not transformed, especially the services for smaller firms. These firms do not have the ease of access, ease of use, access to good pricing or simplicity and transparency that bigger firms have. The Currency Cloud is therefore built as a technology platform that will bring a world of currencies with simplicity and low-cost to a whole range of businesses that did not have it before. We have around a hundred clients accessing our payments platform through our API, and interfacing their business applications directly into the currency markets through our platform.

Q: I assume you are a cloud-based service, with a name like Currency Cloud?

A: We are a Software-as-a-Service (SaaS) based platform, and make a distinction between online platforms that you might get from your bank, where you are connected through a screen to the banks' platform, and what we are doing. We are enabling online applications, including payroll, ERP, invoicing, corporate treasury and more, through a connection to ourselves. We are then connected to multiple liquidity providers, banks, who provide us with sources of hedging and currency pools, as well as multiple payment networks. These are banking and proprietary payments networks.

"We believe that the need to make cross-border payments has become globally ubiquitous. There are more and more firms that need transactions across borders than ever before."

The cloud nature of our platform allows us to bring together a whole range of liquidity providers for small business clients that they would not otherwise have available to them. We also bring to them a whole range of payments networks that would otherwise not be available. Finally, we provide them with a connection to their business applications through the API.

Therefore, from the perspective of our customers, who will often be users of a bank, they will today have their payables or receivables system running, and then will need to do something across borders. This will require them to stop using that system, come out of it, go to another screen or pick up the telephone to connect with their bank and then perform the transaction. As they do the transaction with their bank, the bank will often process that transaction through their own proprietary network.

What we do is ensure that they do not have to be faced with these breaks in processing by integrating all cross-

border payments through our API into their business flow. We also bring a whole world of connectivity for the individual customer to a range of different sources of liquidity providers and payment platforms that are optimized for those customers. The cloud nature of our service brings this very large network of currency transactions and payment services that we connect back to the customer.

Q: Would this work for someone who is using Infosys' Finacle application for example?

A: We have actually provided one client with integration with the Infosys Finacle product. In this case, the bank accounts managed using the Finacle application are linked to our platform for all currency networking, and the reconciliations and reporting and responses from the market go back into the Finacle back end from our platform. The way we look at it is that through the cloud we are connecting individual users with their bank accounts to a whole series of currencies and payment services that would otherwise be unavailable to them.

Q: How are you defining 'cloud' in this case?

A: The way that we are talking about cloud is that there is a vast network of providers in the world of currency. In general, when you are dealing with a specific broker or specific bank, you are dealing through their proprietary network. You may end up sending something through SWIFT, but it starts usually with someone's proprietary network. That network may be good for some areas, but will be suboptimal in others. If you then take the cloud nature of what we are doing, it is transparent to you as the customer as to where the services are coming from, and you suddenly have access to a range of services that we make available to you through the Currency Cloud. We go out to the individual currency markets to perform transactions, and my platform connects all of that. This is therefore not an Amazon style cloud service, where you use compute power to increase volume flows. In our case, the transactions are going to take place in multiple areas of the financial markets. One place may be better for Latin American currency, another place may be better for Dollar Euro, another place may be better for liquidity providers or rates, and another for Asian currencies. That's the sort of thing that an individual consumer does not have access to, but we do, as we bring on sources of currency and liquidity for our customers. Also, one payment platform may do a good job of providing local payments in Europe, another one may do it better in Latin America. It's the same sort of thing and what we are doing is providing access to a global market for each individual customer through our platform.

Q: What are the typical challenges people raise with you when you talk about this sort of service?

A: The issues are around the security of using us as a cloud provider, but this is not a major challenge. You have to bear in mind that we are working in markets

"The issues are around the security of using us as a cloud provider, but this is not a major challenge. The data we hold is only the compliance and regulatory data we need to hold."

that are highly regulated and we ourselves are highly regulated within those markets. We are regulated by the Financial Services Authority in the UK for example, and have the same Know Your Customer (KYC) and Anti Money Laundering (AML) requirements, and all the things that come downstream from being exposed to that. How we provide our service does not absolve us from any of those requirements, and we have to ensure that the connections we make as part of our platform have the same rigour with their processes. So the first issue raised with us is normally a compliance issue, and we have the same management and regulatory compliance

requirements as any other financial provider. The second question would normally then be the security of the transactions themselves and the third is data security.

We work with a number of banks and a whole series of other regulated financial firms, as well as those who are non-regulated. Not a single one of these firms has had a question or issue with the security of the financial transactions or the security of the customer data. In general, the data we hold is only the compliance and regulatory data we need to hold.

For example, one of the specific banks we can identify is Fidor Bank in Germany (see interview with Fidor Bank CEO Matthias Kroner), who uses us to power their ewallet. They are using cloud service like ours, when it improves the customer experience. Bear in mind that we don't see their individual customers within our service, but they use our currency services over the cloud to power their ewallet. So we don't have a relationship with an individual Fidor customer, but with Fidor overall.

Q: What do you think cross-border currency movements will be like in the future?

A: I came to this firm having spent a number of years in the capital markets where the cost of a currency transaction in any major currency has gone down to be priced at basis points rather than percentage points. The banking and payments market has not followed this model or delivered this level of pricing yet, because it has just been too difficult. There are a number of breaks in the process, where you still have to use the phone and things are not automated. We want to see a future world where there is a currency fluency in most major currencies, where businesses will transact with a level of automation and trust across multiple currencies in the same way as they do today in domestic currencies. That means that the currency payment itself moves from a brokered relationship that everyone understands today. That is a zero sum relationship however, with a fixed spread. I make my margin and you get yours. That will move to more of a service-oriented relationship, where there's a small cost of doing business and it is fluent across currencies and becomes easy. The world needs to go that way, as there is such a large requirement for this across so many small to medium sized firms globally. For these firms in the future, the banking or brokerage relationship just won't get there and will not work. What is needed is multicurrency fluency across multiple businesses; and that's the future structure. In terms of business model, it means that the markets will always be pricing-based owing to market movements. We won't get away from that as there will still be multiple currencies in use. However, the difference will be that the customer will not see that as an obstacle, and won't feel it is priced too high, as there will be transparency in the system. The cost of accessing those markets will also become nominal and be looked at as more of a service than as a speculative gamble in what should be a daily transaction.

Q: How would you summarize this future world?

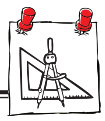
A: Currencies should be easier, simpler and more transparent to use, and it is by applying technology using a cloud-based mentality that will make all of those things occur. In other words, you cannot get the simplicity, transparency and automation unless you change the technical paradigm at the same time.

About Mike Laven:

Michael Laven is the CEO of The Currency Cloud based in London whose mission is to transform the world of cross-border payments through its simple and fully automated payments platform, XBP. From 2004-2011 he was the COO of Traiana which built a post-trade foreign exchange network connecting over 500 banks, brokers, and trading platforms and processing millions of transactions per day. Traiana was acquired by ICAP, a UK brokerage, in 2008.

Mr. Laven has had an extensive career in building and leading venture-backed financial technology companies in Silicon Valley and London. He has a B.A. in Anthropology from Wesleyan University, an M.A. in International Affairs from The School for International Training and a M.Ed. from Harvard University.

Cloud strategy for cooperative banks in India: **The way forward**



Cooperative banks (CB) have a significant presence in the Indian financial system given their geographic and demographic reach. These banks can be categorized as tier 3 and 4 banks on the basis of their combined deposits and lending portfolio. Their competition for business is primarily with rural branches of public sector banks as well as sponsored banks.

The importance of the cooperative sector

There are 96,149 cooperative banks in the Country of which 1618 are known as urban cooperative banks (UCB). They (UCBs) have operations in tier 1 and 2 cities and predominantly operate within a single state. The states of Maharashtra and Gujarat have the maximum number of cooperative banks. There are 94,531 rural cooperatives spread across rural India. About 80% of the banks have less than five branches.

The UCBs have aggregate deposits of USD 44 million and lending of USD 29 million. India's per capita income is USD 1219.00; seen against this, the business levels of UCBs are quite significant.

The business model

Cooperative banks have a plain and simple business model where every customer is a member. The expanse of business operations is largely limited to one area. The customer segmentation is well defined. The deposit and lending products are few and simple and easily understood by the customers. The lending is activity-based, for example: agriculture and small and medium finance. Consumer lending is a small component of business and the competition environment is not agile. Majority of the new customers walk in to a branch to open an account. A customer first becomes a member of the cooperative and then accounts are opened as required.

Computerization of operations: current state

17% of the UCBs are on Core Banking Software (CBS). Across states the range is from 2% to 23%. This shows a high potential market from a technology perspective. 42% of the banks have just one branch and 13% have two branches. These percentages give a new dimension to the 'need for computerization'. There are banks in the cooperative sector that have shared data centers and a few are hosting and sharing applications in the ASP model. The rural cooperatives have largely manual operations.

The need for computerization

There are two imperatives for automation of business operations. The first being governance (transparency, control, compliance, MIS, customer protection, etc.) to strengthen the fragility in the sector. The second is for accelerated growth. Technology up-gradation is expected to redefine the rules of the game and create an environment for competition.

There are 94,531 rural cooperatives spread across rural India. About 80% of the banks have less than five branches.

Cloud as a model for computerization

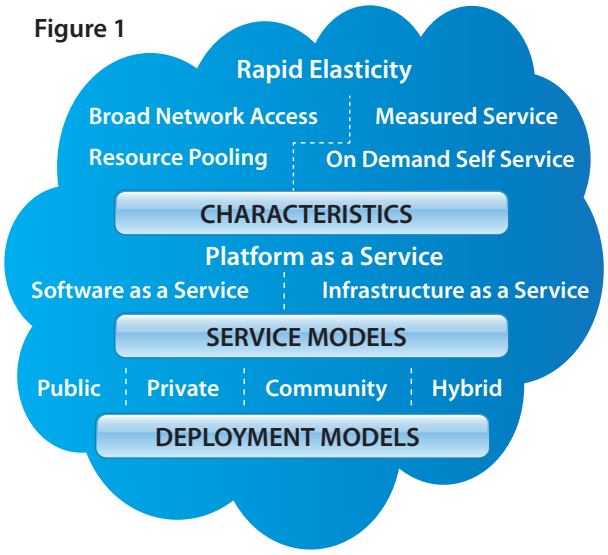
The cloud as a model is the best suited solution for cooperative banks because these banks have a low IT spend. It is also an opportunity for aspirational banks to scale up operations and compete with private and public sector banks. These trends are best illustrated with RBI (Reserve Bank of India – The central bank in India) setting up a working group on 'Cloud computing option for small size urban cooperative banks' and a leading UCB throwing open boutique branches that compares well with leading private and public sector banks.

In the next few sections I will briefly summarize the evolving framework and standards in cloud computing.

NIST definition of cloud

National Institute of Standards and Technology

Figure 1



NIST cloud model – essential characteristics
(pictorial representation by the author)

(NIST) is a federal agency under the US department of commerce and a standard setting body. It defines cloud computing as "…a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

The document further lists out the five essential characteristics of a cloud as (1) On-demand self-service, (2) Broad network access, (3) Resource pooling, (4) Rapid elasticity, (5) Measured service and The three service models as (1) Cloud Software as a Service (SaaS), (2) Cloud Platform as a Service (PaaS), (3) Cloud Infrastructure as a Service (IaaS); and four deployment models (1) Private cloud, (2) Community cloud, (3) Public cloud, (4) Hybrid cloud. Key enabling technologies include: (1) Fast wide-area networks, (2) Powerful, inexpensive server computers, and (3) High-performance virtualization for commodity hardware.

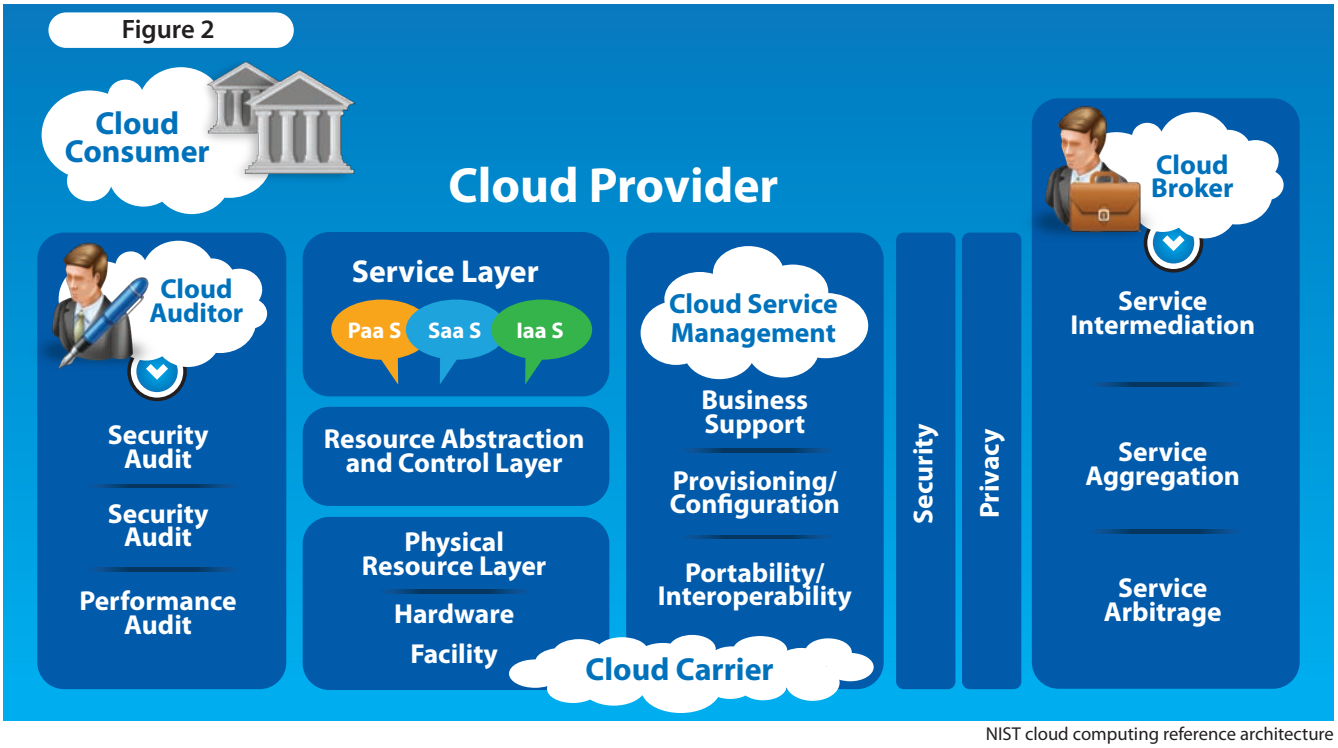
NIST cloud architecture

NIST has defined the cloud architecture with various technical components and players. A good comprehension of this framework will help in understanding the roles and synergistic value. I will discuss a few components and players in the context of cooperative banks later in this article. It must be noted that in Figure 2, I have made a few insertions for contextual clarity.

The cloud model for cooperatives

The cloud model for cooperative banks in India has two

Figure 2



NIST cloud computing reference architecture

value dimensions. The first one is the governance by the central bank. The second is provision of a platform for competition and innovation in the market place. The first is a constraint and a necessity while the second is an option and an opportunity.

The deployment model

The ideal model for cooperative banks is the hybrid cloud that's best defined as a 'private community cloud'. The rationale behind this term is; a service provider setting up a data center to offer banking services to a set of banks who explicitly sign an agreement with the provider to outsource their IT operations. The infrastructure in this scenario is not open to the wider public. While the infrastructure is designed for a 'community' of cooperative banks with similar security, compliance and software requirements, it is provided only to those banks that explicitly sign mandatory contracts with the service provider.

The ideal model for cooperative banks is the hybrid cloud that's best defined as a 'private community cloud'.

The cloud provider

The evaluation and selection of a cloud provider requires special skills, investment and time. This is best left to the central bank and a reputable consulting and technology company with considerable experience in providing core banking software solutions. The central bank can define guidelines for putting the required regulatory governance, security, privacy and reporting infrastructure in place. The cloud provider meanwhile will provide, either on their own, or in partnership, (a) Data center and hardware (b) Infrastructure (software) (c) Virtualization (software) (d) Applications (e) Network facilities. Cooperative banks can then have a 'ready to board' regulatory compliant cloud with managed/ automated services.

Cloud auditor

The auditor will conduct independent security, data privacy and performance audits of operational processes and deployment infrastructure. The scope can be extended to include a regulatory banking audit in line with RBI guidelines. The audit also can include compliance with standards such as PCI and COBIT to name a few.

Service layer

The business model of cooperative banks is simple and consistent. The banking software set (core banking, risk management, asset liability management, anti-money laundering, etc.) can be provided as a checklist of applications. The bank is at liberty to examine and rent out applications as the business requires.

Cloud service management

Cloud service management such as business support, provisioning, configuration, portability and interoperability are still being precisely defined. Service provisioning/configuration, portability and interoperability are activities that requires technical skills. These include end of day operations, reports generation and running batch programs. They are services that will typically be offered by the cloud provider. Cooperative banks will benefit greatly from this. Patch management and provisioning hardware and software resources as banks grow, falls in the realm of provision and configuration. 'Elasticity' in allocation of hardware and software resources is an important benefit of service management.

The business benefits

Strategic value: The cooperative banks can continue to focus on business. With the technology decision (software, platform and infrastructure) delivered by experts, the banks can join the community on the cloud. The OPEX model of cloud will be a game

changer; as sophisticated technology will be accessible at an affordable cost. In addition, common compliance requirements with service management are shared and available off-the-shelf. Large and aspirational banks can leverage technology for faster growth and expansion.

The RBI as a key stakeholder can ensure appropriate governance through audits and mandates. From the point of view of the Central Bank, the cloud provider will be the single point of contact for change management for all the banks served by it. Central Bank will have the ability to exercise control and ensure there are no fault lines in the financial sector and even when they occur detect it quickly. Anti-money laundering, KYC guidelines and close monitoring of impaired assets are a few examples.
Cost of operations: Utility pricing (pay-per-use; pay-as-you-go) is the tipping point to upgrade technology. With unproductive routine operations moving to the cloud, the scope for better management of human resources is another area for lower costs. The cost for compliance being low, banks can now look at investing in innovation and growth.

In India and globally tier 3/4 banks variously known as cooperative banks, credit unions and building societies predominantly have lower IT spend. Central banks find it difficult to govern and control this segment. Cloud computing as a deployment model with shared services built on the platform of OPEX pricing has provided an opportunity hitherto not available. The joint promotion of this model by cloud providers with central banks will throw the gates open for the very first time for a level playing field in the banking industry.

There are large companies providing cloud computing solutions reflecting the paradigm shift of becoming end-to-end service providers. I am seeing synergies between core banking vendors and cloud solution providers who are developing joint value propositions. The coming together of the technology industry, core banking vendors and the central banks projects the most favorable alignment for tier 3 and 4 banks.

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THE WINDS OF **CHANGE**

Cloud computing today, has evolved from being just another buzzword to becoming a reality for organizations across the globe. This phenomenon, coupled with virtualization is creating a game changing shift in how IT resources are being consumed and services delivered, especially across financial organizations. The primary reason for this shift can be attributed to organizations seeking new levels of business agility across the BFSI segment which thrives on a high degree of risk-and-reputation environment.

Cloud computing, coupled with virtualization is creating a game changing shift in how IT resources are being consumed and services delivered, especially across financial organizations.

Apart from improving time-to-market, reducing costs, and increasing responsiveness to risk, cloud computing can also anticipate and adapt quickly to newer regulations or operating requirements such as policy and budgets while also effectively responding to the impact of unexpected or unlikely negative events such as a data breach or a sudden high-volume market shock which normal IT infrastructures cannot handle.

Globally, financial organizations are probably being faced with several revenue-growth related challenges such as increased financial regulations, consumer distrust, slow and uneven economic recovery, or even a highly competitive market. However, the evolving business need of these organizations is continuing to propel the adoption of newer IT technologies. This also goes hand-in-hand and complies with the regulatory guidelines laid down by governing bodies in providing better services and security, given the fact that customers now are able to better align their business processes and improve internal efficiencies through

key IT investments in supporting the development plans of customers in this segment.

The rapid diversification in this sector presents huge opportunities for IT companies and several BFSI companies are also following suit and are hopeful in implementing further IT enhancements. Moreover, the growing business needs of BFSI players have led to a rapid adoption of IT in the BFSI vertical and have contributed to an increase in overall size of the IT market which has seen an over-all growth of 13% YoY.

Factors driving this trend

Until a few years back, technology was typically seen as an expensive hurdle for financial institutions, particularly those in emerging markets where development of customized solutions or investments in advanced banking platforms were either unfeasible or were a result of too many failures. With customers demanding a more dynamic banking website with real-time transaction processing and rich functionality, real-time banking coupled with e-trading has been driving consumerization of IT (mobile banking and social networking) which is enabling communication and transaction across multiple devices.

Adoption trends and challenges

There is a growing need to revamp the traditional way a bank functions – particularly the need to cater to consumers on-the-go. Banks need to align their services with that of their customers—and then innovate to deliver based on that perspective.

Cloud computing is a model, not a specific technology. A cloud-based model provides rapid acquisition, low to no capital investment and relatively low operating costs. There are various flavors of cloud computing that one can adopt in this sector. Public clouds extend the data center's capabilities by enabling the provisioning of IT services from third-party providers over a network whereas private clouds are built by applying virtualization within a bank's own data centers. There are also hybrid clouds which blend public and private clouds depending on the sensitivity of the data and applications in each process. However, we witness the BFSI segment favoring the private cloud model.

According to a study on the Indian Cloud Computing Market by VMware and Forrester Consulting there is a 25% increase in cloud adoption over last year with 80% of respondents believing that cloud computing will enable their organizations to reduce IT costs and will help optimize the legacy IT management and automation capabilities. In fact, organizations without cloud capabilities stated that they would be deploying cloud solutions within the next 18 months, highlighting the growing cloud opportunity in India. 42% of the respondents from BFSI indicated that most of the organizations in this sector are also increasing their budgets to train the internal IT staff in supporting their cloud initiatives and are actively seeking to hire new staff with expertise in this area.

> The added control and security offered by a private cloud in order to circumvent privacy issues is preferred by banks that look for efficient and secure ways of carrying out their day-to-day operations.

The survey also revealed that data privacy, legacy or 'loss of control', integration with existing on-premise systems and security are the top barriers to cloud adoption. In fact, internal resistance within organizations to change as well as security concerns in the form of

identity theft and data privacy happen to be important factors that are hindering wide-spread adoption of cloud in the country.

Many banks today have very specific challenges in areas of security and data privacy. Their existing IT establishments consist of highly fragmented IT landscapes of security and data privacy approaches and policies taken across different functions or business lines. This in turn carries a lot of risk and cost. Also, banks may need to keep sensitive data within firewalls to fulfill local regulations and client confidentiality requirements. Therefore, private cloud-based operating models are currently a better first choice than public or hybrid clouds. The added control and security offered by a private cloud in order to circumvent such privacy issues is preferred by banks that look for efficient and secure ways of carrying out their day-to-day operations.

Looking ahead

The adoption of IT by BFSI customers over the past few years has definitely been maturing. Core banking solutions coupled with cloud computing initiatives helps drive better businesses and enhance a customer's experience while also addressing the economics of the technology. While core banking services continues to be a key area of focus, companies are also investing in solutions which can help solve key business issues. The BFSI vertical will continue to offer significant opportunities for IT service providers in India, enabling IT alliances to be forged by companies to launch solutions for their customers. The rapid growth in this segment in India and future developments in the market is surely bound to increase the scope and scale of IT for the BFSI vertical.

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The transformation of
banking models

In a post-Basel world, where capital itself has become a scarce commodity, banks are under increasing pressure to manage and improve profitability. At the same time, heightened competition is further squeezing margins in the banking industry. Against that backdrop, it would be hard not to see a case in the overwhelming cost advantages delivered by banking on the cloud.

But cloud banking is so much more than a mere cost management initiative of overall IT implementation strategy. As a disruptive technology, it has the power to radically transform the financial services industry; as a versatile business model it can help banks to constantly reinvent themselves based on the dynamics of the market place.

The transformational possibilities of cloud banking can be explored by the impact they will have on two key groups of people – customers and employees.

Customers across the world are increasingly relying on mobile devices and emerging media for most of their interaction and information needs. From a banking perspective, there is a significant shift towards virtual banking, be it online or mobile. And in the age of social media, there has been a radical change in the way that customers go about researching and learning about new products and managing their personal finances.

But in a world where banking is still quite branch-centric, emerging customer preferences are currently being addressed by a new breed of cloud-based financial intermediaries offering disaggregated banking services and personal financial management applications. Even banks' role in payments is now being challenged by technology heavyweights in the m-commerce and mobile wallets space. And there already seems to be a fringe trend of fully virtual banks targeted at the digital natives.

Cloud computing can play a major role in helping banks gear up to address the tectonic shifts in the consumer, competition and technology landscapes. The cost, flexibility and scalability competencies of the cloud model will enable banks to rapidly reconfigure their core banking operations to suit changing market dynamics. This will mean faster development and seamless delivery of products and services that meet the needs and expectations of the new demanding customer.

With the shift to a versatile cloud model, banks now have the huge opportunity to revolutionize banking on online and mobile platforms and enrich the way they engage with their customers. From next generation card-less ATMs that use biometric authentication to cards with built-in authentication, screen and keypad, banks are already putting customers at the center of their engagement strategy. As early as 2008, a bank in Europe became the first to introduce an online personal finance management service that allowed online customers view their account balances and transactions from different providers in a single place.

Just weeks ago, Barclays launched a bank agnostic person-to-person money transfer service in the UK called Pingit that enables payments to anyone by linking a customer's account to a mobile device. Spanish bank BBVA has launched a smart phone app that lets customers send money to anyone - the recipient, who need not be a customer of the bank, receives a secret code via SMS on a mobile phone that can be used to make the withdrawal from any BBVA cash machine.

The transformational possibilities of cloud banking can be explored by the impact they will have on two key groups of people – customers and employees.

Commonwealth Bank of Australia has a mobile property guide app that combines mobile augmented reality with information of actual properties for sale to help buyers in their search.

In Turkey, DenizBank became the first bank to launch a Facebook branch. Customers can now use the popular social networking site to access accounts, see their account status and purchase history, see an overview of assets and liabilities, send money to friends on Facebook, and apply for credit cards and loans. The service even offers an integrated financial and Facebook calendar. Many banks are already investing in social media strategies and tools to combat disintermediation and put the power of differentiated bundling in the customer's hands.

Most importantly, the cloud banking model generates massive amounts of structured and unstructured data, gleaned from multiple customer touch points. Using big data analytics, banks will be able to mine these volumes of data to understand patterns and generate insights that will help them tailor or target their offerings for better competitive advantage.

Cloud banking will also drive transformative change within a bank's internal organization systems, beginning with a radical redefinition of the role of IT relative to other business processes in the system. In the cloud model, end users will independently determine and access IT infrastructure components like applications, capacity or storage based on current demand. Apart from reducing the time delay in waiting for IT to provision infrastructure, it speeds up business processes by providing on-demand access to infrastructure. For example, if there is a requirement for additional capacity in a testing environment, the cloud model ensures that the team has immediate access to the resources required.

In this flattened IT environment, the role of the IT department is enhanced from a pure maintenance

and support function to that of a strategic partner. IT professionals will need to work closely with different business units and develop the bandwidth to understand their individual needs. In this new participative role, IT will be responsible for providing strategic technical guidance, defining standards and enabling innovation.

From a structural point of view, it would mean breaking down existing silos and establishing robust channels for communication between business and IT. It also means that extensive training programs will have to be put in place to upgrade skills to those required for the new computing paradigm as well as to develop the skills required for IT's new role as cross functional strategist. HR will also have to address the requirements of brand new cloud specific positions and titles that are bound to emerge by either retraining existing talent or by recruiting talent specialized in cloud computing technologies.

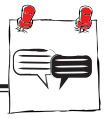
Going forward even banks are expected to transition to a hybrid cloud model from their current preference for the security of private clouds. In this more complex technological scenario, the challenge for in-house IT resources is to manage these disparate environments holistically to ensure that potential efficiencies and savings are fully realized. It is critical that they understand and are in control of the resources required to deliver services across the entire cloud ecosystem. They will have to forge working partnerships with multiple vendors to ensure proper integration not only between different cloud providers but also of applications and data across the entire IT infrastructure. They will also have to push vendors to provide proof-of-performance validations and real life case studies to ensure that all the requirements for migration, integration and innovation are adequately met. Most significantly, IT professionals will have to stay ahead of the cloud computing learning curve so that they can deliver a cloud that is optimized for cost, flexibility, innovation and the unique needs of their organization,

Banks can benefit from the deployment of cloud-based internal social networks that help break down traditional silos across banking organizations and foster a culture of communication and collaboration. There is also the additional opportunity of extending these platforms to business partners, like DSAs or banking correspondents, who may not necessarily operate on the same network. Integrating them and providing them with tools that enable real time collaboration and information access will not only serve to enhance productivity but also instill a sense of community with the bank.

Going forward even banks are expected to transition to a hybrid cloud model from their current preference for the security of private clouds.

Leveraging the native mobile capabilities of the cloud model can also lead to significant efficiency and productivity payoffs. With the ability to securely access data from beyond the office, workers can now exercise their choice of time to work, location to work from, or even device to work with. With access to enterprise applications and information on personal mobile devices, employees are now empowered to redress customer issues, address product queries and boost their productivity around the clock if required.

Most current discussions on cloud banking may be driven from a perspective of technology, but in essence it is really a model for business transformation. And cloud



banking has the potential to truly transform traditional models of banking, both for customers and employees.

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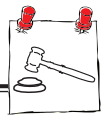
How secure is
your data?



Analysts estimate that the global public cloud services market could reach $40 billion… or $109 billion in 2012. And grow to $83 billion… or $100 billion…or $206 billion by 2016.

The differences in valuation might be stark but in no version is the potential insignificant. Actually, the variance is only a symptom of the fact that this is a nascent market whose boundaries we don't yet know.

Shapes in the clouds

But we do know this: the market itself is not a monolithic entity. The forecasts mentioned earlier account for only the 'Internet access, shared infrastructure' constituency

The public sovereign cloud is a prime and recent example of a need-based mutation of the core cloud concept.

of the overall cloud universe and do not include private cloud deployments, a segment estimated to grow at a CAGR of 21.5 percent through 2015. (The comparative estimate for public cloud deployments is a CAGR of 26.4 percent through 2016.)

Then there is the hybrid cloud, integrating the service delivery methods of public and private clouds, where internal or external resources are allocated as and when appropriate. And as the cloud services market evolves, new models that target specific or niche requirements are bound to emerge.

The public sovereign cloud is a prime and recent example of a need-based mutation of the core cloud concept. Some sectors, like banking for instance, are expressly prohibited by regulation from hosting or even processing customer data outside national boundaries. These sectors then would have been ruled out of the opportunities afforded by public clouds. But public sovereign clouds address this issue of data sovereignty with a commitment to hosting as well as processing data within a specified jurisdiction.

Taking it to the bank

So, why are banks still shying away from the public cloud?

For the banking sector, compliance, data security/ privacy, integration, performance and availability are all factors that influence the choice of cloud model. But information security by far is the single most critical concern of any bank. That is because data privacy, confidentiality and protection are as much strategic imperative as they are regulatory compliance. Since traditional security models can be easily extended to the private cloud, it is the first choice of banks. On the other hand, public cloud service providers are not able to deliver guarantees with the granularity required to assure the same level of compliance, as yet.

That being said, a role for public clouds in banking, is not completely ruled out. Cloud precepts like scalable infrastructure, on demand applications and transaction based pricing can deliver considerable value to smaller banks with less legacy infrastructure, looking to galvanize innovation, competitiveness and growth in these dynamic times. Their option then is to foolproof information security as best as it is currently possible on public clouds – with tightly negotiated SLAs with service providers, certification and third party audits of security against specific parameters. Of course, there is also the option of moving only non-critical horizontal and back-office processes to the cloud.

As public clouds mature and evolve so will industry security solutions. And bodies like the Cloud Security Alliance are furthering the cause with their drive for best practices in security assurance.

Core needs more

But it would probably take a while – and some doing – before large banks take their core banking and

business-critical information to public clouds. Or it might not happen at all. Traditionally big IT spenders, these banks already have impressive technology resources. They have the capacity to on board new applications quickly, and the scale to afford licensing costs. Most have optimized their IT infrastructure by now. From there, it's not a big leap to designing, deploying, securing and managing a private cloud. With their own cloud, these banks can have the one element that they are compulsive about but will never obtain from public clouds – complete control over all layers of security, including the perimeter. As well as the ability to organically evolve a security strategy that is unique to the technologies, processes and behaviors at play.

With attacks becoming more sophisticated, banks have taken their security fixation to the level of application code. They are now ensuring that security controls are embedded into an application's design or code, much before the application is actually deployed on the cloud.

Securing the code

With attacks becoming more sophisticated, banks have taken their security fixation to the level of application code. They are now ensuring that security controls are embedded into an application's design or code, much before the application is actually deployed on the cloud. Without this level of integration, traditional controls of perimeter security may well prove to be inadequate. Banks are therefore securing the Software Development Life Cycle (SDLC) by enabling developers with tools to test the code for common vulnerabilities as defined by OWASP. For example, if OWASP prescribes input validation for protection against buffer overflows, it is integrated into the code during the development process, reducing the possibility of unauthorized usage.

The attention to security detail follows through into the software testing process. Penetration tests are administered in a proactive attempt to exploit vulnerabilities, identify weaknesses, test risky end-user behavior and conduct more detailed analysis. In contrast with a normal vulnerability scan, which only reports vulnerabilities, this also helps determine the possibilities of unauthorized access and malicious activity. During penetration testing, attacks are simulated along two distinct paths – from within the system, referred to as white box testing or source code analysis, as well as from the outside, as part of black box testing. The results of these tests help identify vulnerabilities, apply fixes and finally implement requisite controls within the applications.

Controlling access

Once the SDLC is secured, the sensitivity of applications and platforms is mapped to appropriate levels of access control – for example, less critical applications that are not related to core banking or that are only internal facing, might be protected with "reduced" security controls, like basic authentication and centralized logging.

Similarly, while most applications might be safeguarded with a standard user ID/password-based authentication mechanism, a strong multi-factor or risk-based authentication platform is deployed for privileged access to ensure that the security of the cloud infrastructure itself is not compromised. Banks usually

extend their internal identity management platform to automate the management of user accounts and entitlements of different applications across the cloud. They also apply role-based access control and use advanced security measures, based on segregation of duties, to manage access.

Sensitivity is king

At the data level, security structures and protocols are directly proportional to data sensitivity – as sensitivity increases, data and application security controls must also be strengthened. Data encryption, for example, is fairly standard practice in banking. But more recent techniques like data masking and tokenization enable the secure movement of sensitive datasets, like Payment Card Information (PCI) or Personally Identifiable Information (PII) to other enterprise systems or non-production environments. For example, data masking is useful in obscuring sensitive data elements with fake data for use in testing or training environments.

Tokenization, on the other hand, serves as an appropriate tool for the secure transfer of data to downstream applications where data elements are not required in their entirety. For example, once a credit card transaction has been processed, downstream applications may require only the last four digits to track the transaction. So tokenization of the card number in a secure data vault yields a 16-digit format, with the leading part of the PCI data being replaced by a random token. This ensures that even if the downstream application were compromised, it would not provide access to the credit card information.

At the same time, tokenization also allows applications, like refund systems – which require the complete credit card information to perform their function – to follow appropriate authentication and authorization protocols to query the secure data vault and retrieve the information. So both these techniques enable controlled movement of sensitive data, but do not allow it to proliferate within an enterprise.

Data is big business

As banking moves into the cloud, data itself is the next big opportunity for banks. The rapid aggregation of

massive data volumes from diverse sources and the latent opportunities they present will drive Big Data initiatives to store, manage and understand data better. Next generation in-memory analytics will enable banks to mine data for insights in real time, which will drive a transformation in productivity, performance, innovation and growth. But as Big Data structures move data around, to centralized data management or business intelligence platforms for example, they will proliferate a federated model of computing that will only magnify the security challenges of banking, as well as those of managing massive amounts of data on the cloud.

Next generation in-memory analytics will enable banks to mine data for insights in real time, which will drive a transformation in productivity, performance, innovation and growth.

With Cloud Computing and Big Data being touted as two of the most significant "tipping point" technologies that will drive digital enterprises, security technology has its work cut out: to evolve into fail-safe avatars that can take on the brave new world of computing.

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Cloud Computing:
The core banking game changer

"I bring fresh showers for the thirsting flowers,
From the seas and the streams; "

'The Cloud' Percy Bysshe Shelley (1792–1822)

PB Shelly, one of the finest romantic poets wrote 'The Cloud' in 1820. The first line aptly captures the essence of cloud computing. The cloud as a deployment model has brought much needed fresh showers to the banking industry. It has provided a level playing field previously not seen.

Gartner's Definition

Gartner defines cloud computing as a style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service using Internet technologies. The five attributes highlighted are (1) Service based (2) Scalable and elastic (3) Shared (4) Metered by use (5) Uses internet technologies. These very attributes cumulatively have the potential to be disruptive as a technology model.

Cloud computing and banking industry

We were on a panel recently debating if 'the cloud' is a technology solution or a deployment model. The concluding thought was cloud is a technology based deployment option and more importantly, the true potential of the cloud is in disruption of business models with no precedence; more so in industries where technology has been a differentiator.

Banks with core banking software (CBS) have leap frogged competition and done very well from a business and compliance perspective. The initial and ongoing investment in IT (IT spend) was (and is) not available to all in the industry. This in itself was a competitive advantage. The 'Chinese wall' so to speak defined the rules of competition separating the 'haves' from the 'have not`s'. The cloud has just changed this and rewritten the rules of the game.

The ten game changers

The ten game changers listed below are creating fissures in the Chinese wall and have for the first time destined technology to its rightful place as a business enabler. A two dimensional view from technology and business will put the disruptive potential of cloud computing in perspective.

The technology aspect: Software, Platform and Infrastructure

Commoditizing technology

The giant killer of competitive advantage. Cloud has made state-of-the-art technology uniformly and consistently available and affordable.

Game changer: Technology is no more a differentiator; banks across tiers will have access to the same/ similar technology.

The cloud as a deployment model has brought much needed fresh showers to the banking industry. It has provided a level playing field previously not seen.

Making technology opaque

The decision to evaluate and select technology is highly skilled and risk based. The cloud has shifted this responsibility entirely to the cloud provider. Banks can now focus on 'outcome' based business decisions that application software will deliver completely divested from technology.

Game changer: Investing in a specific type of technology or core banking is not a decision that the bank's executive board needs to worry about.

Level playing field for lower tier banks: Access to the latest solution software was limited to the tier 1 and tier 2 'big boys' who have big ticket IT budgets. The on-premise implementation requires large IT spends. The cloud service model has changed this fundamental premise. Lower cost to access quality solution software and 'pay for what you use' has put the tier 3 and 4 banks at par with the big boys. The competition in the market place is gradually becoming monolithic with new players in the fray.

The technology requirement for a bank is characterized by peaks and troughs. Cloud offers this flexibility to provision for peaks and also to de-provision during slack periods.

Game changer: The service model that cloud brings in with accent on opex and 'pay for what you use' has redefined the competition in the market place.

From 'buy/build' to 'cloud provider 'A'/cloud provider 'B'

The on premise model provided two options 'Buy or Build'. Both are long term strategic decisions. The decision that banks will have to make today is; which of the cloud providers is hosting the software that is required for business. A mix and match of cloud providers for different types of applications is an option as well. The cloud broker is ever willing to place these options on the table.

Game changer: The decision parameters were a strategic risk. In a cloud with 'pay as you go' in conjunction with 'need based' model is reducing the risk significantly. It must, however be noted

that procedures for transitioning of an application e.g. core banking from cloud provider A to cloud provider B still need to evolve.

Need based scalability

The technology requirement for a bank is characterized by peaks and troughs. Cloud offers this flexibility to provision for peaks and also to de-provision during slack periods.

Game changer: The transient requirement for IT resources has relieved the pressure of unproductive investment in IT.

The business aspect: the routine, strategy and Innovation

Routine will cost nothing

The bug bear of conventional on-premise model is the cost to run routine services such as switch over to next day, report distribution and support. The cloud has virtually assumed this responsibility. With governing SLAs, the services are a guaranteed deliverable.

Game changer: The people and processes to run the routine require extensive skills. The cloud has redefined the flat world in a global delivery model.

Business strategy, the new differentiator

The market place will have players across all tiers. Business strategy will drive competition. Banks with a better and more appealing business strategy will be preferred by the customers. The size will matter less now. Small is no more a disadvantage.

Game changer: Business strategy will drive competition. Banks that are customer centric will be the leaders.

Innovation in products and services

Cloud is providing a platform for driving innovation. The 'bank-in-a-box' core banking solution is designed to provide out of the box support for standard products and processes for the market. The cloud provider will publish a framework for freelance developers to create innovative surround offerings. Thus, in future, banks will have the option to select or reject from the innovation catalogue. This innovation agenda will move from 'inside out' to 'outside in' model.

Game changer: The transition from innovation development to innovation adoption is the new rule.

Time to market

With the shift to innovation adoption, the time between conception to roll out will be quick; so also the death of obsolete products. The product catalogue readjustment will be done faster than ever before.

Game changer: The banks with lean processes and strong risk management will thrive.

The true success of the cloud model as a financially viable proposition is in the critical mass of client banks. A joint go-to-market strategy with core banking solution providers is an option to explore.

Regulatory compliance

Regulatory compliance is expensive and at times a constraint for small banks to innovate and grow. Banks have a choice to select a software solution that is compliant and focus on business growth.

Game changer: Regulatory compliance is now hygiene rather than a constraint.

What does all this translate to the cloud providers, core banking vendors and customers?

Cloud provider

The cloud provider is not one entity. There are specialist providers in platform and infrastructure. From a bank's perspective the software solution set may come from a single cloud or from multiple clouds. For example the core banking software from cloud 'A' may complement payment systems and risk management from cloud 'B' with regulatory and compliance from cloud 'C'. The challenge is to meet the market requirements and demand. The IT spend now has moved from banks to cloud providers. The true success of the cloud model as a financially viable proposition is in the critical mass of client banks. A joint go-to-market strategy with core banking solution providers is an option to explore.

Core banking vendors

Cloud model mandates the vendors understand a bank's customers' requirement and pro-actively propose solutions to the banks. This is very different from banks approaching vendors with requirements. Standardization of processes and reporting will be required for building a revenue model. Cooperation across several vendors is necessary to provide a complete landscape of solutions to banks. This delineates the role of a 'cloud broker', a specialist system integrator or a large cloud vendor. As will be apparent, this will mean significant lower risk and costs for integrating solutions across diverse vendors.

There will be a distinct shift in marketing efforts. The vendors will now have a two pronged strategy, a joint proposition with the cloud provider (cloud broker) and the direct conventional method. In either case the profit margins will be narrow.

Customers

A customer now has democratic options. To the majority there will be little differentiation from banking with tier 1 or lower tier banks as the products, channels and user interface will be very similar. The cost of a transaction or maintaining a bank account will be far lesser with pricing playing a key role in differentiation.

In conclusion

The benefit of cloud and its potential to disrupt can be viewed from the deployment models; the conventional 'on-premise' as against 'hosted'. The 'on-premise' calls for high initial and ongoing IT investment in people, process and technology. A bank is locked into the technology. Any change in business strategy triggers a change in IT investment. This increases business risk. The rigidity translates to loss in competitive advantage. The banks with lower IT investment fall into a different league. This league is characterized by low technology adoption and little innovation. The service based utility cloud deployment model has redefined technology as a business enabler. With the democratization of technology, business strategy and business innovation are at the centre stage. The challenge for the banks now is to take a close look at the products and services catalogue through the lens of customer centricity, risk management and regulatory compliance.

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The Philippines:
Asia's outperformer

A tourism website says that there's a fiesta happening somewhere in the Philippines every day. Indeed, that nation of over 7,000 islands has much to celebrate. Throughout its checkered history, the Philippines has battled – and survived – external aggression, internal rebellion, financial crises and periodic seismic catastrophe. That resilience was abundantly evident during the last Global Financial Crisis and after, when the Philippines Banking Sector was among the few to land on its feet.

Conservative banking policy, limiting exposure to structured products and derivatives, can take most of the credit. The Philippines embarked on a program of banking reform and closer risk supervision some years ago, which helped the industry weather the crisis and continue on a path of growth. In 2009, local banks, which had reasonably healthy balance sheets, were able to make a quick return to profitability, and change course to focus on domestic business opportunities, like consumer lending. In the latter, they were supported by the Bangko Sentral ng Pilipinas (BSP), the country's Central Bank, which took steps like allowing discounts to be given for prompt loan repayment.

These, along with other prudent moves – higher credit loss provisioning, capital reinforcement, and leveraging electronic banking technologies to improve efficiency – enabled these banks to not only withstand the hit to treasury and foreign exchange operations, but actually turn out a creditable performance in the midst of the crisis.

In contrast, the balance sheet of foreign banks shrank during that time, mainly due to the fall in inter bank loans and repo operations. In the 12 months between October 2008 and September 2009, assets declined by 12% and loans by 15%.

Banking industry structure: fragmented landscape, dominant leaders

Besides local and foreign banks, which fall into the category of Universal and Commercial Banks, the banking industry consists of Thrift Banks, Rural and Cooperative Banks, and Non-Banks with Quasi Banking Functions.

The Philippines resilience was abundantly evident during the last Global Financial Crisis and after, when the Philippines Banking Sector was among the few to land on its feet.

Although the industry is populated by a very large number of banks – there were over 700 in June 2012 – its business is dominated by a clutch of local banks, owned by financial conglomerates. At the end of June this year, five of the top ten banks belonged to such conglomerates, and controlled about 48% of market share. While that is a potential source of worry for the BSP, industry performance certainly isn't. Propelled by a favorable economy and banking reform, banks have made good progress overall, on balance sheet, bottom line, solvency and asset quality parameters. The last is especially important, since the Philippines banking sector does have a history of significant non-performing assets.

The following graphs represent some key performance parameters, starting 2007.

Banco de Oro (BDO) is Philippines' largest bank and

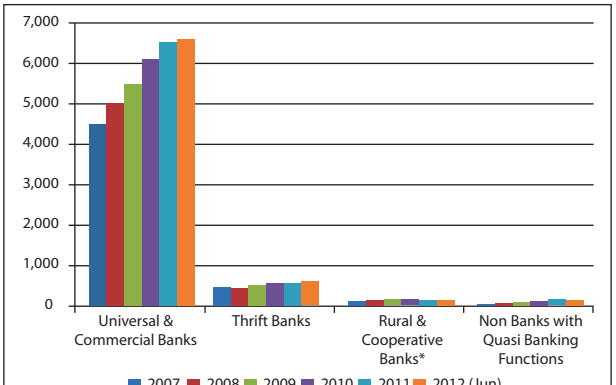

Figure 1: Total Banking Assets, Billion Pesos | * March 2012

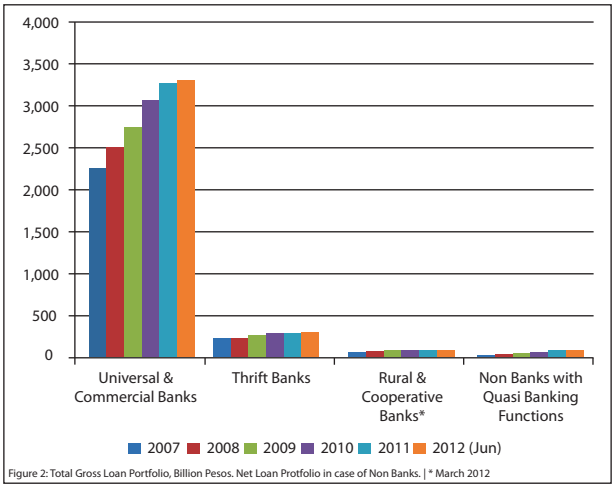

Figure 2: Total Gross Loan Portfolio, Billion Pesos. Net Loan Protfolio in case of Non Banks. | * March 2012

the only one to have more than 1 trillion pesos in assets. At the end of March 2012, Metrobank, Bank of the Philippine Islands (BPI), Landbank and Philippine National Bank (PNB) rounded off the top 5.

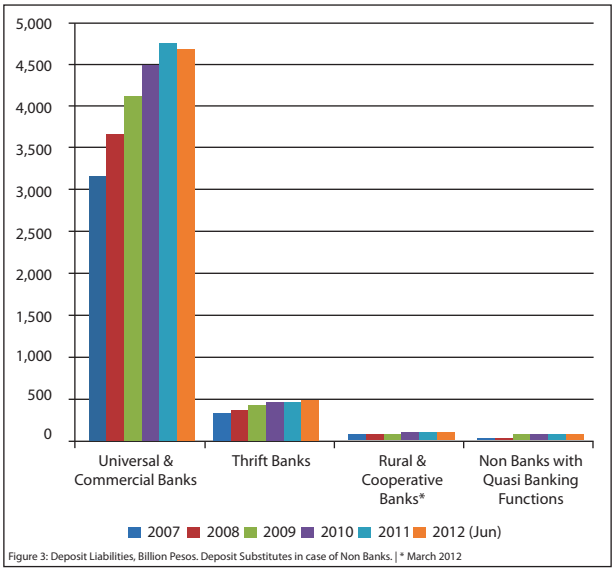

Figure 3: Deposit Liabilities, Billion Pesos. Deposit Substitutes in case of Non Banks. | * March 2012

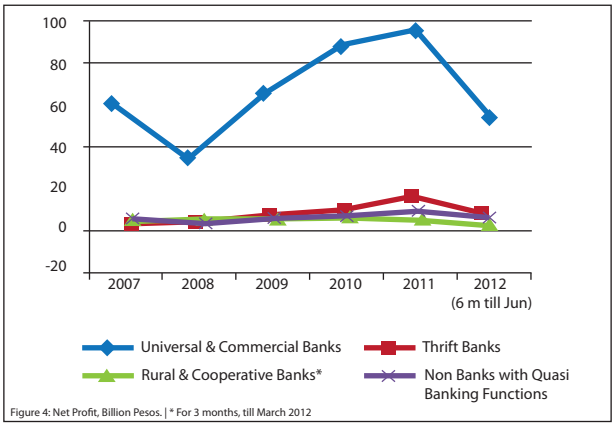

Figure 4: Net Profit, Billion Pesos. | * For 3 months, till March 2012

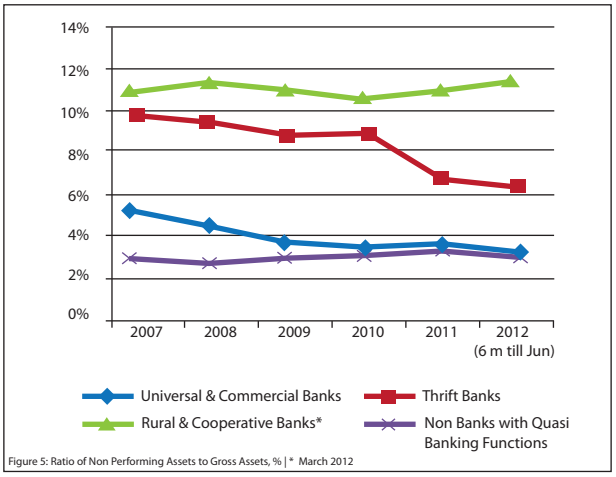

Figure 5: Ratio of Non Performing Assets to Gross Assets, % | * March 2012

Although Citibank just about makes it to the top 10, it has been recognized as the best foreign commercial bank in the Philippines for many years now. Recently, they became the first bank to offer "smart banking" in the Philippines, modeled on similar Citibank branches in other countries.

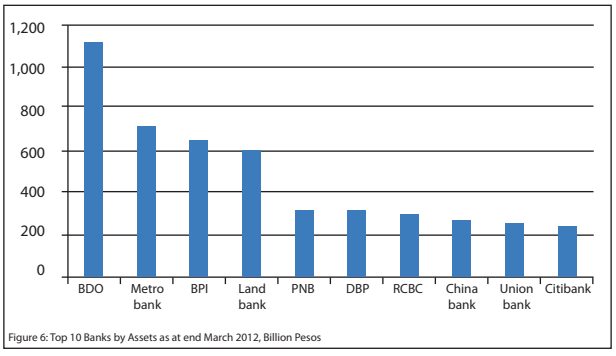

Figure 6: Top 10 Banks by Assets as at end March 2012, Billion Pesos

The remaining 28 Universal and Commercial Banks join these 10 to lead industry performance. Together, they reported net earnings of US$1.3 billion (Pesos 53.50 billion) at 19% year-on-year growth, in the first six months of this year. Net interest income grew 3.2% year-on-year to US$2.4 billion (Pesos 98.75 billion), and non-interest income increased by 13.4% year-on-year to touch US$1.6 billion (Pesos 65.80 billion) in the same period.

This also means that Universal and Commercial Banks completely overshadow the nation's numerous Thrift Banks (69) and Rural and Cooperative Banks (606). Realizing that a banking industry consisting of fewer but stronger players is in the best interests of the financial sector, the BSP has embarked on an agenda of

consolidation for some time now. Its latest move is to allow banks, which acquire or merge with smaller players, to open branches in the sought after Metro Manila area, which is currently closed to branch expansion.

Consequently, the industry has undergone significant consolidation in recent times. Rural banks have been acquired, and many "savings bank" subsidiaries, a common feature of big banks, have been taken over by other banks.

Key trends: consumer lending, financial inclusion, channels, remittances

Besides consumer lending, the major themes in banking are financial inclusion, channel banking, and remittances.

Building financial inclusion is a key priority of the Central Bank. Although the banking network has expanded over the years – offices grew 19% in the ten years between 2001 and 2011, whereas the number of ATMs nearly doubled in the same period – financial access is still woefully low. A consumer finance survey conducted by the BSP in early 2012 revealed that only two out of ten households have a savings account. The problem clearly seems to be one of affordability – people just don't have the money to open one – followed by lack of trust in the financial system. Of the 1,634 municipalities, 609 are without financial service providers; it is hoped that innovative – if unconventional – measures, such as distributing services, such as bill payment and remittance through convenience stores, money changers, mobile banking agents and other small establishments would bring down the latter number to below 400 in the near term.

On the conventional banking side, Microfinance Institutions are doing a commendable job of spreading financial inclusion. In 2011, the Economist Intelligence Unit (EIU) in its "Global Microscope on the Microfinance Business Environment" named the Philippines' Microfinance sector as the world's best in terms of regulatory framework.

The desire to improve reach, as well as operational efficiency and customer experience, is driving banks' investment in alternative channels. Although Filipinos are mobile junkies and the most intensive SMS users in the world, they have, strangely, not taken to mobile banking as expected. In fact, few people realize that the Philippines was among the first nations in the world to introduce a mobile payment system; sadly, it did not succeed, while followers like Kenya's M-PESA did and went on to make history. That being said, banks fully realize that channels are the way forward, and are therefore, marching ahead on the path of channel expansion. Several big banks are investing in kiosks to manage branch traffic and are also looking at streamlining teller operations with a queue management system.

Few people realize that the Philippines was among the first nations in the world to introduce a mobile payment system; sadly, it did not succeed, while followers like Kenya's M-PESA did and went on to make history.

Inward remittance, from over 10 million Overseas Filipino Workers (OFWs), is a key area of focus for banks in the Philippines, as it is for the economy. In the first six months of 2012, OFWs sent home US$10.13 billion (Pesos 417 billion) – a 5.1% increase over what they sent home in the first six months of 2011 – to give a boost to household consumption. Banks are keenly exploring mobile technologies such as digital wallets, to facilitate

the flow of these funds and enhance such services with a card-based withdrawal facility.

A happening technology market

It is only natural that the abovementioned themes drive the banking sector's technology agenda. While core banking replacement is the top priority, given that most banks are stuck with mainframe, legacy or outdated core systems, solutions for inclusion, channel banking and remittance are also of interest. Luckily, this interest is backed by buying power; banks are flooded with cash, and recently placed over Pesos 1.5 trillion into a special deposit account with the BSP.

All these make the Philippines a very exciting market for technology providers. From the core banking perspective, banks are looking to replace their messy architecture, characterized by multiple back end systems or individual systems per line of business, with a best of breed, unified solution. They expect the solution to not only transform core operations, but also support regulatory compliance and integration with other systems in the event of merger or acquisition.

An interesting feature of this market is its strong emphasis on ease of use, a la the United States, which continues to influence politics, business, and popular culture in the Philippines, and is a big investor in its economy. So, when banks evaluate software solutions, they pay particular attention to their front end user interface. They also go over the price with an eagle eye, making that market one of the most cost competitive, worldwide.

But, these challenges are not a barrier to technology vendors with the right credentials, and a long-term interest in the market. For instance, Finacle, which powers seven banks in the Philippines, considers it very significant to its future plans, and hopes to further strengthen its presence soon.

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Kotak Mahindra Bank

Gearing up for the future

Profile

Established in 1985, the Kotak Mahindra group is one of India's leading financial services conglomerates. In February 2003, Kotak Mahindra Finance Ltd. (KMFL), the Group's flagship company, received a banking license from the Reserve Bank of India (RBI). With this, KMFL became the first non-banking finance company in India to become a bank – Kotak Mahindra Bank Limited. The Kotak Mahindra group has a consolidated net worth of Rs. 13,430 crore (approx US$ 2.4 billion) as on June 30, 2012. The Group offers a wide range of financial services that encompass every sphere of life. From commercial banking, to stock broking, mutual funds, life insurance and investment banking, the Group caters to the diverse financial needs of individuals and the corporate sector. The Group has a wide distribution network through branches and franchisees across India, and international offices in London, New York, California, Dubai, Abu Dhabi, Bahrain, Mauritius and Singapore.

Overview

Core bank transformation imperative

In 2009, Kotak Bank decided to transform its Core Banking Solution (CBS). The existing legacy system for retail and corporate banking had not been updated even once in the last seven years, and was laboring under the load of the bank's rapid growth. It rested on branch server architecture; had become increasingly expensive to maintain and fix; and presented several performance issues including being unavailable to the bank's back office during end of day operations. But most importantly, the solution lacked vital functionalities, such as NEFT/RTGS Payments, Flexi Deposits, Sweeps, and so on. Unfortunately, the CBS had been customized over the years to such a large extent that it was a herculean task to migrate to the latest version of the existing legacy system. Under the circumstances, total replacement seemed an easier alternative.

Key business drivers

Choice of transformation partner: a case of total alignment The bank considered a number of core banking technology vendors, before shortlisting Finacle. Over a period of four months, they evaluated each of these vendors through a series of demonstrations, product walkthroughs, functionality mapping exercises and technology reviews. At the end of this process, the Bank reached two conclusions – one, that it was indeed unviable to upgrade to the latest core banking offering from their existing vendor, and two, that Finacle was the best fit, both functionally and technologically, for their requirements. A key factor, which swung the decision in favor of Infosys and Finacle was their alignment with Kotak Mahindra Bank's future aspirations. The bank clearly intended the new CBS to support their ambitious growth plans. This was evident even from their RFP, which contrary to most, made little mention of the solution's current attributes, focusing instead on its future functionalities. Infosys' response to the RFP indicated that Finacle was best placed to fulfill the bank's expectations. Also, it was already compliant with Indian regulations, which was an added advantage.

Transformation challenge: "biggest" bang implementation with minimal disruption

Transforming the bank's core banking platform presented some stiff challenges. At a scale of nearly 2 million customers and 4 million accounts, this was the largest big bang implementation that Finacle had ever undertaken in South Asia; the task was doubly hard because it not only involved going live with Finacle core banking at 340 branches at one go, but also implementing e-Banking at the same time. Amidst all this, Infosys was mindful of the need to ensure that the transformation sustained, if not enhanced, Kotak Mahindra Bank's strong reputation and performance. Another challenge was that Infosys would have to create special tools to migrate the bank's corporate offerings and related data. Last but not least, the latest version of Finacle was still new, and therefore the project team did not have much experience (with this version) to draw upon.

Implementation schedule: 18 months, a record of sorts

The project life cycle was drawn up to an ambitious timeline of 18 months. Even before they wrote up a

Challenges

- **Largest big bang implementation by Finacle in South Asia**
- **Going live at 340 branches while simultaneously launching e-Banking**
- **Tight deadline of 18 months**

Statement of Work, a team from Infosys visited the bank's site to assess the number of systems that Finacle would have to interface with. An initial round of training was conducted over six weeks during which the bank's staff was familiarized with all the functional aspects of the Finacle core banking solution. During the detailed requirement gathering stage that followed, the consulting and delivery teams also discussed various solution approaches jointly, to arrive at a clear understanding of the bank's needs, and to assess whether these could be met with the solution's existing functionalities or would need customization. This resulted in dual benefit – it cut down the time spent on customization related discussions and enhanced the delivery team's appreciation of business expectations. Once the bank signed off the Finacle solution approach, the development phase started in earnest. In order to expedite things, the customization – numbering approximately 150 items – was planned in two "drops" in order of priority. The first drop was made at the end of one month, when it was handed over to the bank for System Integration Testing (SIT) and User Acceptance Testing (UAT). At the end of another two months, the second drop was completed, at which time the Bank commenced full-fledged testing. This phase spanned four months and multiple rounds of interface testing, migration, development, and customization, culminating in e-banking testing and dry runs. The bank made a significant contribution to this effort in the form of a comprehensive test case repository that covered all business/life cycle functionalities of their offering. Once the UAT was completed, it was time for simulation runs. Simulation of "production cutover" was done in three rounds, in which all of the bank's 340 branches participated by replicating one day's transactions in Finacle, and followed that with end of day operations and a tally of the Balance Sheet on both existing legacy system and Finacle. All functionalities were tested over all channels, from domestic branches to international Point of Sale terminals. In addition, the bank voluntarily suffered a few hours of downtime while it tested online and ATM transactions. This was worthwhile because it enabled the bank to go live with zero downtime for ATM operations and a minimal 30 hours of downtime for other channels. The actual "go live" was a matter of precision planning. A special cell comprising members of various committees involved in the project closely supervised the final cutover, and liaised with the branches and processing centers to make sure that there was minimal inconvenience. They were successful in this endeavor – data migration was completed within just 30 hours; implementation at 340 branches was accomplished with no downtime; and all other channels including Net Banking, ATM, IVR, Call Center and Mobile Banking were cut over to the new core banking platform overnight.

Governance: stakeholder commitment at every step

A strong governance structure was imperative to ensure project discipline, and provide support when required. Three committees, namely the Core Committee, Executive Committee and Steering Committee, were assigned different responsibilities. The Core Committee, which was the main driver of the project, was responsible for day-to-day operations, executing decisions, preparing test cases, testing and sign-offs. It had 18 members drawn from both sides representing a range of functions including IT, infrastructure, business (both retail and corporate banking), finance and training. The Executive Committee of 13 members was in charge of architectural decisions, "solutioning" and adherence to project timelines. It was engaged in designing processes and taking decisions at the implementation level. At the top, the Steering Committee, which comprised senior executives including the Joint Managing Director of the bank, met with the other stakeholders once a fortnight to review any significant issues related to the project. This committee also issued commercial approvals.

Transformation verdict: big bang, big success

The Finacle implementation at Kotak Mahindra Bank was an unqualified success. It was not only remarkable for successfully replacing another vendor's core banking system that was supporting millions of customers, accounts and transactions, but also for doing so within a short span of 18 months with no cost or time overrun. It is worth noting that an implementation of such scale usually takes between 24 to 36 months to complete. One of the biggest reasons for this success was the team's unrelenting focus on achieving what they had set out to do, which was to eliminate the problems of the existing system and ensure that there was no disruption of business during and after the Finacle "go live". They accomplished this through an unprecedented amount of testing which saw more than 100 "end of days", and simulations of operations right through to April 2012 prior to going live! Also, the bank's insistence on testing every offering before giving it the go ahead – as well as its vast test case repository – was a contributing factor in the smooth execution. Matters were also helped by the availability of the production environment at the simulation stage itself, which gave the bank and the implementation team a realistic preview of the results that they could expect after going live on the new system.

Special mention: three innovations

Three innovations stood out in the Finacle implementation at Kotak Mahindra Bank.

1) **Enterprise Bus:** The Service Oriented Architecture enabled seamless integration with 72 existing systems through TIBCO BusinessWorks. TIBCO middleware translated the existing message formats such that the change in the core banking system was made transparent to these 72 systems and Finacle messages worked like those of the previous system. This reduced project complexity in terms of development and testing effort by at least 100 person-months, resulting in large cost savings.

2) **Common Beneficiary Module (CBM):** This system – conceptualized in-house – was designed to enable the registration of beneficiaries for a range of Fund Transfers, such as Intra-Bank A/c Transfers, RTGS, NEFT, BC/DD. It also allowed beneficiaries to be managed across channels.

3) **Payment Hub:** The payment hub, conceptualized by the bank, enabled it to release RTGS and NEFT payment instructions centrally and intervene when necessary to ensure timely transmission of instructions. The channelization of the bank's multiple systems, which initiate RTGS and NEFT payments, through this hub, reduced integration complexity and Turn Around Time for the launch of payment-related products.

Business benefits ready for the future

The switch to Finacle has led to several improvements at Kotak Mahindra Bank. The Bank has become more agile, and is now able to take new products and services to market very quickly. This agility was clearly visible when the bank was the first to revise its savings bank interest rate in the wake of the recent deregulation by the Reserve Bank of India. Thanks to the flexibility of Finacle, the bank was able to make this change entirely on its own over a weekend. With Finacle supporting its operations, the bank is fully geared for future growth. From a technology point of view, there is adequate scalability to support the business volume expected in the next three years. What's more, the system is designed to deliver uptime in excess of 99.99%. The transformation has already started to pay off. A quick analysis showed a 44% increase in the number of accounts added in the quarter succeeding implementation

Business Benefits

- **Agility and short time-to-market**
- **Scalability to support future growth**
- **44% increase in new accounts added in the quarter succeeding implementation**
- **Increase in new sales, cross sales and fee income**
- **New offering, such as RTGS Payments, Sweeps and Standing Instructions**
- **24x7 back office**

compared to the quarter preceding it. The biggest reason for this growth is that the bank is now able to extend much needed offerings to customers, such as RTGS payments, sweeps and different types of standing instructions; it has also raised the quality of service and user experience by enhancing its touch points and providing value added services like transaction alerts.

Operational benefits: the end of "end of day"

The biggest advantage of the new core banking solution is that it has brought 24x7 banking to the back office, which under the erstwhile platform, had to shut down for hours during end of day operations.

Finacle's extensive Service Oriented Architecture capabilities have enhanced Straight Through Processing and reduced manual intervention to drastically reduce process time and error. This has improved staff productivity and shortened the Turn Around Time for new account opening, servicing of customer requests, etc.

The bank's executives are able to access a 360-degree view of each customer, and consequently, render "single window" service. Finacle has also consolidated similar activities that were being performed by different divisions on multiple systems onto a single platform, for better monitoring and control. Key elements of transformation • Changed from the current legacy system to a consolidated Finacle Platform • Implemented an all new Net Banking platform integrated with Finacle Core Banking • Implemented a major relationship charging system integrated with Finacle at the same time • Implemented an OLAP database for MIS reporting • Implemented a Common Beneficiary Module, which facilitates customer to maintain beneficiary and the same will be available across all direct channels • Modified 72 "surround systems" for integration with Finacle.

To achieve 100% uptime the bank has put in place a production environment with:

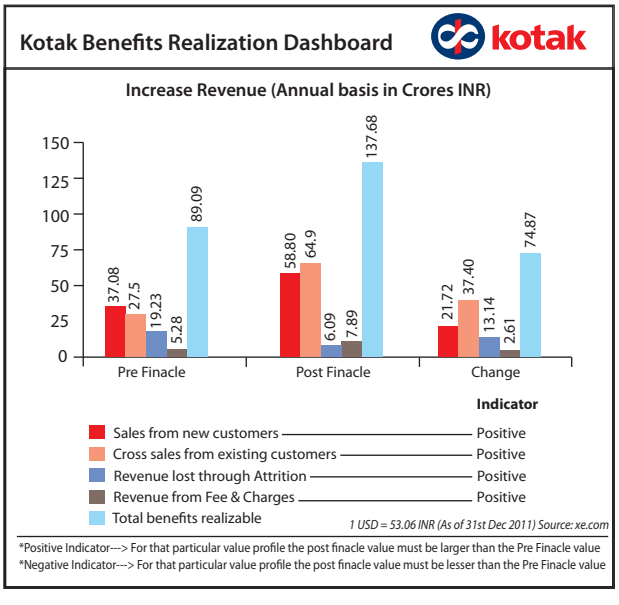
- Active-Active Mode on IBM AIX P7 series
- Enterprise class EMC DMX Storage and director class brocade switch, providing world class SAN infrastructure
- All branches, administrative offices, training centres, etc. networked through Lease Lines, ISDN, VSATs for running multiple applications under CBS with enough redundancy for high up time

The Bank has adopted environment friendly systems and technologies in the design of the new Data Center (Green Initiative), which includes

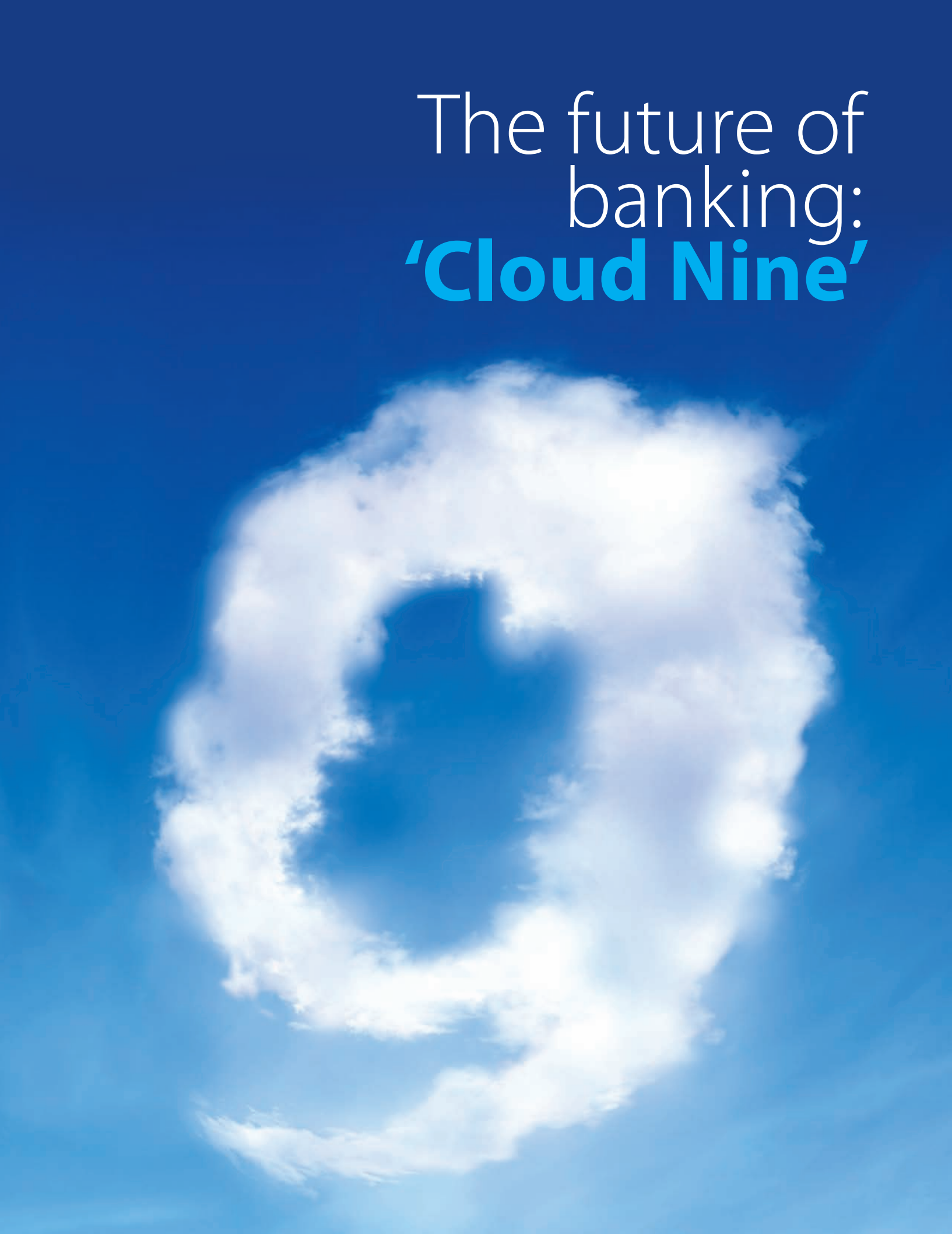
- Energy efficient electrical and HVAC design
- Environment friendly construction material
- Chiller based HVAC
- Temperature monitoring
- Intelligent building management software
- High efficiency precision air-conditioning units

Key elements of transformation

- **Changed from the current legacy system to a consolidated Finacle Platform**
- **Implemented an all new Net Banking platform integrated with Finacle Core Banking**
- **Implemented a major relationship charging system integrated with Finacle at the same time Implemented an OLAP database for MIS reporting**
- **Implemented a Common Beneficiary Module, which facilitates customer to maintain beneficiary and the same will be available across all direct channels**
- **Modified 72 "surround systems" for integration with Finacle.**



The future of banking: **'Cloud Nine'**



If there's one thing that cloud analysts differ on, it's how optimistic they should be. The current private cloud opportunity alone is estimated between US$40-109 billion, and the prediction is that it will be twice that number in 2016. In the context of financial services, a June 2011 report says that globally, the industry will spend US$14 billion on cloud computing in 2012 and a little over US$26 billion in 2015, with private cloud expenditure accounting for a little less than 40%.

Amidst all this effervescence, one of the findings of a recent study by IDC strikes a sobering note. The study, which surveyed cloud adoption among 326 large companies in the United States, the United Kingdom, France and Germany, revealed that although the majority had already begun the process of cloud adoption, barely one in four had a formal roadmap or strategy for it. Even in the case of financial services – a supposed frontrunner in cloud usage – only 38% of organizations had a plan in place.

Hence, there is a clear and pressing need for organizations from all sectors to get their act together and craft a coherent strategy for their venture on the cloud, if they wish to make it right to the top, to Cloud 9, if you will.

This paper takes that thought forward by exploring some important considerations for banks, which are moving a part of their operations to the cloud.

Building belief

The first of these is to build conviction in the cloud – in other words, banks must know beyond doubt what they will use the cloud for, and why it is right for them. My view, as an objective observer of the industry, is that banks are morphing into financial super houses, and banking into a sum of manufactured products, transaction processes and retailed services. Of the three, only product manufacturing is a bank core competency; this is something that banks understand best, within the larger context of customer expectation and regulatory stipulation. On the other hand, transaction processes, because of their dependence on IT elements like networking, security, provisioning, backup, storage, and so on, are best handled by telecom and data center operators or outsourcing vendors who specialize in that field. The same logic applies to sales, marketing and distribution, which is best understood by retailers like say, Wal-Mart or IKEA, who could well become co-opetitive partners to banks in future.

Other industries like the automotive sector, have realized great efficiency and market competitiveness by retaining in-house only those activities that are core to the business, and divesting the rest to external vendors. I believe it is only a matter of time before banks follow suit. In fact, let me qualify that by saying

The financial services industry will spend US$14 billion on cloud computing in 2012 and a little over US$26 billion in 2015.

that thanks to the cloud, this process has already been set in motion: a report from a leading investment bank asserts that 20 percent of organizational workloads (among all organizations, not just banks) has moved to the cloud environment in the last six years; another 18 percent will go within the next two. I can easily envisage this happening in banks in the next few decades as the next stage of evolution in a chain that has gone from decentralized processing in the 1970s, to centralized in the 1980s, to globally centralized operations in the 1990s and 2000s, which are now poised to reach the cloud.

With the case for cloud computing established, let us look at some of the other considerations on the ground.

Keeping it safe

Ensuring the security and privacy of data residing on the cloud ranks right up there. The severity of that concern was in evidence in a recent CIO survey, in which 70% of respondents said that security was an impediment to cloud adoption, and 75% worried about whether the cloud would be available or perform at a 99% level.

In a recent CIO survey, 70% respondents said that security was an impediment to cloud adoption, and 75% worried about whether the cloud would be available or perform at a 99% level.

Let us take a closer look at these issues. Regulations like the U.S.A. Patriot Act, which call for organizations to disclose customer information under certain circumstances, create conflict for banks and financial institutions, which are bound to protect the privacy of their customers by other Acts, like the Gramm-Leach-Bliley. Others like Sarbanes-Oxley require banks' top management to declare on the Balance Sheet that they have adhered to the prescribed standards of processing and control. At the same time, a big part of cloud regulation is still a grey area, in urgent need of harmonization of frameworks, certification norms, identification of jurisdiction, etc.

When infrastructure or data is put on the cloud, there is additional uncertainty about the ability of financial institutions to comply with regulatory mandates to the same extent as in an on-premise scenario. Last but not least, there's also the question of establishing accountability and ownership of data – and its processing – once it leaves the banks' premises when multiple 'transaction processors' are involved in the life-cycle.

The outcome of all these concerns is heightened fear, uncertainty and doubt, which could defer banks' cloud implementation, if not derail it altogether.

Being in control

In the earlier mentioned survey, 79% of CIOs had concerns about the implications of vendor lock-in; these will only intensify as the cloud environment at banks turns hybrid, and consequently more complex, involving multiple providers. At present, service providers, especially those of the public cloud, commit to perform on a best effort basis. While a provider's track record is an indicator of past performance, it is by no means a guarantee for the future, and hence banks would be well advised to demand accountability through the terms of their contract.

Accordingly, banks' IT organizations will need to put a rigorous governance structure in place, as well as SLAs with individual service providers. In the absence of this, there is a good chance of the cloud infrastructure not being optimized, and therefore defeating its core purpose; in the worst case, it could even cost banks a penalty for not meeting SLAs or statutory obligations.

Being on the move

Data exchange over mobile networks is another challenging facet of cloud adoption. Apart from ensuring secure transportation, banks also need to figure out the different cost scenarios, for instance, when a mobile device accesses their cloud from outside its home network, or when the data is processed in an overseas location. Costs – such as roaming or telecom charges – if significant, could eat into the savings achieved by virtualization, and banks need to be cognizant of this. They might like to enter into a mutually acceptable arrangement with telecom operators, enabling them to leverage the benefits of the cloud, while keeping its costs within range.

Deciding what to shift

Cloud computing has already mutated from the original Software as a Service model into others delivering Infrastructure or Platforms as a Service (IaaS and PaaS respectively) and is heading towards a scenario where "Anything and Everything" is provided "as a Service". That leaves the door wide open for banks charting their first move – for instance, they can choose a modular approach to migrate only products to the cloud, followed by lines of business, followed by universal banking operations and so on. Or they can prioritize by tolerance to disruption, moving less critical applications first and those operations, which must be disrupted the least, last. Other options include moving all operations pertaining to a particular customer segment, or process (back, mid and front office), or channel to the cloud. Finally, banks also need to decide what to take from the cloud: Network services? Compute power and storage? Data center services? Applications? Everything and anything?

A word of caution. Before choosing from the above approaches, banks must assess their relative cost effectiveness and elasticity, because both are imperative to a sound business case. They also need to ensure integration of various applications and portability of cloud services.

Reaching the last mile

When making the shift to the cloud, banks should take care to complete the cycle. All too often, the focus is on migrating hardware infrastructure, systems and processes to the cloud provider's environment, without considering its impact on customers, employees or partners. Factors like customer experience, ease of use for employees, and uninterrupted availability on all channels are as important to the decision as cost or efficiency.

And going further

Although the cloud carries untold promise, it is not a panacea for all problems; it certainly has a silver lining but is by no means a silver bullet. That being said, the cloud could enhance the clout of banking institutions by giving them the flexibility, agility and scale to push ahead with their business agendas, without being constrained by cost and delay, which are the hallmarks of on-premise IT provisioning.

Resources:

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5, Start Small, Grow Tall: Why Cloud Now, Business White Paper, HP, May 2011

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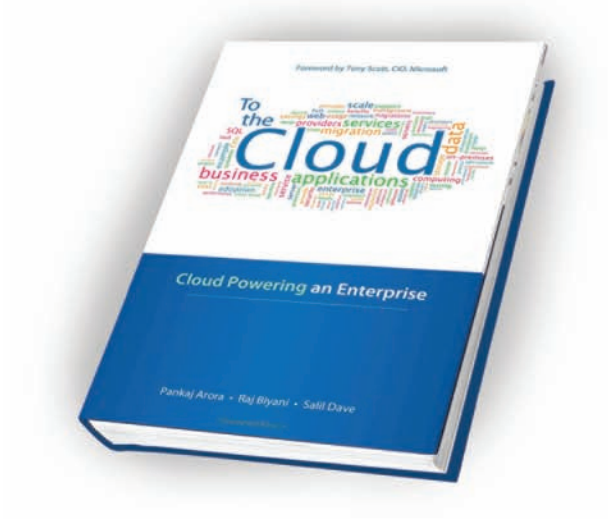

To the Cloud:

Cloud Powering an Enterprise

Authors: Pankaj Arora, Raj Biyani, Salil Dave

The next time you hop onto a plane, this is the book to read. A handy guide to the world of cloud, specially crafted for CIOs who prefer small but meaningful bytes of information delivered in an easy to read package. To the Cloud is written for the busy CIO who wants to know everything that matters about cloud computing powering an enterprise. Clearly categorized into four sections, titled – Explore, Envision, Enable and Execute, this book captures the cloud story better than its fatter counterparts. What's more, the language is peppered with terms familiar to the CIO, thus making it easier to digest.

The first section of the book titled Explore introduces the cloud concept and its many variations including alternatives to the cloud itself. The chapter very naturally leads itself to the next titled Envision which presents a winning case for the use of cloud within as enterprise. It sketches a plan, or a roadmap even to take about into consideration when evaluating the cloud as a possible model.

The third section titled Enable, suggests a comprehensive strategy to move to the cloud including how to choose the right provider, impact of the movement on the people involved and so on. The final section titled Execute, as the name suggests outlines the actual process of moving to the cloud, including a roundup of the best practices used by most companies and a recommendation of what the CIO should be focusing on during the journey.

The book ends with a rather remarkable epilogue that gives the CIO a glimpse into successful cloud implementations using real examples. It discusses the impact of cloud in emerging markets like India and goes on talk about both opportunities and challenges in the cloud roadmap. To the Cloud is a must read for CIOs who want a quick snapshot into this space and are looking for a quick read.

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