

**AMSEC - Knowledge Frontier Series**

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**'Cloud Computing — IT companies on Cloud Nine'**Expert Speaker: Mr. Nitin Mishra  
Vice President, Netmagic Solutions

Mr. Nitin Mishra was the expert speaker at AMSEC's Knowledge Frontier Series held on February 23, 2011. *In an engrossing session, Mr Mishra spoke to a select group from India's investment community on:*

**Basics of Cloud Computing**

- Market Scenario
- Cloud Computing and optimisation of resources
- Drivers and challenges of Cloud Computing
- Cloud Computing Service Models
- Cloud Computing Pricing Models
- Does Cloud make Sense?
- Operational Benefits of Cloud Computing
- Paradigm shift from Traditional Data centres
- Application of Cloud
- Key Barriers to Cloud Adoption
- Indian Scenario of Cloud Application

Cloud Computing has evolved over the last few years from an idea to a viable commercial service offering, which opens up a wide range of opportunities for enterprises, consumers, investors, hosting service providers and application developers. It brings the power of computing within the reach of the masses.

**Market Scenario****Evolution of IT**

The IT movement started with mainframes in the 1970's and every organisation had one mainframe. Then came the personal computers (PCs), which allowed processing to be done at the individual/user end. The client server phase was the next phase or the client-server environment ushered in.

In the 2000's the internet and dot.com age commenced. It was the era when people went overboard with valuations. During this period, apart from client-server, where the client is specific to that application, the web browser became a default client for any web application, which meant a SAP client was no longer needed to access a SAP application. With the web browser and internet, people started moving into data centre space scheming. Thus, earlier one could post in-house, but now one could post from outside.

The constant feature was one required to have hardware, networking components, connectivity to internet and to run all these one had to still speak to multiple people like an IBM or HP for the hardware or you required to get the SAP engineer to put things together, and you also needed your application vendor or CRM.

## Cloud computing is changing IT infrastructure to a utility

A lot has been spoken about cloud computing purely from the consumer perspective as it is removing the complexity of getting required hardware, software putting it together and running it. Cloud computing allows customers to directly approach a service provider and start using the application immediately.

From the IT perspective, application is the top-most layer which concerns the end users. However, the other levels involve many components – eg., for setting up the traditional in-house operating system there are various vendors like Microsoft, Solaris to choose from. In the **collaboration** mode one doesn't do anything individually, but a third party like a data centre is approached. From here, you move to **self-managed hosting** where a third party continues to be in the picture but you still maintain your team with your windows administrator managing various applications. At the level where an individual doesn't want to be involved in any of these processes, a **service provider** is contacted to manage the infrastructure. The next level would be where an individual neither wants the infrastructure nor a service provider managing it, but is only interested in applications. This is where **Cloud Computing** comes in. An example is salesforce.com – it is a CRM package where every day the sales person goes and keys in his orders and is able to see who have moved to the next level from being a prospect – typically a sales code would be distributed where the same application can be used by the sales guys from any region and are able to do a better job. So salesforce.com is a good example that falls in cloud application. Earlier, at HUL the IT engineer would have gone out and taken all the decisions and spoken to an IBM or HP and given them the consultancy for the sales application. But, with salesforce.com, it is now very simple.

Nonetheless, the role of the IT engineers is closer to the business because every thing cannot be available as a cloud application. E.g. salesforce.com can be a common cloud application for sales. But, the ERP and SAP application can be used quite differently even in the same industry. So where it is a standard application cloud will be useful. But, where it needs to be customised the IT personnel will have to step in though he would not have to worry about the application.

## Cloud Computing and optimization of resources

**Grid computing** is used for a single but big problem. Eg in the oil and gas industry, geological data has to be crunched, which requires huge compute power. This is where cloud grid computing is used through various computers to get the output.

**Utility** is not very big. It is primarily what an individual pays a service provider to use his grid. Here you put up a static web-site and as your load increases on the web-site, you pay the service provider accordingly.

**Cloud** optimises usage of hardware. For instance, if there are 5 servers for 5 different applications, usually per server utilisation of the CPU is only 15%, rest all is wasted. Also, there was no option. But, now it is possible to pool resources on a single server with multiple virtual machines on top of it – so, physically it is the same hardware with multiple virtual servers running on top of it with separate OS software. When you log in each appears to be a separate server though that is not the case. In sum, there is optimisation of capacity, eg., earlier India Infoline used 80 servers, but with virtualisation the company now has only 8 servers. This concept works well for the Green initiative as well.

## Drivers and challenges of Cloud Computing

Thus, while defining clouding computing these are the 3 aspects - the **pay as you use** option wherein the service provider bills you for the ram/CPU/server level. Second, it has to be **scalable**, eg., a web-site like facebook can increase its number of users pretty fast, so it has to be scalable or else there will be performance issues. Third, it should be **elastic** – eg. in securities, when markets get volatile and volumes drop, the requirement for so many servers at the back-end drops and the service provider should be able to pull out the unwanted servers from the back-end. So the drivers are very clear flexibility, agility and elasticity.

Among the **challenges**, topmost is **Security**. The oft-asked question is about security of the data being put on the cloud and accountability of the service provider if anything goes wrong -his pool of computers/resources, etc.

In cloud computing however, redundancy is taken care of. For instance, in **online trading**, on the web-site trading is done real time as there is constant communication between the back-end computers of the users and stock exchanges. Another example is **yatra.com**, where ticketing is done online an outcome of back-end cloud computing.

During 2007—2009, there was no growth in server sales. Going forward, cloud computing will be easily available as internet usage increases (currently only 70 million users) and there is additional demand for new applications (like facebook, yatra.com). Currently, salesforce.com and google applications are quite popular.

## Cloud Computing Service models

**Self Service:** This model is at the top examples are salesforce.com, google apps, CRM application, ERP application, yatra.com – all these models entail services available anywhere anytime available on internet based on pay as u use model.

**Platform at service level:** This is the same application shared (SAS) service, where a platform is provided (eg. ODIN), which is shared by others also eg is google apps.

**Platform at infrastructure level:** In this model, the platform (API) is shared at the infrastructure level, but the client has his own committed resources. For instance, players like Netmagic and Amazon provide infrastructure - storage, create virtual machines, OS - and the client can then load his own applications.

**Differentiation is at the SAS and Infrastructure levels:** SAS has a lot of differentiating features in their applications. For the SAS players, the applications on offer will be the differentiating feature. For example, salesforce.com and ZOHO are two different SAS players, both product and price-wise. ZOHO's philosophy is to provide easy-to-use and functional software, where 90% of the features are available at 10% of the cost, while the remaining 10% of the features are much more expensive. Salesforce.com is much more comprehensive, but much more expensive. At the infrastructure level, the differentiators are much less and it may soon become a commodity. There could be very minor differentiators. Also, SAS will not converge. Fall in the bandwidth prices has also aided spread of cloud computing.

## Cloud Computing Pricing Models

### Fixed Plan

- Always on
- Persistent Storage
- Virtual Scaling
- Bandwidth built-in to the VM
- Multiple OS options
- Predictable, flat monthly fee

### Elastic Plans

- Utility (Hourly) Billing
- Persistent Storage
- Vertical Scaling
- Bandwidth built-in to the VM
- Multiple OS options

### Preferred Pricing Model

- Monthly contract based on monthly capped resource requirement with coverage charges
- Month to month minimum commitment on resource usage with coverage
- Month to month resource usage resource based charges without any charges
- Monthly/Annual charges per user
- Others

## Does Cloud make Sense?

### Virtualisation

Virtualisation has helped bridge the gap between virtualisation and the physical machine – VM Ware and Zen are the known players here. Earlier, with hardware in place an operating system (OS) was put on top of it (windows, etc) followed by application. Now another layer is put in between, i.e the virtual OS, which allows multiple Windows OS to run on top of it. Thus, the same physical hardware with the virtualisation OS can convert into multiple logical servers. Cloud computing has leveraged this particular technology and created services with it.

### Vidieye expensive at current juncture

An emerging area is Vidieye or virtual desktop. This would be extension of SAS to the desktop space (which would be a dumb terminal). Here a small virtual desktop would be running at the cloud computing centre, which beams the applications to the desktop be it at home, an ipad or office desktop. But, currently there are some challenges being faced from Microsoft, which is a strong player in desktop and is protecting its old model. At the current juncture, accessing Vidieye is difficult as clients have to pay a charge to Microsoft.

### Application developers and ISP's prefer cloud computing

Earlier, the software vendors went to the end customers to sell their products. Now with cloud computing, without investing much they are able to vend their software on a cloud through an application provider from where the users can pick it up.

## How does cloud computing fit into a software company's revenue model?

The software companies are also inclined towards becoming application players. The software companies are better placed to become application providers as they have better control over costs as ultimately the application is theirs. At the end of it software companies can sell cheaper with nothing else changing in terms of hardware. So many software companies are putting their software on the cloud and trying to sell as a SAS rather than as licenses.

## Customisation and private clouds

Applications, which can be deployed without much customisation are a threat, eg salesforce.com has eaten up revenues of many CRM license companies like CBell, etc. But, in business specific applications like core banking, there is a lot of customisation done and a common application cannot be used. For instance, the customised application being used by SBI cannot be used by other banks. So, has to be using a private cloud. However, some core aspects like accounting may be the same, which are available off the shelf. Theoretically, it is possible to do multi-tenancy on a core banking application and put it on a cloud.

## Public clouds gaining ground

Public cloud is fast catching on with increasing preference for it. For instance, in media and entertainment the demand is high. Sony Entertainment is coming out with videochaska.com. But, it doesn't want to invest in infrastructure as the future is uncertain. So, the preference is a public cloud. Last year, during the 20:20 World Cup, the matches were beamed live by ESPN through a public cloud. But, ESPN required a cloud only during the event. The company continued to get ad revenues as there was viewership (new) through videos/computers.

## Advantage mobile VAS providers

Cloud makes life easier for the mobile VAS providers as well for providing games, music, etc. They have to pay less by renting the cloud for short duration.

## How easy is to switch from one service provider to another?

Currently, it is quite easy at the SAS level. But, at the infrastructure (API) level, the service providers (cpu, storage) code into your system and it becomes difficult to change the service provider. So your application has to be smart enough so that it is easy to change your service provider if required.

As for the contracts, they are very flexible and can be terminated within a month, but definitely the provider doesn't make it very easy for the clients to switch providers.

## Operational Benefits of Cloud Computing

- Scalability
- High Uptime
- Reduced risks of technology obsolescence
- Improved hardware utilisation
- Improved datacentre efficiency
- Faster deployment

## How much do you save?

A person with Dedicated Server and pays Rs100 takes

Fixed Plan on cloud—using 10 hours a day would save approximately 30%

Elastic Plan on cloud – somebody having usage of 9-5 computed resources would save 70%

Transaction-based plan is currently not available. Currently only user/branched based applications are being used. BPO's are the only ones looking at Vidieye services due to security issues, but it is still at a nascent stage.

### Paradigm shift from Traditional Data centres

Question	Dedicated	Cloud Computing	Key Cloud Benefit
Demand	Constant	Variable	Scable and On Demand Highly Portable
Growth	Predictable	Unpredictable	
Users	Concentrated	Dispersed	Globally Dispersed to Reduce Literacy
Application	Batch		Highly Interactive

### Application of Cloud

- Salesforce.com started providing enterprise cloud computing services in 1999
- Cloud computing through Amazon Web Services commenced in 2002
- Elastic Compute Cloud (E2C) commercial services are provided by Amazon to the small companies and individuals whereby computing resources can be rented
- Google offers Google Apps, which includes web applications such as Gmail, Docs and Calendars
- Microsoft Azure Services Cloud Platform supports applications to be hosted and run at Microsoft Data Centers
- VMware is a company that provides virtualisation software for a variety of platforms
- IBM and Juniper Networks formed a collaborative partnership in the delivery of CC services.

### Key Barriers to Cloud Adoption

- Security (79%)
- Difficulty of integration with existing systems (42%)
- Regulatory/compliance (29%)
- IT governance (25%)
- Lack of confidence in ability of Cloud vendors to perform (36%)

Source: Netmagic; Note: As a % of Respondents

### Trends in Cloud Adoption

- Replace most new procurement with cloud strategies
- Start with virtual private clouds as a stepping stone
- Move to Hybrid options for Scale Up/Down
- Online Developers Perform – The new ECO system: Everything as a Service
- Hyper digitization – Media, Entertainment, Gaming, Videos, Books, Education, Mobile VAS, Healthcare
- Access archival data online by bringing back archival content

## Sample Workloads

- Online Internet Centric Applications
- Messaging & Collaboration
- CRM
- Development Test Environment
- Standalone workloads
- Infrastructure Management Solutions
- Mobile VAS
- Document Management

## Indian Scenario of Cloud Application

### In India, Cloud Computing is currently being used by:

- BFSI Sector – Broking firms
- Media and Entertainment
- Education – Manipal University announced results (2 lakh students) for this year via a public cloud
- Automobile Industry – At the time of launch of Tata Nano its 360% view was put on cloud

Cisco has taken the big bait of entering the UCS (unified computing services – hardware in a box required for the cloud) space where its tie-up with HP and IBM has been threatened for their networking space. However, Cisco (UCS) is in tie-up with EMC (storage) and VMware (virtualisation) for offering cloud services.

### About NetMagic Solutions

The company is a leading managed IT services provider and serves over 1,000 enterprises and has hands on experience of Internet operations and product and project management. Netmagic, a pioneer in cloud computing has been in this field since the last 2-3 years. The company has made investments to the tune of Rs3-4crore in the cloud business (less than 5% of its revenues). Currently it has 3 data centres in Mumbai (one at BSE building in tie-up with BSE), one at Bangalore and another one is coming up in Chennai. For R&D, around 20 personnel are involved in providing a complete pack. Hereon, the company is looking at scaling up (targets cloud computing to account for 20% of revenues). On the security front, the company has in place all the compliances, SAS type-2 audits, etc.