Cloud Computing –Applications for NGO'S

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Abstract - **"Cloud computing" – a paradigm shifts now occurring in the information technology (IT) industry – offers the strong possibility of accelerating social and economic development. Cloud Computing aims to provide scalable and inexpensive on-demand computing infrastructures with good quality of service levels. It represents a shift away from computing as a product that is purchased, to computing as a service that is delivered to consumers from the cloud. It helps an organization in saving costs and creating new business opportunities. This new computing paradigm supports an improved and integrated user experience across all devices. It offers great potential for non-governmental organizations (NGOs)to manage their operations more effectively, deliver a broader array of services and achieve a greater impact in the communities they serve. In this paper, we analyze the awareness, effect and adoption of cloud computing and the barriers of implementing cloud computing by NGOs.**

Index Terms - **Cloud Computing, SaaS, NGO, Social Services.**

I.INTRODUCTION

Cloud Computing is more than a technology. It is more than a platform. It is more than just a hosting provider. It is more than just an application hosted as a service. It is more than providing storage services on the Internet. It is a combination of all the above. A 'cloud' is an elastic execution environment of resources involving multiple stakeholders and providing a metered service at multiple granularities for a specified level of quality (of service). The definition of cloud computing provided by The National Institute of Standards and Technology (NIST), as it covers, in our opinion, all the essential aspects of cloud computing:

Cloud computing is 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. Cloud computing is most commonly discussed in terms of four categories; each coming with different design, operations, and integration challenges:

Software as a Service (SaaS) offers the same simplicity for applications, allowing new functionality to be rolled out as fast as a subscription can be obtained with a credit card. Salesforce.com, Taleo, and NetSuite all provide powerful applications to address core business needs. Google and Microsoft are competing to provide a cloud-resident suite of desktop applications.

Platform as a Service (PaaS) provides an environment for development that can be configured and ready to use in minutes. Google Apps Engine, Microsoft Azure, and Salesforce.com's Force.com are complete environments for building software applications based on a ready-made cloud infrastructure.

Infrastructure as a Service (IaaS) offerings make provisioning computing infrastructure something that is purely virtual, something that can be done in an instant, controlled through a simple console or an application programming interface.

Virtualization Technology from companies like VMware, Citrix, Novell, Sun, and Microsoft provides the ability to transform on premise data centers into private clouds. All of the other layers use virtualization technology, and many data centers find innovative ways to save money with the technique.

These general capabilities comprise what is now known as cloud computing and as they are adopted, CIOs and IT staff must rethink enterprise computing. Issues that must be addressed include deciding which parts of your infrastructure to move to the cloud and which to keep on premise. Other decisions include choosing among cloud offerings for SaaS, development, and infrastructure and adapting plans for disaster recovery, networking, IT systems management, training, security, load balancing, scaling, and backup.

II CHARACTERISTICS AND ADVANTAGES OF CLOUD COMPUTING

The 5 essential characteristics of a Cloud Computing deliverable are:

A. On-demand Self-Service – where a customer can unilaterally provision computing capabilities such as user access, server time and network storage as needed automatically without requiring human interaction with individual service providers.

B Broad Network Access – where capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms such as mobile phones, desktops, laptops and PDAs.

C Resource Pooling – where the provider's computing resources are pooled to serve multiple customers in a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction such as a country, state, or datacenter. Examples of these pooled resources include storage, processing, memory, network bandwidth, and virtual machines.

D. Rapid Elasticity – where capabilities can be rapidly and elastically provisioned; in some cases, automatically, to quickly scale out and rapidly released to quickly scale in. To the customer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at any time.

E. Measured Service – where Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service, such as storage, processing, bandwidth, and active user accounts. Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and customer
of the utilized service.

Cloud computing benefits nonprofit organizations of any size; small, medium or large organizations all have access to the same technology in the cloud. As seen through the eyes of a nonprofit, there are many advantages to cloud computing:

a. Flexibility: One can scale up and down to meet organization's requirements. In today's economy, this flexibility is key. Organizations can adjust their IT expenditures to meet their organization's immediate needs. They no longer have to build for the future or be constrained by decisions made or contracts signed in the past.

b. Choice: For a long time, nonprofits have been offered suites of applications. With cloud computing, organizations can pick the functionality that they want, and integrate it with other applications as needed. If they changed their mind, or their needs got changed, they can simply switch to another solution.

c. Capacity: In the past, organizations had to spend a lot of their IT budget on human resources to manage the software. With cloud computing, that's no longer an issue. Now, organizations can focus on how the solution will help them further their mission. The IT piece belongs to somebody else.

d. Security: In the cloud, there is a higher investment in state-of-the-art security. Companies such as Amazon.com and Salesforce.com spend millions on infrastructure to secure data.

e. Upgrades: In the client server world, an upgrade can be a major undertaking, one which is often delayed because of its complexity. Upgrades in cloud computing happen behind the scenes. New features appear the next time one logs into and is always using the most recent version of the software.

f. Costs of Cloud Computing: With cloud computing, many of the hidden costs typically associated with software implementation, customization, hardware, maintenance, and training are rolled into a transparent subscription fee. As a result, organizations overall cost for adopting a system is reduced. Other advantages include: No data backups are required, Access anywhere in the world, Ability to intermingle hardware (Mac and PC) and software (Windows, Linux), No network necessary, Improved visibility into IT costs.

III SUPPORTING NGO ADOPTION OF NEW MODELS FOR SOCIAL CHANGE

As more examples emerge of innovative technologies and new models for social change, the challenge for NGOs, nonprofits and foundations is how to be involved in shaping these solutions and take advantage of them for development.

For more than two decades, Microsoft has worked with NGOs and nonprofits worldwide to help them use innovative technologies to maximize their organizational impact and pursue their mission. However, it will take time and preparation for nonprofit organizations to achieve the full benefits of convergence between devices, software and cloud-based services. In our view, investments in four key focus areas are necessary in order to help the NGO and nonprofit sectors effectively use client-plus-cloud technologies in their operations.

A. Technology Innovation. Ensuring that existing and emerging technologies are relevant, affordable and accessible for NGOs globally

B. IT Capacity Building and the Partner Ecosystem. Supporting both nonprofit and for-profit partnerships and programs that facilitate greater access to IT services, support and training for the NGO community to fully optimize converging technologies

C. Developer Community Support. Motivating and supporting IT developers to pursue innovation specifically for the needs of the nonprofit community

D. Social Networking. Forming a community of technology users dedicated to working together, learning from each other and exchanging information to develop best practices that can benefit the entire NGO and nonprofit sector

Gartner has forecasted that India's spending on green IT and cloud initiatives will double from $35 billion in 2010 to $70 billion in 2015, indicating a buoyant technology outlook for the Indian industry.

While cloud computing may have dominated corporate board rooms in India, NGOs are still largely unaware of the cloud's existence. Our view is based on NASSCOM Foundation's recent survey on cloud computing and cloud products among NGOs in India. The survey indicated that almost 70 percent NGOs are unaware of cloud computing, and the 30 percent NGOs that are aware of it, are unclear on how it could benefit them and taking the next steps toward adoption. Only a handful of the bigger and established NGOs have adopted cloud technologies.

IV AREAS FOR CLOUD ADOPTION BY NGOS

A. Converging Devices, Software and Services
The convergence of device connectivity, software innovation and cloud-based services is enabling a greater number of people and organizations around the world to access information and communicate and collaborate in more powerful ways. The computational capabilities and data access that people can achieve today through a mobile phone or netbook PC exceed what was possible five years ago using high-end computers and sophisticated network-based software managed in a server room.

This new computing paradigm supports an improved and integrated user experience across all devices. It offers great potential to improve how we all work, but even more significant promise for non-governmental organizations (NGOs) to manage their operations more effectively, deliver a broader array of services and achieve a greater impact in the communities they serve. However, bringing the benefits of this new experience to the NGO and nonprofit community will require support and resources from the private sector, governments, foundations and development agencies.

B. "Constructive Disruption" with Cloud Technologies
Many nonprofits have already embraced technology to help improve their productivity and overcome their constant struggle to do more with less. For example, technology enables electronic data entry in place of multiple handwritten copies and facilitates communication among teams. It also enables groups to work together much more efficiently on projects, sharing data and assessing the efficacy of their programs. Moreover, technology also can be a disruptive force that opens exciting opportunities and a venue for nonprofits to better achieve their missions and accelerate their impact.

C. New Delivery Models
Many communities, especially in impoverished and remote locations, lack sufficient healthcare services. Over the past several years, increased use of telecommunications and information technologies in the delivery of clinical care has helped bridge this gap.

However, the cost of equipment to undertake these telemedicine efforts is still very high. Through cloud-based services delivered on intelligent devices, organizations are finding new ways to extend the reach of healthcare and reduce its costs. For example, a diagnostic device working on a battery-power, costing less than 5000 rupees, can monitor a patient's heart rate, blood pressure and oxygen levels, can send the information through a cell phone to physician hundreds of miles away who can then offer expert diagnostic and treatment advice to the local health care provider. As these types of life-saving technologies grow more accessible, development organizations will need to be prepared to adopt and take advantage of the new delivery models.

D. New Information Exchange Models

Effective collaboration is critical in emergency situations that require multiple nonprofits and development agencies to work side by side. This need is driving the creation of new models of collecting and sharing information via the cloud. For example, shortly after Cyclone Nargis struck Myanmar in May 2008, the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) created a Web-based collaboration portal for aid workers in the region that enabled more than 100 humanitarian relief and development organizations to communicate, analyze information and manage resources. Using e-mail, texting and basic Web connectivity on a mobile phone or other mobile device, aid workers in remote or heavily damaged areas were able to view content, create alerts, file reports, participate in discussion forums and update other information on the portal. This is a powerful example of the cloud's capacity to help NGOs narrow the gap between the IT infrastructure at their headquarters offices and the more remote locations where their employees, and the people they serve, are often working with limited Internet bandwidth or PC access.

E. New Networking Models

Social networks such as Twitter, Facebook and YouTube keep many of us connected to a continuous stream of information. NGOs and others in the development community are also seeking to effectively use these powerful tools for social change. An interesting example is Causes, a Facebook application that allows people and organizations to mobilize support for a social or political cause through the network. Microsoft services such as Windows® Azure, Windows Live and the Microsoft Web Platform can provide a simple way for volunteers to tap into their passion and skills while lowering the technical barriers and overhead for organizations that need skilled volunteers. The ability to access an updated database that links volunteers to need becomes crucial in emergency situations where need can be met effectively by trained and competent volunteers. Cloud-based computing approaches can make these links far more effectively.

F. Social Networking

The immediacy and influence of online social networking make it a powerful force in supporting NGO efforts to improve services and operational capacity. To that end, Microsoft recently launched the NGO Connection Web site (www.microsoft.com/ngo) as an online community where NGOs can easily locate technology resources that are geared to their specific needs and learn from one another's success stories. Across the company, the use of social networking tools helps to stay more closely attuned to the NGO community, broaden access to valuable information and foster collaboration among nonprofits.

V. ADAPTATION OF CLOUD COMPUTING IN NGO'S

SAAS Model: SAAS is the software distribution model, which is designed for web delivery and it is the user friendly by the internet hosting, deployment and access. SAAS providers build information platform for enterprises which needs all network. Infrastructure and software, hardware and is responsible for the implementation of all pre-maintenance, post-maintenance and a series of service. These services are scalable on demand and can be priced on pay-per-use basis. In general, the introduction costs changing will drastically reduce fixed production costs, changing them into variables and adapted to manufacturing needs. This act shall have a positive impact in competitiveness for all sectors where expenditures in information technology are crucial.

A) Substantially Reduce Costs: NGO's only need to do the simple registration they will be able to access web services, save the cost of software acquisition and ongoing maintenance costs.

B) Usability improvement: On Demand solution as an example user without relevant experience or training can get started and they can access data from various sources and retrieve. All can access these data by clicking the mouse and then generate and analyze reports through a detailed user instructions.

C)Flexibility of multi –level service configuration improvement: Cloud computing is an attempt to standardize an already existing situation of interoperability among applications and distributed services. Social network that it can serve content that takes advantage of the effect of network, whether or not it creates interactive and visual websites. It is currently getting a strong push and is highly supported since it provides the best services to support the NGO's.

CONCLUSION

The Long Road to NGO Cloud Adoption
NASSCOM Foundation is itself among the earlier adopters of cloud technology. For the last two years, they have been sharing their knowledge with partner NGOs in their Connect IT training program, where they have worked with 1,270 NGOs and government organizations on developing skills in cloud applications and social media. In the course of this work they have found that the state of cloud adoption is largely personal (for example, Google Mail, Google Docs) and not yet institutional. Of the 3 million NGOs that operate in India, most are small and dependent on volunteers. They operate with donated computers and often are located in remote areas with a lack of Internet infrastructure and therefore do not have access to cloud products. A sizeable number do not even have PCs yet. We expect that for Indian NGOs, the path to cloud adoption will be a long one.

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