Sixth SG13 Regional Workshop for Africa on "Standardization of future networks: What opportunities for Africa?" (Abidjan, Côte d'Ivoire, 26-27 March 2018)

Supplement No. 146 to Y Series of Recommendations 'Requirements and Challenges Regarding Provision and Consumption of Cloud Computing Services in Developing Countries'

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1956 2016
CCITT / ITU-T

Presentation Outline

- Introduction
- Information Gathering
- Sample of Results
- Requirements
- Case Study
- Challenges
- Recommendations

Introduction

In developing countries, Cloud Computing has the potential to:

- Improve energy efficiency in every sector of the economy by consolidating IT services especially in Government and Banking sector;
- Improve service delivery and operational efficiency in various sectors such as health, tourism and transport;
- Create new business models;
- Build new skills in application and content development;
- Promote environmental sustainability;
- Make significant savings in set up cost of IT solutions;
- Contribute significantly to the Gross Domestic Product (GDP) and
- Create new job opportunities.

Introduction – Deployment Models

Model	Description
Private Cloud	Proprietary resources provided for a single organization (for example, a Government or large enterprise), managed and hosted internally or by a third-party.
Public Cloud	Open resources that offer services over a network that is open for public use. Many mass market services widely used by individuals, such as webmail, online storage and social media are public cloud services.
Hybrid Cloud	A mix of the deployment models for example, public and private cloud provision.
Community Cloud	Resources/services provided for and shared by defined CSCs who have similar requirements and a relationship with one another. This is managed and hosted internally or by a third-party or a combination of both.

Introduction – Service Categories

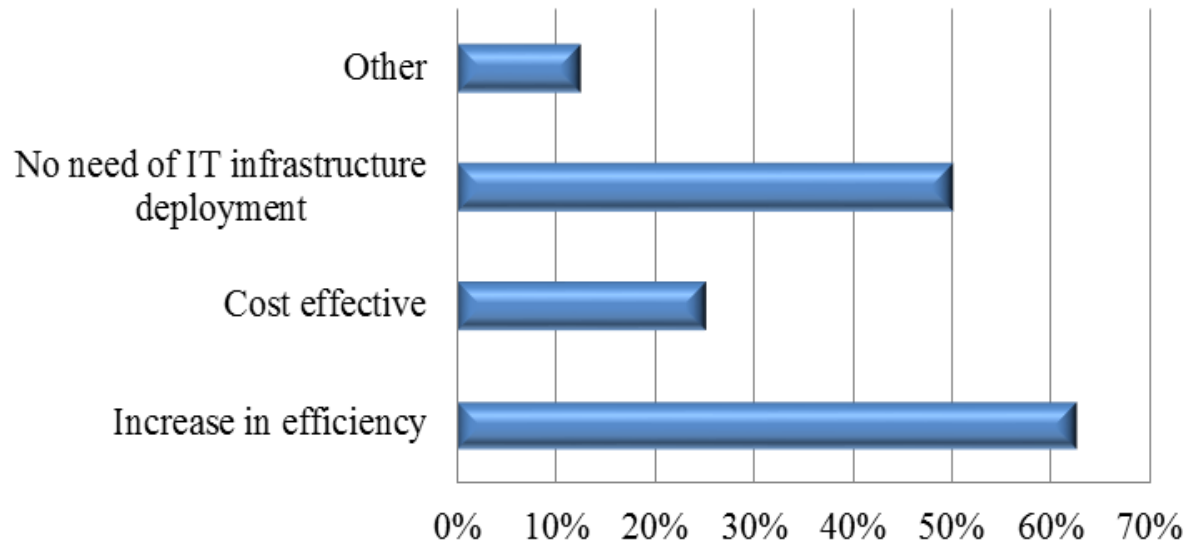| Service Category	Description
Communicate as a Service	Audio/video communication services, collaborative services, unified communications, e-mail, instant messaging, data.
Compute as a Service (CompaaS)	Cloud service category in which the capabilities provided to the cloud service customer are the provision and use of processing resources needed to deploy and run software.
Data Storage as a Service (DSaaS)	Cloud service category in which the capability provided to the cloud service customer is the provision and use of data storage and related capabilities.
Infrastructure as a Service (NaaS)	Virtualized on-demand server, virtualized data centre, flexible on-demand storage space, flexible local networks(LANs), firewalls, security services, etc.
Network as a Service (NaaS)	Platform for Cloud Computing service provision, virtualized network (customer service management, billing, on-demand bandwidth etc.)
Platform as a Service (PaaS)	Applications built on top of cloud service provider's infrastructure. Developers can derive benefit from this
Software as Service (SaaS)	Business applications, customer relations and support (CRM), HR, finance (ERP), online payments, electronic marketplace

Information Gathering

SG 13 meeting of 29 April 2016 approved deployment of two Questionnaires:

- One to Cloud Service Providers (CSP)
- Another to Cloud Service Consumers (CSC)
- 17 Countries responded; 18 CSP and 8 CSC responses received

Sample of Results

CSC Motivation to Migrate to Cloud

Motivation to migrate to the Cloud

Chart categories (top to bottom): Other, No need of IT infrastructure deployment, Cost effective, Increase in efficiency. Horizontal axis: 0% to 70%.

Other Reasons Include
- Scalability;
- Flexibility;
- Resilience and reliability;
- Resource conservation;
- Resource conservation;
- Data security;
- Statutory compliance regarding government data;
- Guaranteed uptime and SLA and
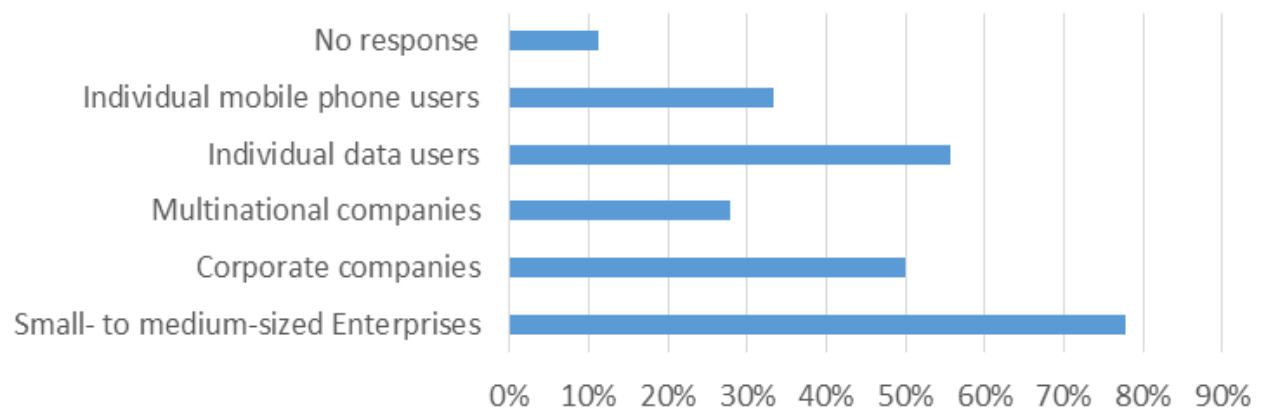- Latest software license

Sample of Results

CSP's Clientele Landscape

Main services offered by CSPs

- Online customer support;
- Data storage through;
- Mail hosting;
- Communication and collaboration services;
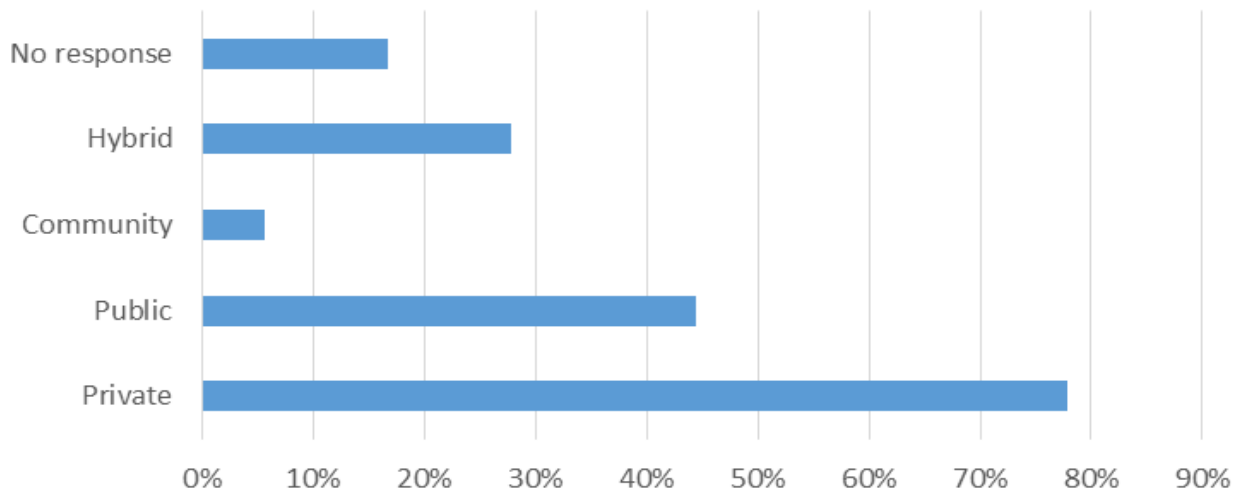- Software as a Service and
- Infrastructure as a Service

What types of customers are currently subscribing to Cloud Computing in your country?

Sample of Results

Popular CC Deployment Model

Main services offered by CSPs

- Online customer support;
- Data storage through;
- Mail hosting;
- Communication and collaboration services;
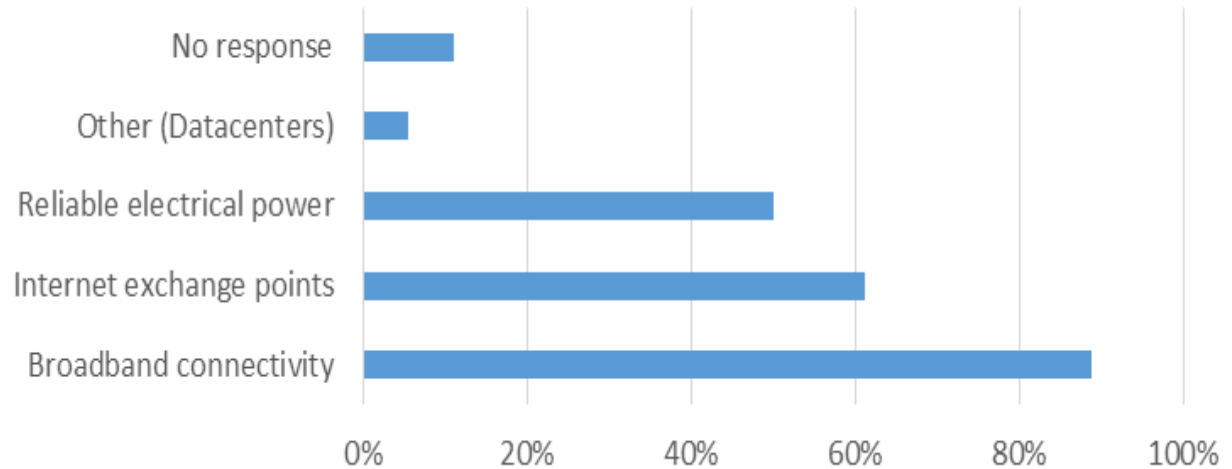- Software as a Service and
- Infrastructure as a Service

Requirements

Developing Countries Need such infrastructure as Broadband connections, IXPs and reliable power

Other are:

- Data Centres;
- Standards;
- Skilled human resource and
- Trust

In your view, what are the prevailing infrastructure needs for supporting and enabling access to cloud services?

Case Study

Senegal

Senegal is at the stage where information is being gathered by various experts to try and guide developments in Cloud Computing in the country. Specifically, some of the country's ICT operators have begun to implement or are already using cloud computing. At present, application of cloud computing is mostly by big corporate organisations like banks. Many operational and regulatory issues such as policy implementation, licensing and security still remain unclear. Senegal would want to holistically provide an environment which promotes availability of this service to many users.

Zambia

In Zambia, there are about seven (7) cloud service providers already providing or in the process of offering cloud computing services to the public. Only one (1) of these providers has cloud computing as its core business. The other providers offer cloud computing services as Value Added Services (VAS) to which they obtain a license from the ICT regulator, ZICTA.

Challenges

Lack of Regulatory Framework

Security and Privacy Concerns

Under-developed infrastructure

Shortage of skilled human capital

High cost of broadband internet

Poor Quality of Service

Recommendation

- It is recommended that developing countries solve each of the challenges highlighted in the previous slide if there is to be any meaningful uptake of cloud services in their countries