

# ENTERPRISE TECHNOLOGY

Kenya KES 500  
Rwanda RWF 4000  
Tanzania TZS 7200  
Uganda UGX 10000

## FEATURE

The rocky road to the digital migration

## EVENT

2nd ICT Expo



COMES TO EAST AFRICA

X marks the spot

ISSUE 6

## EXECUTIVE

Loren Bosch :: Sophia Bekele



ERP :: Electronic queue :: Virtualization :: Smartphones :: Cloud Computing :: BPO



# MTN Home&Away

**Be part of the largest mobile family in East Africa.**

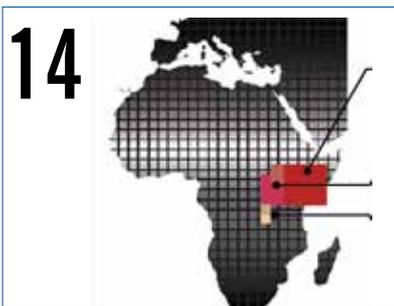
MTN Home&Away enables you to keep your number when you travel to Kenya, Tanzania or Rwanda. You receive calls free of charge and apart from a special rate

when you call anyone on Safaricom, vodacom or MTN Rwanda. You are also able to load airtime of these networks on your MTN phone.

## How to load

| Network/Country    | How to load           |
|--------------------|-----------------------|
| Safaricom (Kenya)  | *148*1*Access Number# |
| vodacom (Tanzania) | *148*3*Access Number# |
| MTN (Rwanda)       | *148*7*Access Number# |





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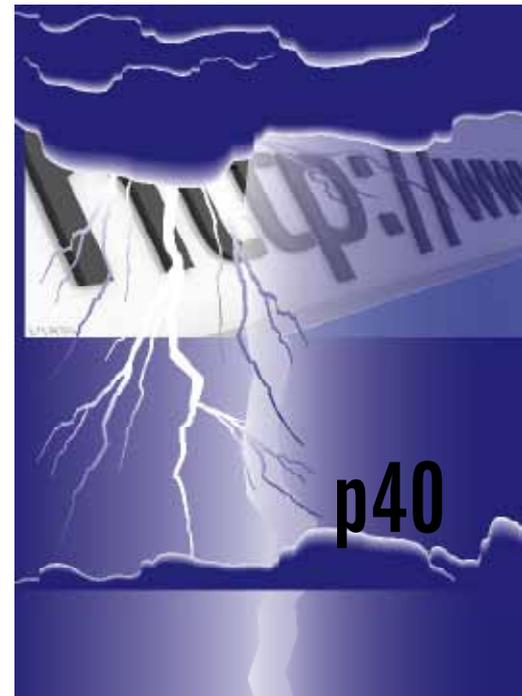
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# Enterprise Technology

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**[www.ictcreatives.com](http://www.ictcreatives.com)**

ICT Creatives offers technology consulting services through its network of leading IT Consultants.

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## March/April 2011 global value conferences

**March 9th**  
**Cloud Computing**  
**World Forum Middle**  
**East & Africa,**  
**Dubai**  
[www.cloudcloud.computing.live.com/mea/](http://www.cloudcloud.computing.live.com/mea/)

**March 22nd**  
**Africa Innovation**  
**Digital Summit**

**April 12th-14th**  
**TradeTech Europe**  
**2011 London UK**  
[www.wbresearch.com/tradetecheurope/](http://www.wbresearch.com/tradetecheurope/)

**April 16th**  
**Exploring ICT in**  
**Education**  
**Doha Qatar**  
[www.qatarictconference.org/](http://www.qatarictconference.org/)

**April 15th**  
**International**  
**Conference on**  
**Engineering & Infor-**  
**mation Management**  
**Chengdu China**  
[www.iceim.org](http://www.iceim.org)

**22nd April**  
**International**  
**Conference on**  
**Transforming-**  
**Healthcare with IT**  
**Hyderabad, India**  
<http://www.transformhealthit.org/>

**27th April GovTech Asia 2011**  
*The 5th annual GovTech 2011 will give the latest technologies and solutions for government including strategies on how to improve government information and service delivery. Singapore, Singapore*



## WHO'S WHO

Alice Wanjira-Munyua one of the most prolific technology professionals in East Africa started out as a programme assistant working for the Vatican Radio. Equipped with an MA in Social Communications, Wanjira-Munyua championed the effort to encourage Africa Civil Society to contribute to the first World Information Society effort and consequently chaired the Geneva Civil Society Caucus towards the process in 2002. She has served on the DOT-Digital Opportunity TRust-DOT which creates opportunities through the effective use of ICTs in developing countries. An active player in ICT in East Africa, Wanjira-Munyua is the Convener of the Kenya ICT Action Network (KICTANet), and the East African Internet Governance Forum (EAIGF) a member of the Board of Directors of the Communications Commission of Kenya (CCK), vice chair of the Kenya Network Information Centre and represents the Government of Kenya on ICANN- the internet governing body. She is currently Project Coordinator for CATIA an ICT policy advocacy effort to increase access to ICTs in East Africa.

**ENTERPRISE TECHNOLOGY SYMPOSIUM**  
 "Technology Skills for the Workplace"  
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Enterprise Technology is a leading regional technology solutions magazine and is read throughout Uganda, Kenya, Tanzania and Rwanda.

**DATE:** October 30th 2010  
**VENUE:** Kampala International University, Kampala  
**TIME:** 10 am - 5pm

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**April 30th**  
**Enterprise Technology Young**  
**Professionals Symposium**  
**Makerere University, Uganda**

### ZUBEDI THE CTO



## JARGON BUSTER CROWD SOURCING

ENTERPRISE TECHNOLOGY ISSUE 6 | 2011 6

A great example of Crowd Sourcing was the use of the Ushahidi software created by now Google employee- Ory Okolloh, to tap into the collective knowledge of the general public- also referred to as the crowd. From a business perspective Crowd Sourcing enables businesses to listen to what their customers are saying without having to employ professional poll takers or consultants. Crowd Sourcing has gained increasing importance with the extensive use of social media platforms like Facebook, Twitter, blogs, YouTube where consumers now generate content which can be tapped by companies for example holding public competitions to solve difficult technology problems or submit creative product designs.

## Quoted

"The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency."

*Bill Gates, Founder and CEO of Microsoft Corp, now its Chairman and Chief Software Architect*

## ISSUES | Why Bill Gates' kin are camping in Kenya

**A**ll evidence pointed at Rwanda becoming the innovation hub of East Africa but the gradual or perhaps sudden spurt of innovation in Kenya is placing the focus firmly on developers there.

In addition, Kenyans are spending 20% more on Internet services than all other countries in East Africa and the level of internet penetration in Kenya- 10.8% exceeded that of South Africa- Africa's rich Godfather.

Kenya's growth in innovation is in many ways a result of the mLab Initiative, a WorldBank sponsored training that seeks to support local and regional innovation. The presence of global stalwarts like Nokia has driven the growth of local mobile applications developed for East Africa's

business markets and this has restored confidence in investors that the region is ripe for picking.

The strong developer market is highly skilled in developing any number of applications and the Crowd Sourcing platform, Ushahidi is its most famous export.

iHub, eMobilis, and other technology communities in Kenya are building Africa wide partnerships that will further enrich the developers eventually culminating in the creation of an online Africa applications platform where apps can be purchased.

Bill Gates kin- the Googles, Nokias, IBMs have all set up shop in Kenya- the early bird catches the worm. This may well be the cheapest and most effective way of shifting software and apps development from Asia to Africa for these industry players.

## NUMBERS

4

Factor by which the price of a mobile phone call dropped in East Africa within the last year.

22

Million phone subscribers in Kenya

9.2

Million registered Tanzanians registered for mobile payments

30

Networked districts in Rwanda due to investment in a countrywide fibre optic cable.

2.4

Percentage of Orange internet subscribers in Kenya

3,000

University graduates to be trained in using ICT for BPO in Uganda

28

Minutes of talktime you will get when you charge your phone using the Nokia bicycle phone charger pioneered in Uganda

## ICT SMEs in East Africa: starting up and succeeding

**Exhibit 5: Highlighted country strengths and challenges**

|   | Strengths  | Areas for improvement   |
|---|--|---|
| <br>Kenya    | <ul style="list-style-type: none"> <li>• Strong physical space and network capability</li> <li>• Government involvement through ICT Board</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Few trusted networks and mentorship</li> <li>• Finance for seed stage entrepreneurs</li> <li>• Onerous regulatory regime</li> </ul>              |
| <br>Rwanda   | <ul style="list-style-type: none"> <li>• Best-in-Africa business set-up process</li> <li>• Highly engaged government support for ICT</li> <li>• Educational anchor through KIST</li> </ul> | <ul style="list-style-type: none"> <li>• Focus on BPO and contract services</li> <li>• Access to markets for local SMEs</li> <li>• Limited trusted networks and mentorship</li> </ul>     |
| <br>Tanzania | <ul style="list-style-type: none"> <li>• Upcoming infoDev supported incubator</li> <li>• Emerging grassroots entrepreneur network</li> </ul>   | <ul style="list-style-type: none"> <li>• Community for entrepreneurs</li> <li>• Technical skills and practical experience gap</li> <li>• Limited market and investment funding</li> </ul> |
| <br>Uganda   | <ul style="list-style-type: none"> <li>• Wide set of active business networks and associations</li> </ul>  | <ul style="list-style-type: none"> <li>• Lack of incubation facilities for early stage companies</li> <li>• Limited "hands on" government involvement</li> </ul>                          |


 Source: InfoDev report "Transforming the East African ICT Sector by Creating a Business Engine for SMEs"

## MORE CONNECTIONS, MORE BUSINESS

S ometime this month, a gentleman walked into my office- he was looking for a business development job in the technology sector. As he spoke I realized he was no ordinary techie- he clearly had a fine flavour of web applications design knowledge that I had not encountered in a long time and he also had a knack for recognizing product ideas that would sell like hotcakes in East Africa.

What baffled me was why he was failing to get regular business, until he told me he had just recently moved back to East Africa, having left 18 years ago. When I questioned him further about how he was approaching prospects he said it was arbitrary. He would simply ask his friends. I prodded further to find out about his professional network; he said: "Hmm basically my uncle and a couple of other relatives."

"What's your uncle's profession?"

"He is in the agricultural sector."

This very talented web designer was not a member of any technology group or association of any sort, did not attend technology events and although he had a LinkedIn profile it was not visible to the public. He had no viable connections to his target market. His case is a classic but also a very common one. Everyday I meet people and companies that have some of the best products and services but refuse to sell themselves with the new brand of online media tools available. In business one thing is a constant, the more connections (people you know) the more business you will get. Essentially, people buy from people they know.

It is precisely for this reason that we are advocating for increased adoption of social media tools like Facebook, Twitter, LinkedIn, YouTube by the business community. We are aware that many business owners regard these as time wasters but for companies that have branded, customized and set specific objectives for their social media platforms, the benefits have included a significant growth in connections which have bumped up the bottom line. The number of companies and businesses on social media is exploding and companies that stubbornly choose to stand by the wayside will join the steamrollers or become part of the road. After consulting with several prospects on Social Media Strategy we have discovered that the biggest fear for most business owners is measuring ROI. This fear stems more from misinformation than reality and we have the intel to prove that.

In this issue we also have an impressive array of seasoned technology practitioners deciphering and discussing topical solutions like the Digital Migration, Cloud Computing, Customer Service technologies, Business Process Outsourcing opportunities and a slew of Google tools that will improve your business activities by bringing the world's information much more quickly to your fingertips.

We're also excited about our April Young Professionals Technology Symposium which will attract over 500 talented graduates from universities and other higher education institutions around Uganda, to fine tune their skills and be work ready as seasoned professionals discuss the career opportunities technology offers including The Innovator's Dream business concept competition where one professional stands to win a complete business startup suite which includes business mentorship and financial aid. We invite you to partner with us in shaping tomorrow's leaders, today.

Joyce Kyeyune Tonda | [jtonda@ictcreatives.com](mailto:jtonda@ictcreatives.com)



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## ENTERPRISE TECHNOLOGY MAGAZINE ADVERTISING RATES as of December 1st 2010

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|---|--------------|
| Full page (20.5 cm w x 26cm h)  | 1100         |
| 2/3 page (13cm w x 26 cm h) Portrait<br>(20.5cm w x 17cm h) Landscape   | 800          |
| 1/2 page (10.25cm w x 26cm h) Portrait<br>(20.5cm w x 13cm h) Landscape | 600          |
| 1/4 page (10.25cm w x 13cm h)   | 300          |
| CLASSIFIEDS ( 18cm w 7cm h)   | 100          |
| <b>SPECIAL SIZES</b>  |              |
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# GOOD READING

Disruptive innovations in the telecom sector

## *Regulatory Intervention or Disruptive Competition?*

Lessons from East Africa on the end of International Mobile Roaming Charges

*Alison Gillwald and Muriuki Mureithi*

Availability: Free PDF for download at [www.ResearchICTAfrica.net](http://www.ResearchICTAfrica.net)

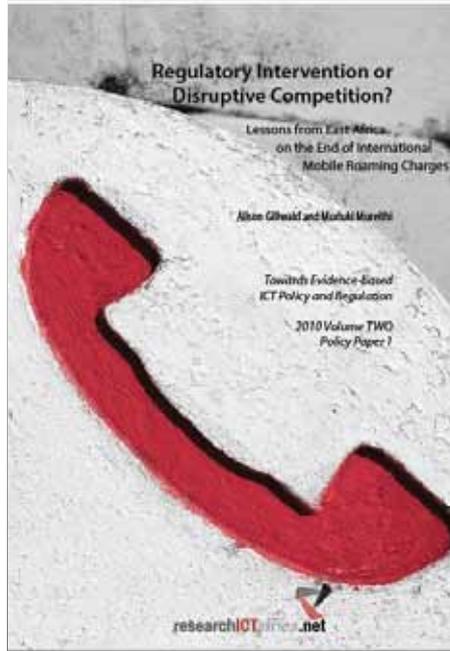
Even if you've never read, *The Innovator's Dilemma* by Clayton Christensen, one of Harvard Business School most celebrated Professors, where he expounds on several problems technology innovators face, you will still appreciate the insights expounded on in this research report, especially if you live in East Africa.

In the telecom sector, East Africa stands out as a global beacon of innovativeness- with the highest mobile phone adoption rates; the most transformational uses of mobile phones- payment systems; and as Gillwald and Mureithi point out- East Africa brought an end to the cumbersome practice of international roaming charges which are still very much a thorny issue in the developed world.

Zain- now Airtel, was the forerunner of the disruptive innovation that was to become the end of roaming charges through the introduction of its One Network. Capitalizing on its key advantage at the time of having multiple licenses in East Africa Zain went off on a totally different tangent and created a uniform rate for its users throughout the region. With a fiercely competitive battle for the heart of corporate East Africans, who were the main users of the roaming facility, other operators followed suit and by de facto, roaming charges within East Africa quietly disappeared.

Thus this research report puts the One Network innovation through the disruptive technology litmus test developed by Christensen.

The report highlights some important



points that should inform telecom operators in the face of a highly competitive market where price has become the key differentiator albeit an unviable one.

A key assertion in the report is that although Zain moved from the laggard position to number two in Uganda, as a result of its One Network it was unable to reap huge benefits from this disruption as all the other telecoms simply followed suit and the key benefit was gone. Disruptive technologies must tackle markets that are unattractive to incumbents in order to gain sustainable advantages.

**FACT: Roaming revenue does not contribute significantly to the bottom line- it makes up about only 5%, however it is critical for customer acquisition and retention.**

**“...a disruptive business model can generate attractive profits at the discount prices required to win business at the low end and create an extraordinarily valuable growth asset if it targets products and markets that the established companies are motivated to ignore or flee from..”**

# ENTERPRISE TECHNOLOGY HOSTS THE 2nd YOUNG PROFESSIONALS **TECHNOLOGY SYMPOSIUM**

“Discovering new career opportunities in technology”



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## LOREN BOSCH: THE “EASY GOING GUY”

East Africa Sales Director for Internet Solutions, **Loren Bosch** is a successful entrepreneur in the technology sector, having founded iBurst in Ghana, iBurst South Africa, Storm Voice & Data and Duxbury Networking and Telkom in South Africa. He has a wealth of experience in Technical Sales, Consulting and Management built over 12 years in the ISP and VoIP industry. He shares his passion and his plans for IS dominance in East Africa.

### **What professional strengths do you contribute to the success of IS in Kenya?**

Any good businessman or leader will tell you that without people to execute it, the best business strategy in the world is worthless, so making sure you have the right people doing the right things correctly is key to the success of any venture. I believe this and have seen it many times so I try to make sure that our staff have a very clear description of their role

within the business and that we rely on them to do it to the best of their ability. If you get this bit right; the rest falls into place. Our 'tag line' : DO WHAT YOU LOVE, LOVE WHAT YOU DO also relates directly to that.

### **How would you describe yourself as a person?**

Leadership and people are two key components of my approach to managing a business. I have always believed that strong

and clear leadership yields better results than aggressive management techniques. When times are tough and extra effort and focus is required from people in a business, leadership will provide a far stronger motivation to go the extra mile than draconian management. So within the context of the working environment I try to be a leader and clearly communicate where we are heading as a business. Outside of that; I guess you could

say that I am a pretty easy going guy with a taste for adventure and a strong focus on my family.

**You came from South Africa where the ISP landscape is significantly different. What unique challenges are you addressing in the Kenyan market?**

The Kenyan market place is indeed a very exciting place to be. It is far less restrictive in terms of the regulatory environment and the current rate of growth in the region presents a number of significant challenges. I'd say one of the most challenging aspects has been clearly communicating to the market about the IS positioning statement and helping

sharing. These kinds of services have only recently become viable options due to a great deal of investment from infrastructure providers to expand terrestrial and wireless networks off the back of the arrival of Seacom, EASSY and TEAMS, but also due to the fact that products and services like these need to be run from world class data centres; like the one at IS, which is now a tier 3 Data centre. All these exciting options and opportunities are now available in the region garnering a lot of interest.

**What type of customer are you targeting for your hosted Data Centre services?**

**IS South Africa has 80% of the top 250 listed companies in South Africa. How do you plan to grow market share in East Africa?**

IS's last mile agnostic position in the local and regional market makes us an ideal outsource partner for a fully integrated and managed network solution that offers a customer access to all the available infrastructure without the headache of multiple vendor management and the required investment in skilled resources to utilise multiple networks to build and manage a single integrated environment. The fact that IS is not an infrastructure provider allows us to be objective about the best combination of infrastructure

**“Any good businessman or leader will tell you that without people to execute it, the best business strategy in the world is worthless...”**

large organisations with decision making around ICT infrastructure investment and the outsourcing model in particular. With all the price activity in the market there has also been a need to clearly focus on the IS value proposition to prevent us from getting drawn into price wars and thereby diluting the differentiation that we have in the market.

**What Internet based service/product are businesses in East Africa not fully taking advantage of?**

We're only just starting to see the transition from mainly using internet access to companies building managed private networks with centralised and shared services. This relates to almost every information system within a business from email to ERP. So services like MPLS networks connecting multiple offices and branches, hosted application solutions within a private or public cloud and of course SaaS solutions like hosted mail, hosted security, back-up and file

The Data Centre is only part of the picture. Remember that we have integrated all the local infrastructure providers into our network environment with fully redundant North- and Southbound international capacity. If you view all of these elements together you will see that we have created a managed infrastructure platform that includes all local and international connectivity options. This platform can be utilised by large regional and multinational companies to build international MPLS based private networks with centralised hosted system and application resources and services run from our data centre. It's also the perfect environment for software as a service and cloud computing vendors to host their services from since we host the 2nd KIXP pop in the same environment. In this scenario we are able to support SaaS vendors with security, back-up, redundancy and connectivity as well. IS is ideally positioned to support the DR and BCP requirements of customers with critical data and system needs.

to meet a customer's requirements. There is no other player with the same international network capacity and alternate routing in the region and certainly no competitor on the continent that has access to the same skill and resource pool across Africa. Then the final cherry on the top is the fact that IS is an exclusively corporate service provider which means that our customers do not have to compete with thousands of consumers for support.

**What main dish would you prepare for a CTO executives luncheon?**

It would definitely be sushi. Beautiful, clean and healthy food that is easy to eat and offers a variety of options.

**You have a degree in Psychology how did you make the transition to a career in technology?**

Computers are easier to talk to, actually it's a very easy transition, because technology is about people. **ET**

# SOCIAL MEDIA

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| 1. Brian Solis     | Globally recognized expert in CRM and new media |
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| 4. Moses Kemibaro  | Kenyan techie and societal commentator          |
| 5. Dharmesh Shah   | Best Startup junkie full of yummy ideas         |
| 6. the99percent    | Unique insights on productivity                 |
| 7. Guy Kawasaki    | Rich Dad Poor Dad fame on financial health      |
| 8. Seth Godin      | Customer management unplugged and upset         |
| 9. TandaKenya      | Kenya digital local content developers          |
| 10. TechnologyEA   | Enterprise Technology solutions for East Africa |

## LinkedIn

### THE BEST APPLICATIONS

1. SlideShare: Allows you to share powerpoint slides of your business, projects or previous consultancies. The SlideShare format is also prioritized by search engines therefore anything you post will rank high in search results. You can use it to redirect traffic back to your other online media like a website. You can also use it to publish your company profile which can then be viewed easily.

2. **Answers:** Share your business knowledge and position yourself as an expert by regularly contributing answers.

3. **Wordpress /Blog/Twitter:** The ability to have your blog and tweets reflected in your LinkedIn profile helps provide viewers of your profile more insight into your business acumen and opens up potential employment opportunities.

4. **Events:** A great way to find industry events and to network with other people who attend similar events. Any event worth its salt should be here.

5. **Company Buzz:** Want to keep track of what other people are saying about your brand and products, this app helps you monitor all tweets that mention your company.

## facebook MUST USE TOOL



Facebook analytics is a powerful tool that provides hardcore insights into a company's fan base providing details such as country of origin, age range, gender statistics, post feedback, fan engagement, page views and referrers.

## OTHER SOCIAL MEDIA TOOLS WORTH EXPLORING

- |                   |               |                   |
|-------------------|---------------|-------------------|
| 1. WordPress blog | 6. AllTop     | 11. Digg          |
| 2. YouTube        | 7. BackTweets | 12. Ushahidi      |
| 3. Flickr         | 8. Blog Pulse | 13. SocialMention |
| 4. Bit-ly         | 9. Delicious  | 14. TweetDeck     |
| 5. Google Alerts  | 10. Wikis     | 15. Foursquare    |

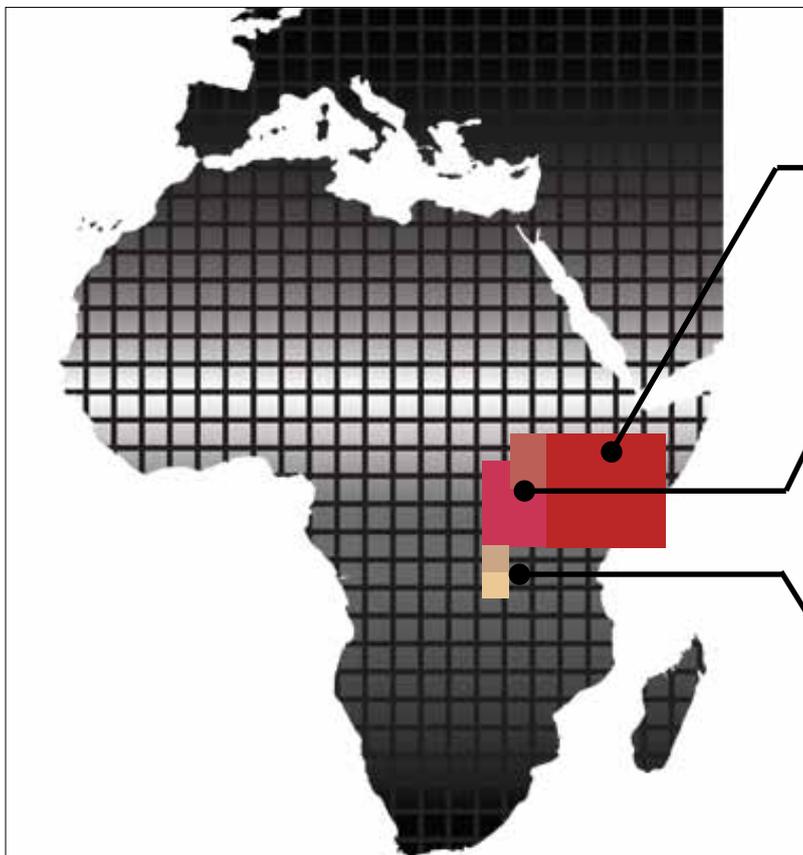
More insights on how to use these tools for business? Email [sales@ictcreatives.com](mailto:sales@ictcreatives.com)

# IN EAST AFRICA

Usage of social media platforms by country

| COUNTRY  | FACEBOOK   | PERCENTAGE GROWTH ON FACEBOOK | TWITTER | YouTube CHANNELS |
|----------|------------|-------------------------------|---------|------------------|
| Burundi  | 17,860     | +27.8%                        | 99      | 2,090            |
| Kenya    | 1,050, 180 | +5.64%                        | 7,766   | 23,200           |
| Rwanda   | 82, 580    | +12.62%                       | 344     | 6,820            |
| Uganda   | 277, 440   | +9.61%                        | 407     | 13,100           |
| Tanzania | 246, 340   | +10.4%                        | 1,045   | 10,100           |

As of 19/02/2011



**KENYA** leads the way in all social media platforms far ahead of all the other countries in East Africa and therefore B2C marketing will yield significant leads though it also means there must be a waterproof strategy in place as the users are likely to be more sophisticated.

**TANZANIA AND UGANDA** have similar usage and growth patterns-although several miles behind Kenya, businesses selling services and products in these countries will find a receptive online audience especially since growth is much higher than Kenya's.

**RWANDA AND BURUNDI** generally lag in social media usage but they also have the fastest growing adoption rates of social media platforms ensuring that companies that capitalize on reaching the early adopters will find more eager customers than those companies that prefer to wait for a critical mass.

**Sophia Bekele** is an Ethiopian born executive who has served on numerous international bodies including Internet Corporation for Assigned Names and Numbers (ICANN), United Nations African Information Society Initiative (AISI); and has spoken at a host of global events - UNECA, ISOC, the Africa Union Commission. A successful entrepreneur with businesses in both North America and her native Ethiopia she has also spoken at the Stanford Women in Business series, Silicon Valley; and on e-Government at the ITU World Summit on Information Society. Bekele is co-founder of the Internet Society for San Francisco Bay and has represented East Africa on the UN sponsored Steering Committee for African Stakeholders Network.



**Tell us about your professional and academic background**

My elementary and high school education was in Ethiopia, a private Catholic high school enveloped by African values. I then went to the US to study for my higher education in Business Analysis and Computing Systems and an MBA in Management of Information Systems. I also studied Corporate finance and Corporate governance where I have various certifications in Information Systems and Auditing and Systems Governance. Certainly I have adapted the US values of individual rights, freedom of speech, risk taking and business entrepreneurship,

on the internet. It is a new idea which will be guided by the ICANN policy embodied in the rule book – that’s a process which is both competitive and “bottoms up”.

**What international policy changes would you like to see regarding usage of Internet domains?**

We have seen a major one in this recent past on International Domain Names (IDNs), which exemplifies the benefits made by the international community to support language development to the internet based on non-English scripts, which was great. The international community that were beneficiaries have given credence to DCA its contribution

in business and government. This will provide a lot of opportunity for internet capable African professionals as there will be many opportunities that would need solutions.

**How can we drive creation of local content useful for Africans?**

For a long time it was assumed that Africans would be interested in the rest of the world rather than what is happening in Africa. The success of African media – music, films and so on – shows that Africans are very interested in things African. We can drive this through great platforms and communications – band width for instance. Of course some

# SOPHIA BEKELE

## Ethiopian champion of the .africa initiative

Bekele is the Executive Director of a non-profit organization DotConnectAfrica, which advocates for the adoption of a dot Africa Top Level Domain. On 11th December 2010 the International Domain Resolution Union endorsed the dotAfrica project for DotConnectAfrica stating that: “ Ms. Bekele, as a former gNSO advisor to ICANN, you have worked hard and long to champion Internationalized Domain Names (IDNs). You have made the case within ICANN for a policy development process that will see IDNs in service of the world community. And you have done so successfully.”

which laid a great foundation in the way I view the world and my interest in developing economies. My policy work as an advisor to various United Nations agencies including the UNECA and ICANN in the ICT and internet fields has also shaped my understanding and balancing of agendas between developing economies and western expectations and further fuelled my interest in the internet and its governance which is the role of ICANN. This led me to see what other continents had done and the idea of dotAfrica was born.

**What is the DotConnect Africa initiative?**

DotAfrica is really Africa’s response to the benefits of a unified continental domain

to the ICA policy development process towards this end and have endorsed our initiative for such. Further to this, I would like to see a continuation of the internet governance such that it remains free of politics – truly independent of any single or group of countries.

**What can we expect now that the dot Africa dream is gradually becoming a reality?**

dotAfrica will encourage unity in Africa through a single brand, be it in showcasing products and services of Africa as well as presented a united voice on the internet; in parallel to that, we will see much greater use of the internet to promote efficiency and transparency

content should be paid for either through advertising and of course the creation of opportunities. Driven by mobile phones local content will definitely be the next new thing in Africa.

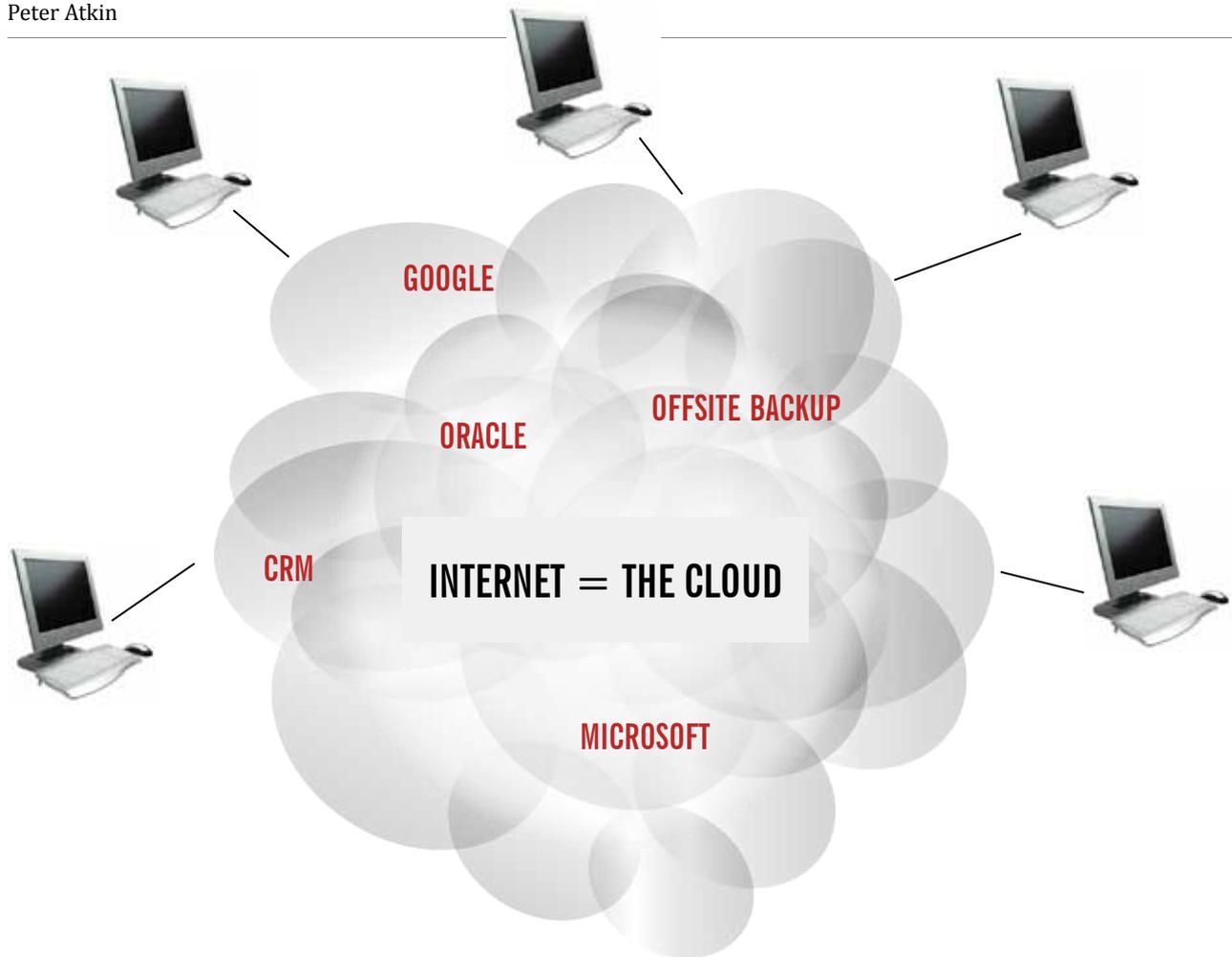
**What is the future of the Internet in the context of East Africa?**

Very, very bright – East Africa is really embracing the possibilities that the internet has to offer and we have a generation of management that is tech savvy. EASSY and other fibre landings in East Africa will only improve access and content development. The economic integration of East African countries are on speed, and so the future is full of tremendous opportunities. **ET**

# CLOUD COMPUTING TAKES CENTRE STAGE

Initially a North American and European trend, major shifts in the business model and technology landscape are driving the attractiveness of Cloud computing for East Africa's business community.

Peter Atkin



As a metaphor for the Internet; Cloud Computing is a way of delivering internet hosted Information Technology services to businesses. In essence this is aimed at removing the need for the business to purchase, install, support and maintain back-end I.T. infrastructure with minimal hassle. In fact the most common cloud computing service is hosted email services like hotmail, yahoo, or Google mail, Mozilla Thunderbird. This is in contrast to companies using Microsoft

Exchange for example, hosted physically at the company .

Cloud services is not a new idea in fact it's been envisioned since the early 1960's and brought to the masses by Amazon in 2006 by initiating a new product development effort to provide cloud computing to the market by launching Amazons own Amazon Web Service (AWS) and shortly after that various companies like Oracle, Microsoft, IBM began to offer cloud services which

brought easily available internet based content managed systems accessible to the main stream market . Cloud Services Provider (CSP) have been providing services such as back-end servers, storage, networking, support and software to many companies enabling them to pay for their I.T. services on-demand in the form of ideally a low cost, monthly service charge. Cloud Computing provides the business with advanced I.T. infrastructure and



Computer Warehouse Group

ORACLE

Platinum  
Partner

We are steps ahead of our contemporaries; our customers are assured of platinum level services for Oracle solutions.

UGANDA • NIGERIA • GHANA



CWG Uganda

*The Pan-African ICT Company*

services that would be too costly to provide in-house.

**Drivers of Cloud Computing in East Africa**

Although the trend has been popular in many developed countries its become increasingly attractive in sub-Saharan as the business and technology landscape has undergone significant change and here are some of the reasons why:

- **Plunging prices of Internet access due to the recent introduction of fibre connectivity in East Africa.** With increased access to the Internet, Cloud Services Providers are now

In South Africa for example Call Centres were able to do away with a significant portion of infrastructure costs and have realized a 20% increase in productivity.

- **Business pressure to deliver I.T. capacity and resources** – faster, at lower costs and with reduced risk to the business. Cloud computing allows for scalability both up and down enabling efficiencies as capital does not get tied up - which is especially useful for seasonal businesses that require fewer employees and resources at some point in the year

initial infrastructure investment and software costs has limited the number of players. With cloud computing, BPO providers simply need to log in from any location without incurring the high costs required to set up a call centre.

**Challenges and Risks**

Some things are still way off - for instance while offsite backup via the internet is attractive and while it is true that prices have dropped for internet access in East Africa it's still not at a level financially where offsite internet based backups can be done without incurring unrealistic

**A Sandhill survey of 500 IT decision-makers found that 50% of respondents cited business agility as their primary reason for adopting cloud applications**

focusing on the East Africa market especially since developed markets tend to be more competitive.

- **The rapidly expanding use of the Internet** (average regional internet usage growth of 4250% between 2000 and 2010) in business activities in East Africa means that users are more conversant with its operations and more willing to embrace internet based services.
- **Increased alignment of East Africa businesses with global time operations** to ensure 24-7 availability which necessitates usage of Cloud Services Providers who work at all hours.
- **Spiralling costs of managing in-house data centres and reduced IT infrastructure spending** has forced many companies to focus on less cumbersome alternatives like hosted services which do not require heavy infrastructure investment, regular software updates and maintenance.

and then need to scale up resources and employees during a specific season. For instance, companies that maintain huge databases across several different branch locations, hosting on the cloud becomes even more attractive as information can be updated from a centralized location- the cloud.

- **Growing concerns about lagging security.** A Kenyan researcher (Kinyanjui 2009) for example reported that at least 60% of Kenyan banks did not have adequate security systems. Equally In Uganda, significant financial losses have been attributed to insecure systems. Outsourcing security to the cloud offers secure systems maintained by highly experienced security experts-a resource that is not in high supply in East Africa.
- **Growth of the Business Process Outsourcing Industry.** East Africans are eager to participate in the growing BPO business but the

charges. Internet is still circa \$450.00 per Mb full duplex to the end user in Uganda , and you would need for most SME's at least 5-10Mb or more depending on the amount data being backed up.

While the cloud can bring the region up to speed with sturdy security systems, nevertheless, there are concerns related to corporate espionage and unauthorized access to cloud based data though this has been the norm with onsite security and the cloud maybe the better devil of the two.

Inspite of the increasing access to PCs, and growing usage of the Internet, the two factors are still not at an optimal level severely limiting the adoption of cloud computing. To address this some scholars have suggested the development of mobile phone based cloud computing business models (China Mobile's BigCloud )since the ratio of cellphones per capita is much higher than the ratio of PCs per capita. **ET**

## The 2011 Focus Experts' Guide to Enterprise Resource Planning

“When choosing ERP software, select a vendor with functional capabilities that match your business.”

| VENDOR    | VERTICAL      |                    |                         |                      |                       |                |                |           |            |          |              |                     |       |
|-----------|---------------|--------------------|-------------------------|----------------------|-----------------------|----------------|----------------|-----------|------------|----------|--------------|---------------------|-------|
|           | MANUFACTURING | FINANCIAL SERVICES | PUBLIC SECTOR/EDUCATION | RETAIL/<br>WHOLESALE | MEDIA & ENTERTAINMENT | COMMUNICATIONS | TRANSPORTATION | UTILITIES | HEALTHCARE | SERVICES | CONSTRUCTION | RESOURCE INDUSTRIES | OTHER |
| Consona   | X             | O                  | O                       | X                    | O                     | O              | O              | O         | O          | O        | O            | O                   | O     |
| Deltek    | O             | O                  | X                       | O                    | O                     | O              | O              | O         | O          | X        | X            | O                   | X     |
| Epicor    | X             | O                  | O                       | X                    | O                     | O              | O              | O         | O          | X        | O            | O                   | X     |
| Infor     | X             | O                  | O                       | X                    | O                     | P              | P              | O         | O          | X        | P            | O                   | X     |
| Lawson    | X             | X                  | X                       | X                    | O                     | O              | O              | X         | X          | X        | O            | O                   | X     |
| Microsoft | X             | X                  | X                       | X                    | O                     | O              | O              | O         | O          | X        | O            | O                   | O     |
| Netsuite  | X             | O                  | O                       | X                    | O                     | O              | O              | O         | O          | X        | O            | O                   | X     |
| OpenTaps  | X             | O                  | O                       | X                    | O                     | O              | X              | X         | O          | O        | X            | O                   | O     |
| Oracle    | X             | X                  | X                       | X                    | X                     | X              | X              | X         | X          | X        | X            | O                   | X     |
| Plex      | X             | O                  | O                       | X                    | O                     | O              | O              | O         | O          | O        | O            | O                   | O     |
| QAD       | X             | O                  | O                       | O                    | O                     | O              | O              | O         | O          | O        | O            | O                   | X     |
| Sage      | X             | X                  | X                       | X                    | X                     | X              | X              | X         | X          | X        | X            | X                   | X     |
| SAP       | X             | X                  | X                       | X                    | X                     | X              | X              | X         | X          | X        | X            | X                   | X     |
| Syspro    | X             | O                  | O                       | X                    | O                     | O              | O              | O         | O          | O        | O            | O                   | O     |
| TOTVS     | X             | X                  | X                       | X                    | O                     | O              | O              | O         | X          | X        | X            | P                   | X     |
| Unit4     | O             | X                  | X                       | X                    | O                     | O              | X              | O         | O          | X        | O            | O                   | O     |
| Workday   | O             | X                  | X                       | X                    | O                     | O              | O              | O         | X          | X        | O            | O                   | O     |

KEY:  
 X = Have this capability  
 P= Partial capability  
 O= Do not have this capability/not a focus area

Focus research is available at [www.focus.com](http://www.focus.com)

“ Google’s strategy in Africa is to get more users online by developing an accessible, relevant and sustainable internet ecosystem

-<http://www.google.com/africa/>



X marks the spot

# 11 solid, made-for-business, Google Apps

For most business users, Google's claim to fame is its impeccable search engine and hosted email service- Gmail. What most users are not aware of are the other Google apps that can enhance business decisions and improve productivity.

1. **Gmail Tasks:** Effective scheduling. Within Gmail in the top left corner under Mail is the Task tool which essentially is that-it allows you to write all your tasks and cross them off or delete them as you complete them. The reason it's so handy is because it's given a visible priority position which means every time you're checking your mail you are going to be able to pull it up very easily to see what needs to be done.
2. **Gmail Mail merge:** Instant marketing. If you've ever wondered how companies are able to send the same email simultaneously to thousands of customers but customize it using the name of each recipient for example, 'Dear Tracy Musoke', well you can actually run a Gmail script which will create this for you. To use it effectively you need to put your contacts in a group to which you can send the same email simultaneously.
3. **Google Alerts:** Industry tracking. If you're a keen business, you will want to know what issues are hot in your industry by tracking how often certain industry key words are mentioned on the Internet. Through Google Alerts you can specify certain key words you want to monitor and every time they are mentioned in blogs, news, video or discussions Google will send you an alert in your email letting you know where the keywords were mentioned. You can also change the frequency with which you receive alerts. Alerts are great for competitor analysis as well as you can track press mentions for example for your competitors which should help you gauge how well you are or not performing and what you need to do to change.
4. **Google Directory:** Find information really fast. Let's imagine you're a mechanic and you need to find a manual for a certain contraption. You can go to Google Directory and type in Science and then type in manuals; you will be able to access all the online manuals available. This Google directory helps you search by category which will enhance your productivity as you find your information faster.
5. **Google Images:** True imagery. Yes we've all used Google images but did you know you could search for images by colour- for example you can specify that you only want blue images or yellow images, or black and white images and those are the only pictures you will see. This is helpful if you want to colour code your report to make it look more professional

with the same type of images. It will also be helpful if you are looking for design ideas in your company colours. You can also search by image type for example photographs, line drawings, vector graphics or even just facial pictures.



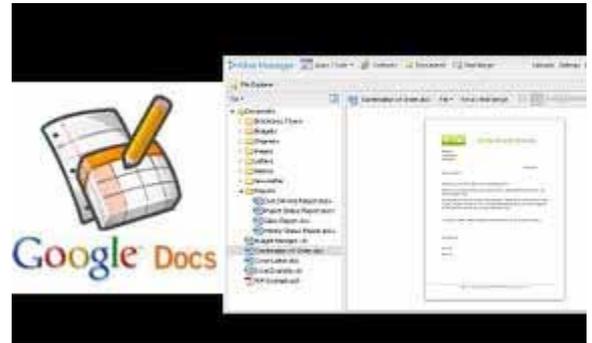
6. **Google Search:** Customized search. On a broader level you can decide exactly what type of search results the search engine should bring up. For example if you're a lawyer and you want to find all bloggers that write about legal topics, you can type legal in the search box and then on your left you select blogs or video or books. You can even specify that you only want discussions a specific length of time. Like Google says, this saves you time by bringing you information much faster than doing a generic search
7. **Google Scholar:** Patent search. Have you invented a mobile application for example and you want to see what patents or articles if any exist on your innovation? Go to Google Scholar and find out. Perhaps you're an academician required to publish regularly- you can get inspiration by reading other scholarly papers and identify little known topics that can help your publishing drive.
8. **Google Download Helper:** Digital library. You've stumbled upon a sales business video but have to rush for a meeting. You want to keep the video in your digital library, however YouTube does not have an option to download it and keep it. If you use the Google Toolbar, get the Download Helper add-on which will make downloading any video easy and convenient and help you build your own professional digital library.
9. **Google Realtime:** Instant updates. As its name says, if you want to live by the minute, Google makes it possible for you

to be up to date on your favourite topics- in real time. Type in a search term like 'cars 2011' and you will get aggregated content of different types from minute by minute Twitter updates to news, blogs, Facebook updates and a graphical timeline showing mentions of your search term at different times of the day. This can help you monitor a critical news piece which affects your business.

**10. Google Insights:** Online intelligence. Although still a new tool, Google Insights is poised to be a catch-all for businesses. As a form of online business intelligence it helps provide insights about services and products people are searching for; keywords consumers are using; marketing messages that are selling; which region of the world is searching for a specific product or service and even during which months it is most searched for. For example: When you type in a search term like 'East Africa' you will be shown which regions are searching this term the most. You will also be shown the search

term they are using for example 'funding' 'GM maize trials' 'jobs in East Africa' and you will also be shown which month these searches were made and how many times the term was searched for. Insights can guide your product campaign team by revealing consumer keywords that you should use in your marketing as well as help you differentiate your campaign from your competitors by noting what they are using.

**11. Google Docs:** Documents in email. Google Docs is a great way to create the most common type of documents including presentations, spreadsheets and reports as well as collaborate with other users online to work on the same document. With Google forms for example you can create a form quickly and email it to multiple recipients who then fill it in and send it back to you. The best thing is that you not only view the results



in email, there is also a graphical mapping of the results done for you automatically by Google.

**12. Google Maps:** Also known as "The Killer App", Google maps goes beyond the tradition physical maps we learnt about in school. Apart from being able to put your business on the world's most ubiquitous searchable global map, for businesses that charge fees based on location, Google maps has on-traditional uses for maps include: you're an art dealer and need to find the location of famous art pieces; tracking specific news items; map illnesses; map political issues and a

## GOOGLE CHROME: THE BEGINNING OF THE END OF LEGACY OPERATING SYSTEMS



You've probably heard of Google Chrome-as a browser; but that's not what's sparking off a

heated debated and lots of doomsday talk- it's the Google Chrome Operating system. Yes, there's room for one more OS except Google Chrome OS is not going to be a client based operating system- it will be 'cloud based'. In other words, instead of installing the operating system on your computer, you will 'log onto it' from the Internet. All the programmes you need to use to create or edit documents will be internet based and in fact already exist- through Google Documents which

offers Spreadsheets, Word Processor, Picture editors for example with the suite growing regularly. And here is where it gets more interesting. Because there are no more programs, rather web applications, everything you create or edit will be saved on the Internet. If your computer crashes you still have access to all your files because they are saved online. There will be no need to install troublesome drivers (those annoying tools that connect the software and hardware) and you wont need to re-start your operating system because you actually wont have access to it- it will be on the cloud remember.

Companies working with Google to

develop hardware for the OS include Acer, Dell, Lenovo, Intel, Adobe and Toshiba, Samsung and HP.

It all sounds very fantastical and unnatural but if Google has its way and gets a critical mass, Chrome will bring an end to legacy operating systems installed on your computers like Windows and Mac and pave the way for a revolutionary web based computing model supported and compatible with only Google Apps.

Issues surrounding Chrome include privacy of data hosted entirely on the web, a likely monopoly of Google apps and the lack of computational power on netbooks pushed by Google to perform more complex and intensive tasks. **ET**



Douglas Onyango

As time goes by, more buzz is being generated on the subject of IPv4 exhaustion and the transition to IPv6. The problem is that many people still don't understand what this means, how they will be affected and how they should respond; while others have compared the dawn of IPv6 as an 'ipocalypse' which will lead to the collapse of the Internet as we know it today.

The Internet in its simplest form can be defined as a system of Interconnected Networks. This system was invented as a research project mainly backed by the US Military and went on to become a communications medium for geeks in a few Hi-Tech research facilities where the creators and

each host (Computer, Server, Smartphone) on a network – or shall we say the internet. For a host to be uniquely identified on the Internet it must have at least one IP Address. addresses respectively.

#### The Problem

Like I mentioned earlier, the Internet was nothing more than a

#### KEY DIFFERENCES

IPv4 address: 212.298.0.1

IPv6 address: 201:db8:0:1234:0:567:8:1

IPv6 allows for faster processing of internet requests, enhanced security, and more quality features. It is also more suited to mobile networks which is the most popular platform in regions like East Africa.

a few learned colleagues punched away lines of commands just to read an email.

Since the technology involved communication or interaction, identification of communicating nodes or computers in this case was necessary; hence the adoption of the Internet Protocol (IP) as the preferred addressing scheme. We won't go into the details, but suffice it to say there were other competing addressing schemes at the time, but the Internet Protocol v4 gained the most traction.

#### Internet Protocol (IP) Address

An Internet Protocol (IP) Address, is a unique number that identifies

research project turned communication tool. The original creatures of this ubiquitous technology didn't exactly envisage their baby helping a housewife find a steak recipe or even help people with bad taste in music watch Justin Bieber on Youtube – Ok, not the best example, but you get the point.

Because of this, the addressing scheme (IPv4), only allowed for about 4 billion unique IP addresses. Like Bill Gates' prediction on Computer Memory (1981), The Engineers thought the 4 billion addresses as sufficient at the time – This prediction has turned inaccurate thanks to the Dot-com Bubble

in the early 2000's that put computers into ordinary households and the rich content available on the internet which is over a billion users strong. As a result of this problem several mechanisms have been devised in the last decade to cater for this short coming in the Version 4 of the Internet Protocol Addressing scheme. We will go over some of these shortly, but first, The impending doom of the internet or the reports of one.

### IPocalypse

There have been reports on the impending doom of the internet. Some have even made allusions to an IPocalypse – (Apocalypse of the Internet Protocol)an erroneous and misleading view. There won't be a crash of the internet. Even after the current pool of internet resources runs out, the internet will continue to exist thanks to its design; early adopters of the newer version (6) of the Internet Protocol and the major websites that already run services on this Protocol. Websites like Google, Yahoo, Youtube, CNN and AfriNIC can now be reached on IPv6.

A common question is whether IPv6 was the most ideal solution to the problem

of address exhaustion – let's take a look at some of the other remedies that have gained wide adoption and why they fall short of being a panacea to the problem of address exhaustion.

NAT: Network Address Translation or NAT allows Network Operators to allocate private addresses to End-users and requires only one or a few globally reachable address for a potentially large group of customers. Of course this means the End users have to use the gateway for traffic to the Internet. The problem with this that it:- 1) Breaks the end-to-end model of the Internet Protocol and the Internet itself. 2) Mandates that the network keeps the state of the connections 3) Makes fast rerouting difficult as traffic has to go out through the node that is facing the global internet at all times. 4) Because of its nature NAT, breaks the End-to-end security model 5) also some applications are not NAT friendly this can cause problems sometimes. This is why NAT is an imperfect solution to the exhaustion problem.

CIDR:Classless Inter-Domain Routing employs aggregation strategies to

minimize the size of the Internet's routing table. CIDR allows routers to group routes together in order to cut down on the quantity of routing information carried by the core routers. With CIDR, several IP networks appear to networks outside the group as a single, larger entity. CIDR is perhaps the most widely used method but because the internet is growing constantly, It just can't keep up with the exhaustion of a finite resource.

DHCP: Dynamic Host Configuration Protocol (DHCP) is the protocol used to assign addresses to hosts in a network automatically. DHCP is used to avoid the administrative burden of assigning static addresses to each device on a network. It also allows multiple devices to share limited address space on a network if only some of them should be online at a particular time.The Problem is that nodes that communicate over the internet have the need for an always-on connection state and DHCP simply doesn't offer this. This makes it a less than ideal solution to the exhaustion problem. **ET**

## How will the transition to IPv6 affect your business, company or organization?

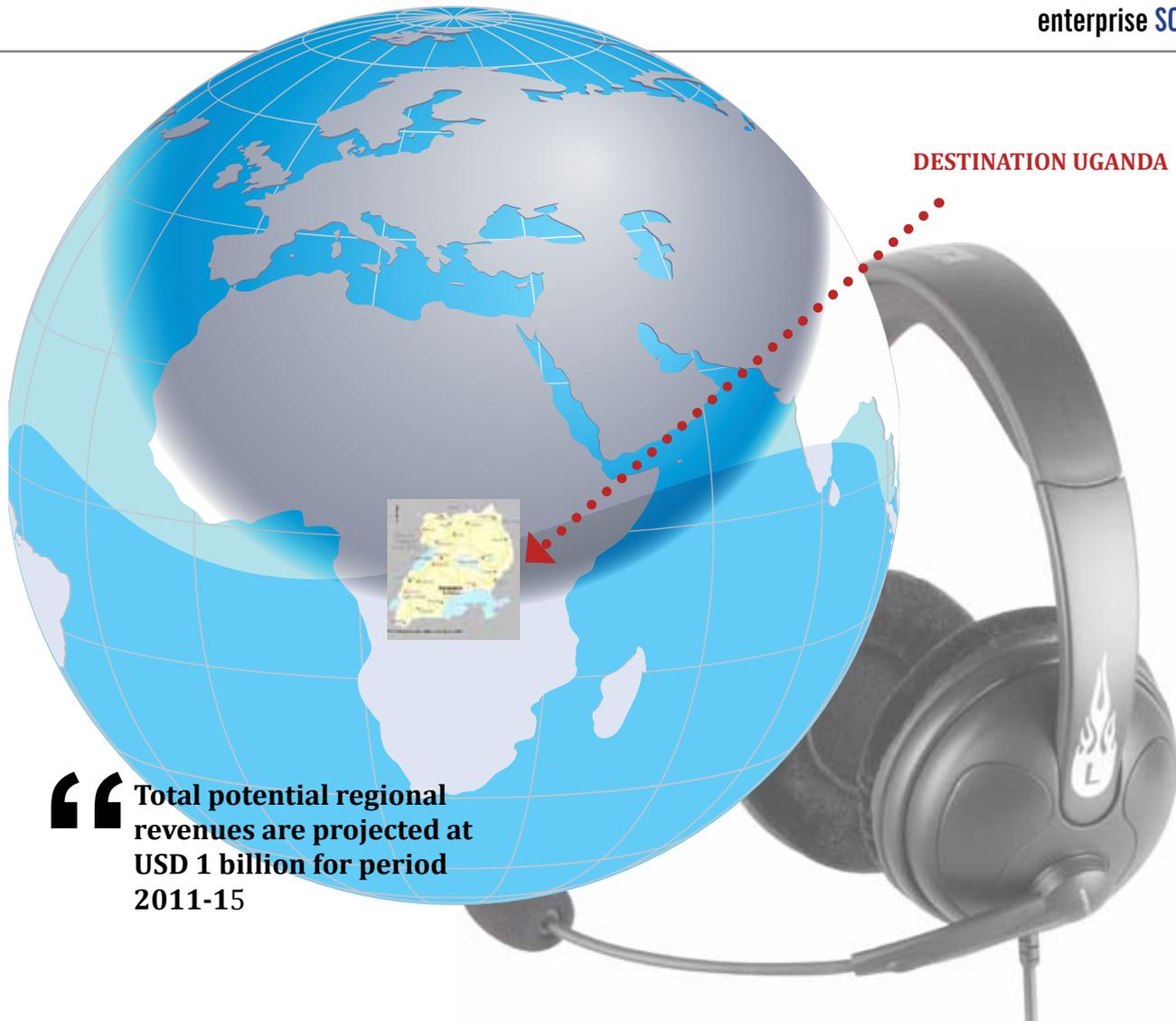
Consider the fact that in East Africa for example, the percentage of mobile phone penetration is 40% while Internet penetration stands at less than 15% throughout the region. This has consequently led to more East Africans accessing the internet via mobile phones rather than PCs. Because IPv6 is the most ideal protocol for mobile communication and will be adopted by telecom networks, it follows that if you want more visitors to your website your website will have to be IPv6 ready. However the onus will fall on Internet service providers, hardware makers, operating system

vendors and web hosting companies to make the necessary changes that will have you and your website ready for the transition. Fortunately if you've bought your technology recently, components like your router should be compatible as computer hardware manufacturers have been aware of the transition for several years; the issue however will be with your software as most older versions are not compatible with IPv6.

Governments and public institutions websites for example that provide resources to the public will have to ensure that they are directly reachable by clients who will be using IPv6.

Although IPV6 has been touted as more secure than IPv4, experts warn that the likelihood of bug issues will grow significantly as operators move to an unproven platform with unknown problems in addition to the fact that there are a limited number of network engineers that fully understand security on IPv6. June 8th has been set aside as the date where major sites like Yahoo, Google, Microsoft to trial run IPV6 for 24 hours.





DESTINATION UGANDA

“ Total potential regional revenues are projected at USD 1 billion for period 2011-15

## UGANDA'S FLEDGLING BPO INDUSTRY: OPPORTUNITIES AND CHALLENGES

Rogers Karebi

Contrary to the general belief that BPO is all about Call centres, BPO constitutes a vast range of functions and activities. Business Process Outsourcing (BPO) is the contracting of specific non-core business functions or processes to a third party service provider. BPO can be categorized into Back-office Outsourcing, and Front-Office Outsourcing.

### Back-office outsourcing Vs Front office

This includes outsourcing of the Internal Business Functions of a company like Human Resource, Finance and Accounting, Billing, Data Entry and the like. This constitutes functions that do not require

direct interaction with customers or clients. Front office outsourcing on the other hand constitutes outsourcing of customer related services. The most common functions are contact centres, marketing, customer surveys. The service provider interfaces directly with clients.

The contracting firm sets minimum standards and expectations to the service provider.

The objective of outsourcing is to allow the contracting company focus on its core activity, thereby becoming more efficient, as well as saving costs.

### Challenges to the BPO industry in Uganda

Uganda has a very small and struggling BPO Industry. We have a few in-house or captive call centres, mainly in the telecoms industry like MTN, Warid, Airtel. A number of initiatives have been generated in the past to facilitate the growth of the Industry, however not much has been realized. This can be attributed to a number of challenges faced by the Industry in Uganda.

**The bandwidth rates in Uganda are still very high** in comparison to the neighbouring countries. These rates have however dropped significantly in the

*Continued on page 30*

## The 2nd Annual Kampala ICTExpo & the East Africa Digital Revolution Forum, 2010

Organized by the ICT Expo organizing Committee, chaired by Nasser Ntege, Held on the 29th-30th November, Kampala Serena Hotel, the ICT Expo in its second year turned out to be a useful platform for business networking and for companies that exhibited, an opportunity to explain their newest technology innovations as well as create awareness in the public arena role in fostering the adoption and usage of ICTs.

As the Media Partner for the ICT Expo, Enterprise Technology magazine, spoke to various exhibitors about the transition from analogue to digital television and the general consensus was that the region as a whole was making significant steps towards the transition. Most stakeholders however agreed that the process was fraught with challenges that needed to be addressed such as standards for equipment, policy on allocation

of the redundant spectrum as well as public sensitization. Attracting a wide array of professionals from Educational institutions, Telecommunications, Banking & Finance, Government, Leisure & Hospitality, Customer Care, and Regulatory Agencies

**Sponsors included:** Grameen Foundation, Uganda Revenue Authority, Hardcat, NITA-Uganda, Foris Telecom, Warid Telecom, Posta Uganda

**Best in ICT Research and Development:** iLabs, Makerere

**Best in ICT Innovation and Creativity:** NITA-Uganda

**Best in Embracing ICT to improve service delivery:** Uganda Revenue Authority

**Best in ICT Customer Care and Public Relations:** Posta Uganda



The Enterprise Technology booth was kept busy with visitors requesting copies of Enterprise Technology magazine; requiring help in troubleshooting technology problems or passing by to see the faces behind the team. URA, exhibitors at the expo spent most of the time explaining the recently introduced e-Tax platform.

Top: James Saaka, ED, NITA(U); Bottom: Acting ED, UCC, Patrick Mwesigwa



Delnet Engineering staff (left) exhibited various technologies including their Information Management System and various products for the Telecommunications sector. (Right) Uganda Communications Commission, co-sponsors of the expo are key stakeholders in the development of policy regarding the digital migration process

Visitors to the expo exchange knowledge and receive updates on different technologies



(Left) Hardcat, Fixed Asset Management company, describing how their software solution works to booth visitors. (Right) Wilson Kutegeka, ClinicMaster software for health institutions addressed the expo on 'Centralized Electronic Health Exchange'.

(Left to Right) John Musajjaka, Senior Advisor on ICT in Uganda Investment Authority chats with stakeholders during the expo cocktail.



(Left) Makerere University, Faculty of Computing discussed the iLABS@MAK Project which will help the development of school technology online labs (Right) Logix display their security solutions

Top to bottom, Warid Telecom sales representatives, STAR Times



(Left to right) Posta Cash employees, Jane Kasumba of UBC, Nasser Ntege and Derek Kasedde ICT expo organizing committee, middle, Joyce Tonda, Enterprise Technology magazine.



(Left) Moshe Kalige, Foris Telecom; Badru Ntege, NFT; (Right) Simon Vass, Linux Users Group Uganda (LUG)



## Uganda's BPO Strategy

| INPUT                        | DESCRIPTION  | PROPOSED ACTION PLAN FOR GOVERNMENT OF UGANDA   | RESPONSIBILITY                                     |
|------------------------------|--|---|--|
| <b>Policy Framework</b>      | <ul style="list-style-type: none"> <li>National ICT Policy</li> <li>Cyber Laws</li> </ul>  | <ul style="list-style-type: none"> <li>Revise ICT Policy to incorporate BPO model</li> <li>Update Cyber Laws bill to incorporate strong Data protection and privacy laws.</li> <li>Laws should be enforced and awareness promoted all key stakeholders</li> <li>Establish guidelines for investment in the BPO industry</li> </ul>  | MoICT MoJCA<br>NPA                                 |
| <b>Finance</b>               | Financial support for startups in form of Grants, Incentives   | Support should be extended to BPO operators to meet start up costs of the following <ul style="list-style-type: none"> <li>Infrastructure                             <ul style="list-style-type: none"> <li>Telecommunications costs</li> <li>Bandwidth</li> <li>Computer hardware and related software</li> <li>Furniture and fittings</li> <li>Power backup systems</li> </ul> </li> <li>Skills development</li> <li>Premises rentals and Construction</li> <li>Provide incentives such as tax holidays</li> </ul>   | MoICT<br>MoFPED<br>UIA<br>UCC<br>Telecom Operators |
| <b>Infrastructure</b>        | <ul style="list-style-type: none"> <li>Bandwidth and Telecommunications infrastructure</li> <li>Electricity</li> <li>Premises</li> <li>Accessibility</li> <li>Water Supply</li> </ul>                          | <ul style="list-style-type: none"> <li>The National Transmission Backbone to be connected to the submarine cable system;</li> <li>Provision of sufficient power supply should be ensured;</li> <li>Set up well serviced Information Technology Parks where premises can be provided at subsidized rates. The IT parks would also enable defining Special Economic Zones (SEZ) for firms that operate within these IT parks.</li> <li>Allow and encourage private sector to develop, build and operate IT parks as PPP or as purely privately owned venture .this would help Government in avoid heavy investments in the development of the facilities</li> </ul> | MoICT<br>MFPED<br>UIA<br>Private Sector            |
| <b>Entrepreneurship</b>      | Entrepreneurship development Programme   | <ul style="list-style-type: none"> <li>Potential Entrepreneurs should be sensitized and encouraged to invest in BPO industry.</li> <li>The Banking sector as well should be brought on board and offered training to understand how BPO industry operates and encouraged to extend equity financing.</li> </ul>   | MoICT<br>Private Sector<br>BoU<br>Banks            |
| <b>Human Resource Skills</b> | Training for both Managerial Category and<br><br>Operator Category   | <ul style="list-style-type: none"> <li>HR Training should be of highest priority, as it is a people intensive business.</li> <li>Training courses to be developed and arranged to meet major segments of the BPO industry.</li> <li>The HR training should be subsidized by the GoU for employees and the companies by:                             <ul style="list-style-type: none"> <li>Providing grants for BPO Trainings</li> <li>Training of Trainers</li> <li>Accrediting Centres to offer training in BPO</li> </ul> </li> </ul>  | MoICT<br>MoES<br>Training Institutions             |
| <b>Subcontracting</b>        | To kick start the industry in Uganda, the Public/Private sector can subcontract business from countries like India, Israel and Ireland which have sub-contracted to countries like Mauritius, Ghana and India. | <ul style="list-style-type: none"> <li>The Government should send out teams to these countries to study and attract business to Uganda.</li> </ul>  | MoICT<br>UIA<br>MoFA                               |

**From page 27**

last one year, from \$4,000 to \$600 per megabyte, but are still very high compared to \$20 in Europe and \$30 in India. However with the commercialization of the National Backbone (NBI), Uganda's bandwidth rates are expected to go down further. The neighbouring country, Kenya will always have a comparative advantage on bandwidth rates because of their "last-mile" advantage on the fibre optic cables as well as the World Bank/IFC subsidy project.

Another challenge faced by the BPO Industry in Uganda is **high start-up cost and operation costs**. The start-up costs of establishing and operating a BPO Business are high. These include, rent of premises or construction, partitioning, equipping, sound proofing, ICT hardware and software, air-conditioning, electricity installation and monthly bills.

The success of BPO depends largely on faultless power and bandwidth services however, the unreliable electricity and bandwidth supply means that firms have to invest in alternative power supply sources like stand-by generators and alternative Internet connectivity like V-Sat, which is much more expensive.

**Lack of well-enforced cyber laws** has limited the Ugandan BPO Industry from penetrating the off-shore outsourcing Industry. Several laws need to be operational to ensure confidentiality of the foreign markets.

**Uganda lacks trained BPO ready -agents**, a major input in the BPO Industry. The education system however reportedly graduates over 50,000 every year.

The Ugandan BPO Industry still operates without any **standards and ethical guidelines**, thereby subjecting it to sub-standard BPO services. This is risky for a sustained flow of outsourced business. BPO companies in Uganda open and close within a year of operation, and this is largely attributed to low local demand and lack of public awareness.

**ADDRESSING THE CHALLENGES OF BPO IN UGANDA**

The core objectives of the government's interventions are to help facilitate BPO growth and thereby create jobs specifically



Roger Karebi, Chairman UBPOA

for the youth, increase government revenue and attract investment.

The Government of Uganda, through its mandated implementing body, National Information Technology Authority, Uganda, NITA-U through a Public Private Partnership (PPP) arrangement is setting up a multi-function plug-and-play BPO centre in Kampala with fully subsidized electricity, bandwidth connectivity, paid up rent and fully furnished. This will help solve the rent, electricity and infrastructure set-up challenges.

Further on, NITA-U in conjunction with Makerere University Faculty of Informatics and Communication Technology launched an internationally certified BPO training course subsidized up to 90% by the government. This is designed to produce a critical mass of BPO trained agents to close the BPO skills gap.

NITA-U is in the process of sourcing for a competent marketing firm that will be contracted to market Uganda's BPO services both locally and globally. This should create the much-needed demand for the services. Another initiative that will be undertaken

by NITA-U is to develop BPO Standards and Ethical guidelines that will ensure quality service levels are adhered to by BPO companies.

Other interventions that are under scrutiny include developing a BPO Incubation centre, and development of BPO parks specifically in Namanve Industrial park. A location study for the BPO Industry is also in the NITA-U roadmap while benchmarking studies are planned for later in the year to countries with well developed BPO industries.

Developing the BPO Industry requires both the public and private sectors to work together through Public (Government), Private (Private Sector) Partnerships (PPP). The private sector through its association, The Uganda Business Process Outsourcing Association has drawn a roadmap geared towards making its advocacy role more relevant. To ensure that the private sector prepares for the growth of the BPO Industry, there is a need to engage the operators in professional BPO Operators' training as well as sensitizing them on standards and ethical operating guidelines. This will ensure sustained minimum quality levels.

According to a study carried out by Perwitt, a Canadian consulting firm, it was observed that Uganda has great potential to grow into one of the biggest BPO powerhouses in the world, owing to good and stable political climate that created a good and conducive investment climate, high academic standards, high numbers of graduates churned out annually low cost of labour, the country's location 3 hours ahead of GMT and the improving Infrastructure which work in favour of making Uganda the preferred BPO destination. **ET**

*Rogers Karebi is the Chairman of the Uganda Business Process Association and Managing Director of DIAL-A-SERVICE a contact/call centre in the heart of Kampala. He holds an MBA Human Resource from University of Kent, London and enjoys motorsport, golf, football and travelling.*

# THE ROCKY ROAD TO THE DIGITAL HIGHWAY

Farida Nakawooya

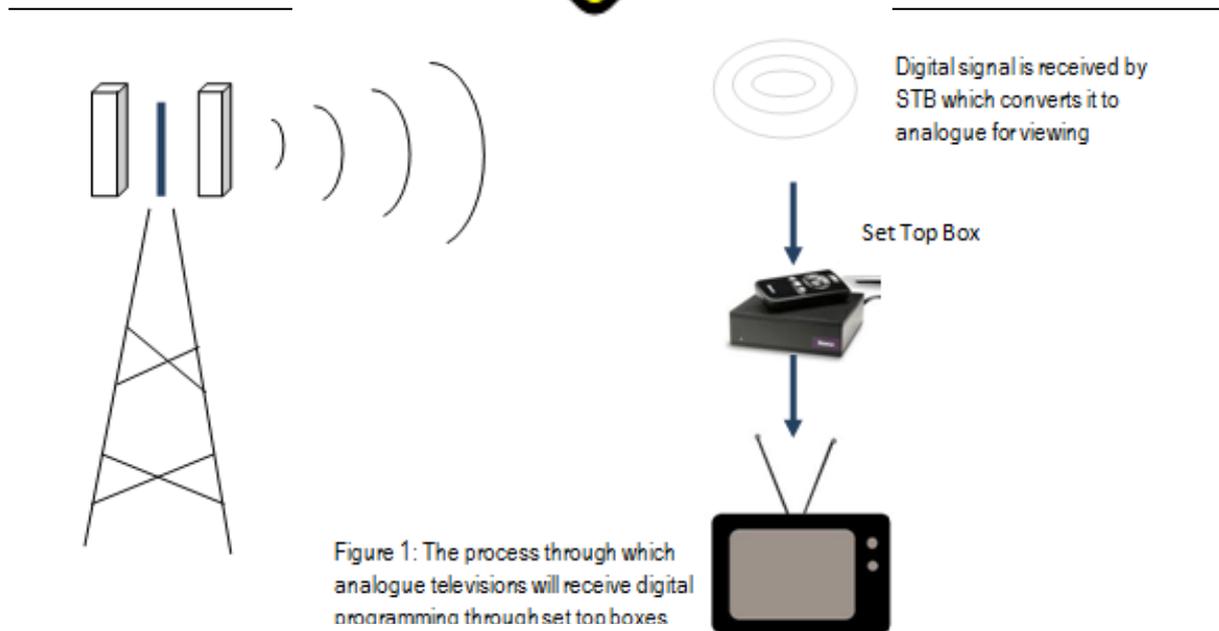


Figure 1: The process through which analogue televisions will receive digital programming through set top boxes

Television broadcasting began in the 1960s in Kenya and Uganda, monopolized by government broadcasters using analogue technology to transmit pictures and sound. Tanzania, Rwanda and Burundi would follow 30 years later in the early 90s at which point the pioneering governments were already opening up the broadcast sector to private players. Today there are over 30 operational television stations in the region, 12 of these in Uganda. In May 2004 and 2006 Regional Radio Communications Conferences held in Geneva, Switzerland and attended by

global broadcasters resolved that all analogue broadcasters migrate to digital technology by 2015 as digital technology used the spectrum more efficiently and cost effectively. For example, while an analogue frequency can only support one channel, a digital frequency can support 12 channels. In Europe and indeed the whole world, Luxemborg was the first country to migrate its entire broadcast system from analogue to digital in 2006. Worldwide, after June 2015 analogue television will not be supported any longer. East African states as members of the International Trade Union (ITU) are

bound by this decree.

## What will happen when the 2015 deadline is reached?

In 2015 analogue TV broadcasters will not be able to transmit pictures or sound and owners of analogue television sets will not be able to view any TV channels. Analogue television owners will need to purchase Set Top Boxes (STBs) which receive the digital signal, convert it to analogue and then take it back to the analogue TV so that the images can be viewed. Alternatively they may use external aerials or short indoor antennae.

**Advantages of Digital Television over Analogue Television**

International obligations for the migration will come with multiple benefits. The advantage of digital television and its efficient bandwidth consumption is that it allows the provision of other related services like multimedia games , TV shopping and the ability of viewers to interact with the TV for example by pressing specific buttons to access an available service. An added

enable text to be transmitted to television sets. According to Uganda’s draft policy, school curricula and relevant national data could potentially be broadcast. It could further enable channels which could be used for delivery of government programs like education, health and other public services. Provision of services broadcast in a variety of languages would also increase access to information which is key to meeting global poverty reduction goals.

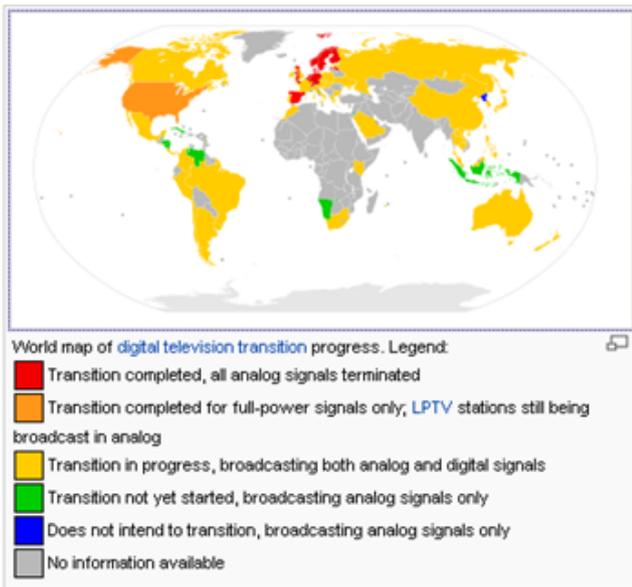
on a channel.

Increased availability of channels will translate into more programming choices for viewers and foster the growth and production of local content.

**EAST AFRICA’S TRANSITION TO DIGITAL TELEVISION**

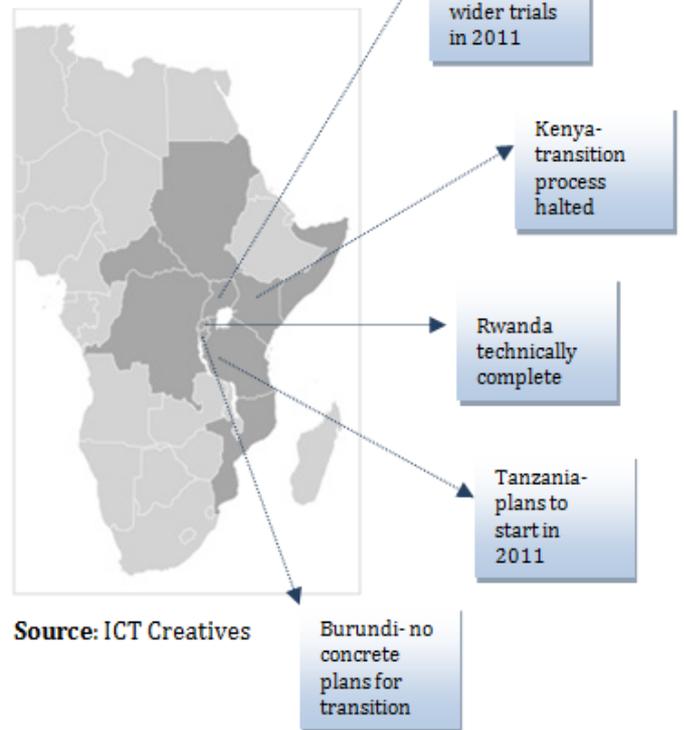
Digital television itself is not new in East Africa. The technology was pioneered in the early 90s by leading Pay-TV broadcaster, Multichoice which brought

**Figure 2: The Global Digital Television Transition**



Source: Wikipedia

**East Africa’s migration status**



Source: ICT Creatives

advantage will be the ability to provide improved clarity of sound and images so that for example, the smallest facial detail like sweat beads can be seen- also known as High Definition TV (HDTV).

When all the analogue frequencies are reallocated to digital frequencies, more regions in East Africa will be able to receive TV transmissions thus improving coverage and signal strength. Overall the benefits will come from equal access to information. Digital format can

Digital Television also offers better picture and sound quality as opposed to analogue, as well as creating opportunities for multiple programming / multi casting. Existing channels will be able to provide multiple programmes; for example if there is news on East African TV, viewers would be able to change and view a movie or music on the same channel. Multicasting essentially brings an end to the practice of linear broadcasting where viewers were forced to watch only one programme at a time

over 40 audio and 70 video channels via Satellite to East Africa. Multichoice currently has more than 2 million subscribers across Africa. Since then numerous Pay-TV digital broadcasters have joined the lucrative broadcasting market using TV aerials and cable to broadcast digital signals. Digital TV can also be delivered via telephone lines – also known as broadband delivery or via mobile phones. Because the current status quo supports both analog and digital broadcasting,

it is known as the simulcast phase, and will end in 2015 when only digital broadcasting will be supported.

Africa's digital switch is being led by South Africa where the government has for example agreed to subsidise the equipment needed to receive images -STBs for the 6 million poorest households that cannot afford the boxes. South Africa is targeting a complete migration date of December 2013 although there has been public outcry about the government's inability to involve all stakeholders (network

frequencies; to decisions on the type of equipment that will be needed in households for access of digital broadcasts. Free to air TV stations will also have to identify creative sources of revenue as previously linear programming has allowed them to 'force' viewers to see advertisers ads. With digital TV viewers can flip channels as they like, essentially skipping the ads as they come.

**The status of East Africa's digital migration**

With a government investment of USD

the Rwandese population.

According to the Uganda Communication Commission draft strategy, which awaits cabinet approval, Uganda expects to learn lessons in migration from countries like Malaysia and United Kingdom. In the United Kingdom, areas with low population density were first successfully trialled in order to gain experience before moving it into heavily populated areas. In 2008, the switchover process began and was completed in 14 phases and will be concluded in 2012 resulting in a complete migration to digital. The key lesson in

**Digital Dividends:** Savings arising from the more efficient use of the spectrum enabling this valuable resource to be used for other services like HDTV and Mobile TV

owners, manufacturers, viewers, vendors, TV stations) in the migration planning process.

**Challenges of migration**

In terms of free to air TV stations, East Africa's late bloomers already face a number of challenges during this transition period; from standards of digital broadcasting; allocation of

\$ 40 million in broadcast infrastructure, Rwanda, a late player to the analogue broadcast realm, became the first East African country to be technically prepared for a complete digital migration with a switch-over planned for March 2011. The investment in equipment like additional transmitters will result in increased coverage from 60% to 80% of

the UK was that the migration should be a phased approach, starting with a few towns before a full scale switchover.

Similarly Malaysia conducted trials with 2,000 households in Kuala Lumpur by broadcasting analogue channels in digital concurrently with two fully digital channels. The users opinions and experiences would then be polled and

**Comparison of two digital television modes: Digital Terrestrial Vs Digital Satellite**

| COMMON PROBLEMS                            | DIGITAL TERRESTRIAL TV (STAR TIMES)  | DIGITAL SATELLITE TV (DSTV, Top TV) |
|--|--|-------------------------------------|
| Picture break-up (pixelation)              | Yes  | Yes                                 |
| Picture freezing                           | Yes  | Yes                                 |
| Antenna adjustment                         | Yes (Difficult to adjust especially since the picture is either on or off) | No                                  |
| Missing channels                           | Yes  | No                                  |
| Interactive services sometimes not working | Yes  | No                                  |
| Coverage                                   | Limited to cities  | Countrywide coverage                |



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inform the migration process.

In November 2009 five television stations in Uganda including NTV the Kenyan owned station, Nile Broadcasting, East Africa Television and WBS and UBC switched from analogue to digital in a pilot with 200 viewers that was supported by Next Generation Broadcasting, a Swedish Digital Terrestrial Transmission Company.

The Ugandan Government has now established the National Digital Terrestrial Broadcasting plan and formation of the Digital Migration Taskforce (DMTF). The taskforce comprises of a number of stakeholders including the Ministry of ICT, Uganda Communications Commissions, broadcasting houses, and the Office of the Prime Minister. Recently the National Information Technology Authority of Uganda (NITA-U) was added to the taskforce. As a first step, consumer awareness has been prioritized. The DMTF will mainly develop an action plan for switch off of analogue television broadcasting, monitor as well as coordinate and monitor the technical roll out process .

The switch over policy is expected to be out before the end of March 2011, according to Aggrey Awori Minister of Information Technology in Uganda. The migration will involve transfer of

broadcasting services that operate on analogue network to a digital network. This will be done through the replication of all services operating on the analogue network to the digital network with the aim of eventually switching off the analogue services before the slated date. The draft for the Digital Migration Policy on Digital Terrestrial Television Broadcasting in Uganda highlights December 2012 as the switch off date for the analogue signal.

**Equipment costs**

Equipment installations will also require significant financial investment including equipment like studio middleware and transmitters required to realize the full benefits of migration.

For the consumer Set top boxes, also known as Digital Terrestrial Television (DTT) receivers will be sold for not less than USD \$50 for the minimalist spender to USD \$1000 for viewers who want a more sophisticated box to receive HDTV for example. At that price for many East Africans it may be the less expensive alternative to buy a new digital compliant television.

Although Kenya was the first of the East African states to commit to complete the switch by 2012, setting up a Digital Transitional Committee to oversee the process its transition has suffered several mishaps stemming from discontent

among the Media Owners Association amidst allegations of foul play in the allocation of frequencies, by the government broadcaster, KBC, leading to the suspension of the migration trial process. The process was further injured by the abrupt ban slapped on importation and sale of set top boxes of an older technology (DVBT1) in a move aimed at encouraging the buying of the new DVBT-2 technology.

**Equipment standards**

Although all countries agree on the need to migrate to digital TV, different standards are being adopted worldwide.

**Environmental issues**

James Kasigwath Assistant Commissioner for Broadcasting Infrastructure, Uganda, says that although consumer awareness has been prioritized, due to the current misinformation, consumers are disposing of their analogue televisions believing that they will be useless in the future. As in North America, where consumers have higher income the disposal of analogue televisions has become a key environmental issue as the disposed electronics are dumped in landfills where their hazardous contents pose a significant threat to the environment. East Africa will have to tackle this challenge too. **ET**

**Global Digital TV Standards**

| DIGITAL TV STANDARD   | COUNTRIES ADOPTING IT               | NO OF COUNTRIES ADOPTING | COST OF SET TOP BOX USD\$ | ADVANTAGES  |
|---|-------------------------------------|--------------------------|---------------------------|---|
| ATSC (Advanced Television Systems Committee)                  | USA, Canada, Mexico and South Korea | 5                        | 50-80                     | Minimal signal interference, suitable for large area transmissions                    |
| ISDB-T (Integrated Services Digital Broadcasting Terrestrial) | Japan, Brazil                       | 2                        | 100-130                   | Suppresses noise, good for mobile and indoor reception                                |
| DVB-T (Digital Video Broadcast Terrestrial)                   | Europe, Asia, Africa and Oceania    | 118                      | 27-80                     | 2 <sup>nd</sup> generation good for HD programming mobile reception and data services |

# Q & A WITH CHARLES HAMYA

## What implications does the planned migration mean for DStv MultiChoice customers?

The planned migration will not in any way affect DStv subscribers as all the channels available on DStv are already digital. Digital television was implemented over a decade and half ago. However, for television viewers in Uganda who are still viewing the free to air analogue signals, he/she will have to migrate to a new digital platform and should expect to receive an improved TV picture quality and also be able to receive an increased number of channels due to the new digital services which will provide many benefits to viewers.

At MultiChoice, we are also exploring all the new possibilities so that we can ensure that when the migration occurs, we will be able to extend the benefits of digital broadcast to as many television viewers in the country as possible.

MultiChoice has always and will continue place its customer at the centre of our business endeavours which is demonstrated by the constant innovations we have introduced in order to improve our products, programming and service delivery to subscribers. The migration will allow us to take our customer centric approach to the next level and to so many more people.

## What can the different stakeholders do to ensure an effective migration to digital television?

First of all, I would like to applaud the efforts undertaken so far by the Uganda Communications Commission "UCC" and Broadcasting Council to create awareness amongst the public about the impending migration. This is an important first step. I believe that the next step is for the government and policy makers



Charles Hamya, MD, DSTV-MultiChoice Uganda

to pass the proposed digital migration policy. This should lay the framework for a well regulated industry that guarantees the adoption of the best available technology such as DVB-T2 as well as a level but competitive playing field for all the players.

Lastly there are a number of digital technologies being marketed and sold in Uganda, some have already been rejected in other parts of the World due to new and more innovating technology becoming available; I am confident that the UCC will select the most modern and up to date standard which offers Ugandan viewers the best usage of spectrum while ensuring television viewers in Uganda are provided the best digital television experience, in this way we will have one single smooth migration and not a second or third.

## How is DSTV MultiChoice positioning itself in the face of mushrooming competitors, many of whom are

## offering lower prices for PayTV?

As we know it competition is a healthy development, as it provides the customer with more choice in selecting a pay television service that suites their unique needs. DStv already has a number of bouquet products on the market which compete very favourably on price with competitors yet offers much richer content. These include DStv Access featuring over 35 channels at only Ugx24, 000/= per month, DStv Family over 40 channels at Ugx48, 000/= and DStv Compact with over 50 channels at only Ugx67, 200/=.

Additionally we are constantly launching new channels on each of the bouquets to further enrich the content, a fact we firmly believe will be important towards achieving our goal of retaining and gaining new customers.

## How will Multichoice be driving the generation of local content that is appealing to East African audiences?

Together with M-Net and SuperSport, we are already doing a number of local productions across the East African market. Examples include the Patricia Show and Stand-Up Uganda production. We have also invested in training and building the capacity of local television producers so they can create regionally produced high quality programmes featuring East African nationals that can be showcased on DStv. This will be an on-going process.

M-Net is always on the lookout and procures locally produced television content in the region which they then broadcast to a wider TV audience even beyond East Africa.

We are hoping that sometime in the future, M Net will be able to launch an East African channel.



## KEY FACTORS

**Security:** This should be a priority especially since companies work with confidential data whose breach can have serious legal implications. The phone must therefore be able to support Virtual Private Networks in addition to user passwords and PIN access.

**Business applications:** Without enterprise applications like Microsoft Exchange for mail a smartphone is nothing more than a fancy gadget. Ensure that any other critical applications your company runs will be supported on the smartphone you choose.

**Ease of use and Form factor:** Even though your enterprise might need a tonne of fancy features, if employees are going to get lost finding the functions, then it will defeat the purpose of introducing efficiency in the company. Equally, form factor is important as a brick phone will become cumbersome to pocket.

**Battery life:** It's absolutely critical that a smartphone has a reasonable battery life - in many cases traveling executives, in the field workforce will need a phone that can endure days of talk time, not hours.

**Features:** Although some features tend to be fluff, some are important, for example if your employees travel, the phone must be able to work in different locations. For example not all smartphones access the web at the same speed and some do not even support high speed data services.

# CHOICE PICKS; BERRIES Vs APPLES

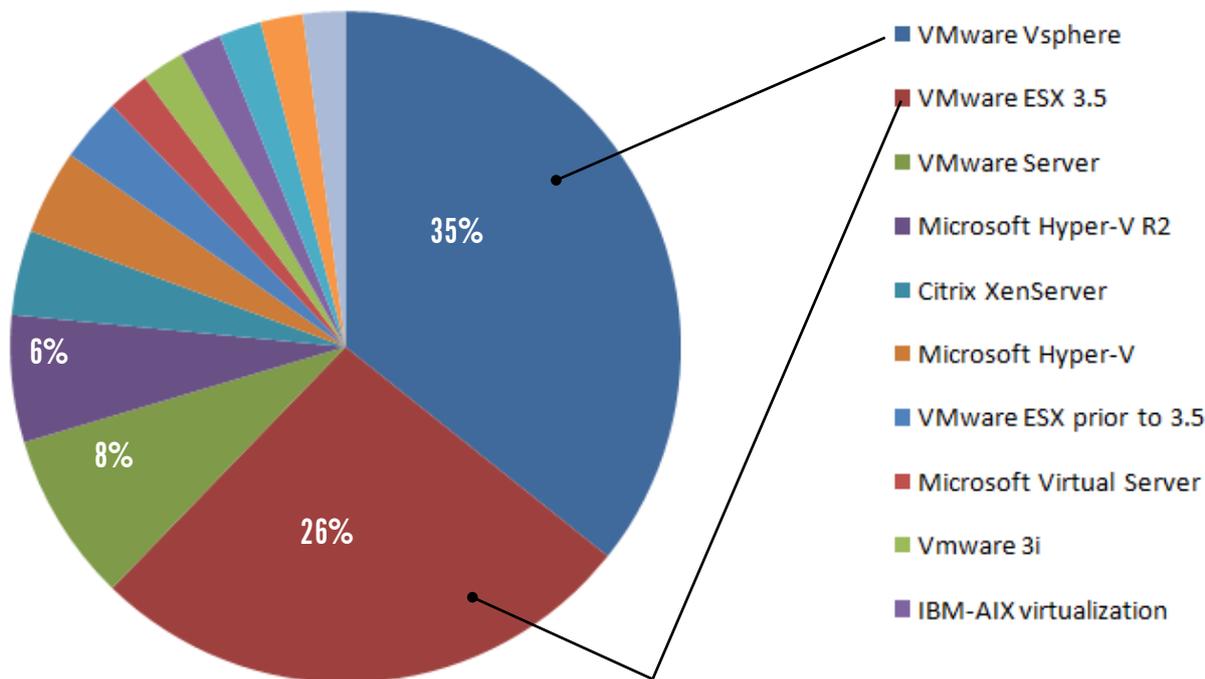
## iPhone vs Blackberry: How to choose a smartphone for your enterprise

Although both the iPhone and Blackberry are smartphones suited for business use, one size does not really fit all-there are specific peculiarities which will determine which one you should buy based on your business primary needs.

|                                | iPhone 4  | Blackberry Bold 9780   |
|--------------------------------|---|--|
| <b>Security</b>                | No centralized management portal and therefore no company wide security policies can be implemented since the iPhone was initially positioned as a consumer device which has become attractive to business users  | Centralized company wide security policies can be implemented due to the availability of the Blackberry Enterprise Server portal. The Blackberry was endorsed as inherently secure for transmission of sensitive data by NATO and various governments worldwide.   |
| <b>Device consolidation</b>    | You can carry your music as well as your cellphone since the iPhone has consolidated iPod functionality and mobile phone features   | If you are a multimedia fan you need to carry both the Blackberry and iPod which becomes cumbersome.   |
| <b>Business applications</b>   | As a consumer device its business applications are limited although the iPhone developer community is constantly churning out apps to satisfy business users. The iPhone for example can now integrate with Microsoft Exchange allowing business users to access business mail. iPhone is also now running Oracle applications as well as dashboard apps for business intelligence. | The Blackberry is the King of Apps with at least 15,000 apps available in 5 global languages. For example, the SAP Customer Relationship Management is available for Blackberry users. Blackberry apps include tools for data collection, real estate, sales and customer service, file transfer, WebEx online meetings, media backup, Lotus Notes in an endless list of apps. |
| <b>Multimedia capabilities</b> | Videocalling: Yes<br>Video recording: Yes<br>Media player: Yes<br>Camera and Video: Yes   | Videocalling: Yes<br>Video recording: Yes<br>Media player: Yes<br>Camera and Video: Yes  |
| <b>Storage</b>                 | The iPhone has more storage capacity which obviously supports its multimedia functionality- up to 32GB  | Significantly less storage of 256MB but both phones have 512MB of RAM  |
| <b>Usability features</b>      | Talk time up to 14 hours<br>Keyboard- in-built<br>Screen size 3.5 inches diagonally<br>Navigation: Multitouch input<br>Speakerphone: Yes<br>Weight: 137g<br>Durability: Scratch resistant screen<br>SIM Card usage: Special SIMs  | Talk time up to 6 hours<br>Keyboard-QWERTY<br>Screen size 2.4 inches diagonally<br>Navigation: Optical trackpad<br>Speakerphone: Yes<br>Weight: 122g<br>Durability: Sturdy body<br>SIM Card usage: Ordinary SIMs   |

**VERDICT:** If your phone is primarily used for multimedia perhaps you're in the entertainment industry, or media business then an iPhone is the best choice for you. However, for users who are tasked to check and responding to business email and need to review documents regularly, the no-frills Blackberry will serve you best for business productivity.

## Virtualization Driven By Data Center Consolidation



**2010 Primary virtualization technology used**  
Source: searchdatacentre.com

### Nicholas Katumba

Organizations with large-scale IT infrastructure are facing a double-edged challenge. The financial pressures exerted on IT budgets have been exacerbated by the never-ending increase in demand for storage and compliance requirements, along with the ever-present need to provide resilient business continuity solutions. In short, IT managers are being asked to do more with less to a greater degree than ever before.

A combination of computer density, the need for improved management efficiencies, energy conservation and information quality has driven the issue of data centre consolidation to the top of every IT Manager’s agenda. Typically organizations have often responded to these challenges by employing server virtualization solutions. Data centre consolidation traditionally focused on the migration of distributed data systems to a shared infrastructure, later advancing to

operating systems using server virtualization techniques and software.

Virtualization is an approach where several applications—sometimes running on different operating systems—run on the same piece of hardware, creating multiple “virtual” servers from a single machine. Software manages the different applications and systems, resulting in an experience for end users that is indistinguishable from having each application on a dedicated machine.

A virtualized environment, like a data center, uses fewer machines, requiring less physical space and less energy for cooling. By avoiding hardware that runs at partial capacity, virtualization provides greater return on IT investments, and a virtualized server environment provides an IT organization with greater flexibility to deploy new applications.

Many enterprises are today going virtual

in most of their IT implementations and this is mainly being driven by the new data center management approach; consolidation of all data center resources for a more effective and efficient management. Every organization wants to use less power, less space, and less personnel while aiming at gaining more advantage and value at the same time. Virtualization is seen as the key enabler for organizations to achieve their goals of reducing the cost of running IT infrastructures while improving their levels of availability.

In recent years, server virtualization has evolved from a technology with significant usage in development, training, and test environments to one that also has a viable place in the data center. Space and power limitations in the data center have fueled a large consolidation movement, with server virtualization and clustering at the forefront.

While virtualization allows organizations to run multiple unique operating systems on the same physical host simultaneously, it also offers benefits in high availability and system portability. Naturally, the benefits come with tradeoffs. There is little room for error when it comes to managing data center resources. Understanding where each virtualization technology is best suited in the data center allows organizations to realize the benefits of virtualization without falling victim to its weaknesses.

IT organizations combining data center consolidation and server virtualization

reduction in physical infrastructures, organizations no longer have the capital and operational burden of running expensive DC and DR sites. The ability to take hundreds of legacy, often poorly protected servers and move them all to a fully clustered system at little additional cost and in no time at all, is also of huge benefit. On top of this, virtualization also allows virtual servers to be backed-up as a complete image. This further reduces the risk to the business, particularly for those services that are no longer supported by the vendor or the internal IT developers are long gone, and there are plenty of these cases around.

lack of budget, or certain certification requirements. In these circumstances it is generally recognized as good practice for applications with non-intensive workloads to use server virtualization in order to maximize consolidation.

However, where maximizing consolidation, availability and agility are paramount; a combination of server virtualization and grid-based solutions are the best way to maximize the benefits of consolidation, availability and agility. Working in tandem, they can ensure enhanced server virtualization, the ability to dynamically scale within and across nodes,

## Many enterprises are going virtual in most of their IT implementations and this is mainly being driven by the new data center management approach; consolidation of all data center resources for a more effective and efficient management

must understand how the sequence of consolidation operations (i.e., server virtualization before, during, or after data center consolidation) can impact different aspects of the project. With that understanding, an institution can make the best choice for its particular set of circumstances.

A successful combination of server virtualization and data center consolidation yields benefits, including a flexible infrastructure, efficient use of IT resources, reduced costs, and a better posture for adoption of cloud-related services. In my opinion, the best path to this “consolidation nirvana” is to perform server virtualization before data center consolidation. At its very core, virtualization offers three key features that can greatly enhance most data center and business continuity strategies:

- a) The ability to provide high availability, both local and remote, across a far broader range of service tiers.
- b) The abstraction of services (compute, storage, network and application) from the underlying infrastructure, enabling greater levels of flexibility.
- c) Through consolidation and the resulting

In the early days, before many of the new toolsets became available, the ability to replicate many virtual servers from one site to another was great but the recovery process was complex. It involved a significant number of manual processes or a very complex set of scripts that required modification every time a change was made. Today, as greater numbers of automation tools hit the market, DR for instance is becoming a ‘push-the-green-button’ solution requiring fewer and fewer administrators. This level of automation simply wouldn’t be possible without virtualization technologies.

Taking this one step further, the days of having specific DC and DR strategies for unplanned disasters could be a thing of the past as more and more technologies have business continuity solutions built in by default. Cloud storage solutions, based on virtualization technologies, now enable data to be made available any time any place, regardless of where the critical failure happened.

More still, some enterprises may not be in a position to deploy a grid infrastructure. The reasons for this may be one of enterprise size, footprint size, IT policy, outsourcing,

and the dynamic resizing of virtual nodes.

The benefits of virtualization in being able to reduce costs for large-scale organizations are undeniable. However, while server virtualization has brought major benefits, it can also introduce potential vulnerabilities. In a physical server environment, loss of a single server has significantly less impact than in the virtual world where, workload dependant, the consolidation ratio of virtual machines running on a single physical server could be in the 10-15x range. A physical server failure can affect all of the virtual machines and applications running on that piece of hardware. Similarly failure of the virtualization layer itself impacts all running virtual environments.

The complexity of this scenario grows as organizations standardize on server virtualization and deploy tier one applications in a virtual server environment. In short virtualization, while hugely effective in what it does, is not enough on its own to provide safeguards against unplanned downtime. Furthermore, while server virtualization can address consolidation at the server level, it can be found wanting at the level of storage, data and applications. **ET**

# Revolutionalize your onsite customer service

The VasTech Wavetech eQ system is a turnkey solution for companies that want to dramatically improve customer service and increase employee productivity while enhancing the management decision making process. The system has been widely used by top performing companies in various industries like banking, public service, media, diplomatic missions. In Uganda it is used by Emirates Airlines.

## A: Improving the customer experience

|  |  |  |   |
|--|--|--|---|
| <p>Customer arrives at the eQ Ticket Dispensing Unit (TDU) at a help desk or reception</p>   | <p>Alternatively customer is served at a Touch Screen TDU offering up to 64 services</p>   | <p>Waiting area Status Display Unit (SDU)</p>  | <p>Multi-lingual Counter Display Unit (CDU) suspended or wall mounted</p>   |
|    |    |   |   |
| <p><b>Problems proactively solved</b></p> <ul style="list-style-type: none"> <li>Instant service: Customer issued ticket with unique customer call number</li> <li>Marketing: Ticket branded with company logo and slogan</li> </ul> | <p><b>Problems proactively solved</b></p> <ul style="list-style-type: none"> <li>Customer guidance: Screens provide easy step by step procedure</li> <li>Marketing: Engaging dynamic promotional videos</li> </ul> | <p><b>Problems proactively solved</b></p> <ul style="list-style-type: none"> <li>Customer knows their position in the queue</li> <li>Customer number and service point announced</li> <li>Customer is entertained by multimedia on LCDs</li> <li>Marketing messages</li> </ul> | <p><b>Problems proactively solved</b></p> <ul style="list-style-type: none"> <li>Customer instantly knows which service point to proceed to as next customer number is displayed</li> </ul>   |
| <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>Customer feels valued</li> <li>Increased awareness and remembrance of company brand</li> </ul>   | <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>Reduced labour needs</li> <li>Elimination of arbitrariness in procedure</li> <li>Awareness of other products</li> </ul>                              | <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>Reduced customer anxiety replaced by relaxation</li> <li>More customers served as confusion is eliminated</li> <li>More opportunities to sell other products</li> </ul>  | <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>Efficiencies in customer service in terms of saving time; minimizing confusion;</li> <li>Customer comfort is increased when display is in a language they understand</li> </ul> |

The challenge for many businesses that regularly service huge crowds like those found in places of entertainment, fast food restaurants, government offices and banking halls, is how to effectively service customers by reducing waiting times, engaging customers while they wait and minimizing employee stress to improve productivity.

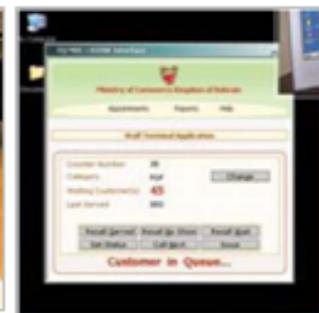
Manual systems of customer service

include the traditional queues which are often fraught with problems like queue jumping, customer impatience; confrontation of tellers and confusion regarding service points.

Electronic queuing systems such as that pioneered by VasTech partnering with Wavetech are specifically designed with a clear understanding of both worlds- the company which attempts to satisfactorily

serve as many customers as possible and the customer who wants to spend as little time as possible in the queue while having their needs met. Telecom companies for example by nature of dealing with numerous customers regularly are prone to these challenges and therefore would find immediate benefits from using electronic queue technology.

**B: Improving employee productivity and management decision making**

|  |  |  |  |
|--|--|--|--|
| <p><b>eQ Teller Station Units (TSU) for managing customer queues</b></p>   | <p><b>eQ Soft – TSU enables staff to manage queue from desktop</b></p>   | <p><b>eQwave Reporting tools runs on Windows PCs on a Local Area Network</b></p>   | <p><b>Central Reporting tool for Dashboard view for multiple locations or branch offices</b></p>   |
|   |    |   |    |
| <p><b>Enhancing employee effectiveness</b></p> <ul style="list-style-type: none"> <li>• Gives teller information about queue status</li> <li>• Displays ticket number to be served</li> <li>• Added functionality for issues like Wait, Transfer, Priority Call</li> </ul> | <p><b>Enhancing employee effectiveness</b></p> <ul style="list-style-type: none"> <li>• Allows customization for unique requirements like real time reports</li> </ul>                 | <p><b>Enhancing management effectiveness</b></p> <ul style="list-style-type: none"> <li>• Saves all records-queue and service in real time along with live graphical presentation</li> <li>• Generates post data analysis reports</li> </ul>                               | <p><b>Enhancing management effectiveness</b></p> <ul style="list-style-type: none"> <li>• Provides summary on tickets served, average waiting times, serving times</li> </ul>  |
| <p><b>Employee Benefits</b></p> <ul style="list-style-type: none"> <li>• Provides employee with some degree of control</li> <li>• Reduces employee stress</li> </ul>   | <p><b>Employee Benefits</b></p> <ul style="list-style-type: none"> <li>• Reduces employee overload during peak hours since employees do not have to manage multiple devices</li> </ul> | <p><b>Management Benefits</b></p> <ul style="list-style-type: none"> <li>• Helps prediction of customer flow for seasonal preparations</li> <li>• Monitor employee efficiency</li> <li>• Generate periodical reports quickly</li> <li>• Measure service quality</li> </ul> | <p><b>Management Benefits</b></p> <ul style="list-style-type: none"> <li>• Provides actionable information for management to decide areas and locations for improvement;</li> <li>• Solve service problems before they escalate</li> </ul> |



## Building blocks for every business...

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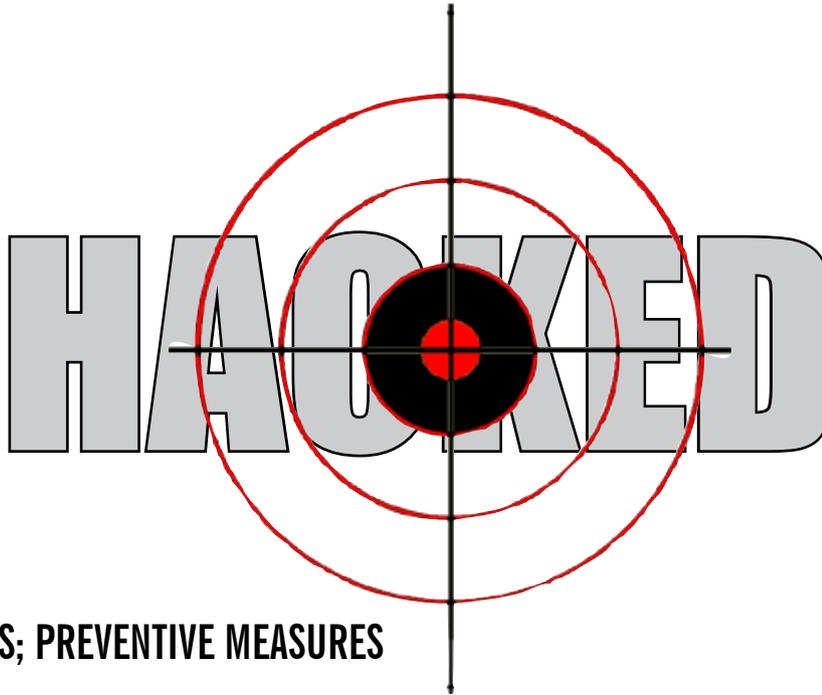
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## WEBSITE ATTACKS; PREVENTIVE MEASURES

Douglas Onyango

It's every website master's nightmare, getting hacked- worse still not being able to put the site down for days.

A couple of years back when we attended Internet Governance meetings, all we did was discuss access and connectivity, security and privacy issues that the early adopting nations grappled with, we only mentioned in passing. This is fast changing thanks to the efforts of groups like YOGYACARDERLINK, REALQW, and C4UR who have made it their business to wake up East Africa with their relentless hacking attempts.

### Problem

Employing various methods, these groups have and continue to fell targets at alarming rates; The targets include Government, NGO, Businesses. Name it, they have all got a pinch on the ear from this very unequivocal teachers who occasionally leaves messages like "Where is your security!" on hacked sites. Now, whereas the Target selection seems random, the success rate of these attacks

are astounding. This begs the question, what is common about these target and why are these miscreants succeeding on this very malevolent quest?



### Background

To answer this question, a few points may be helpful:- 1. Most of the targets felled are websites, 2. Nearly all the hacked sites use CMS's – particularly Joomla and 3. Nearly 90% of the time a SQL injection is used with success.

### Solutions

Let us see how we can protect ourselves

against some of the most common forms of attack.

### Security Framework

The first and most important aspect of online security, is a security framework. This is a blueprint and without it, website developers and Admins will be unable to develop, or maintain secure web applications. This document will usually have access levels, file permissions among other best security practices. It is critical that a corporation involved in any sort of development on the web embed this into every single undertaking. Incidences at Facebook and Twitter are a living testimony of what can happen if security measures are not adopted earlier in the development life cycle.

### Update Web apps

Content Management Systems (CMS), have greatly improved the speed and manner in which we design, build and deploy websites and other web applications. Because of this, businesses have shifted their focus to rapid deployment and getting as much info out there as possible. The unintended

consequence is that security is generally overlooked. Fortunately most of the commonly used CMS' :- Joomla, Drupal, Wordpress to name three, allow for automatic updating of modules or extensions. If you use a CMS be sure to enable updates so that modules with flaws are fixed immediately a vulnerability fix is found. This can drastically lower your attack surface.

### Rewrite URLs

With Google Hacking, a search term like "inurl:com\_contact" can be used to find vulnerable hosts on the internet. If your url's are in their original form they could expose you to real threats. The good news for you is that most CMS today have modules to rewrite your url from something like "test.ug/index.php?option=com\_content" to "test.ug/

### Changing Default Passwords

During installation CMS' will setup a default password. You must ensure you change these as these trivial passwords, like "Password", "Admin" are known by anyone who has ever done an installation, let alone the hackers. You open up your website to the possibility of a complete take over by leaving your passwords at the default. Choosing a long, hard to

Content Management Systems (CMS), have greatly improved the speed and manner in which we design, build and deploy websites and other web applications. Because of this, businesses have shifted their focus to rapid deployment... The unintended consequence is that security is generally overlooked

### Database Prefix and Version Numbers

Many Sql injection tools are written to exploit CMS's in their original form. Take Joomla for instance:- it's nomenclature has a Database prefix of (jos\_). A change in the Database prefix alone will make any SQL exploits on your Database fail most of the time.

And speaking of original form and Joomla, extensions have vulnerabilities in particular versions and hackers usually abandon a target if reconnaissance gives unreliable information or none at all. By removing the version numbers from your extensions, you lower your chances of being attacked in the wild to nearly zero. You also create far more work for the targeted attackers given how much gambling the attacker has to do.

### Sanitize User input

A SQL injection occurs when a site is unable to preserve it's query structure given certain forms of input (usually malicious). The Web application executes a query that otherwise shouldn't have been processed resulting into malicious attacks. Sanitization includes excepting URL's parameters from being executed and blocking operations that write, delete from the DB.

index.php/sponsors.html". The later is easier to read, index for search engines and conceals the Web applications components offering you security in the process.

### Permissions

During installation and updating of CMS's, it is common for the modules to write to certain files and directories. It is also common place especially for the less adept Web Admin to allow more permission than is required in an attempt to make administration easier. This creates the potential for upload and execution of files should an attacked be mounted on you. Always allow just sufficient permission to modules, anything over and above can be misused. Also ensure you downgrade these after installation if your modules really require a privilege escalation.

As a standard:- Your PHP files (.php extension), should be set with a mask of 644, Configuration files (.conf) should have the mask set at 666 while other files should generally maintain the 755. Use of the .htaccess file in most webserver environments – especially Apache will allow you make directory level changes and keep the changes uniform across the board.

guess alphanumeric password combined with special characters will go a long way preventing you from getting hacked.

### Testing Web Apps

Even with the best security framework and practices, it is possible to omit certain parts of you applications security. The solutions is vulnerability testing. This can cater for our human flaws. There are myriads of tools available today - both free and premium with some being complex to install or even requiring Linux to run, while other are as easy as a Firefox Addon. At the end of the day it depends on what you want to achieve. An example of freely available Firefox addon is "SQL Inject Me". This will crawl your Webpage and test Form fields and other things for SQL inject vulnerabilities and present you a report at the end of the scan which usually lasts only a couple of minutes. **ET**



SQL INJECT ME FIREFOX ADD-ON



## IMPROVE YOUR WEBSITE RANKINGS

With the exception of Facebook, Google and other internet giants, most businesses have over 30,000 online competitors. In order to attract web traffic to your business site, you have to employ innovative approaches to stand out from the competition. When a user types a key word in a search engine, over 10,000 results are displayed, less than 5% of the users will go to the next page, so its important to be on the first page, which is not an easy feat..

Cavin Mugarura

**S**earch engines employ a myriad of parameters to display sites on the first page, in order to improve your web ranking, take note:

**1. Content is king.** Websites that update their content frequently are able to gain favorable ranking and even more if they have unique copy not marketing jargon. And when it comes to content, pictures do not count unless they are html tagged. A great way to incorporate good lengthy content is to include relevant PDFs for download in your site. If you lack useful PDF content then it is crucial that you employ a professional copy writer who understands your business and what keywords users search for in relation to your business.

**2. Incorporate RSS feeds.** RSS stands for Really Simple Syndication, and it's an effective way to amalgamate content from other sites for your users. It's important to check the feeds for relevance.

**3. Keywords.** You need to have a Search Engine Optimization (SEO) checklist plugin, which can check that your website is search engine friendly. Search engine optimization is a process that

involves adding keywords, meta tags and descriptions to your content and images.

**4. Images.** When using images do not embed text in them because search engines cannot read embedded text. Instead use the 'ALT' tag and give your images descriptive names relating to your primary business on your website. Instead of leaving default names like 'IMG325.jpg' instead rename it to 'Girl making African crafts'. Also take note that you give image dimensions in the source code so the web browser can begin to render the image immediately since it knows its dimensions. This will help speed up the opening of your pages.

**5. Web standards.** Ensure your site complies with global standards such as web accessibility standards developed by the World Wide Web Consortium (W3C) to enable people with special needs like the disabled to access it.

**6. Flash with keywords.** Contrary to popular belief you can use flash if you incorporate text keywords relevant to your site into it and keep it short otherwise many people find it irritating.

**7. Review.** Visitors to your site will close your site quickly if they find broken links. They believe that broken links show the information is probably not fresh or relevant or the webmaster has not been there in a long time. It is vital therefore to have an independent review of your website to ensure you dont have any broken links and that navigation is easy.

**8. Useful freebies.** Reward your website visitors with some freebies like manuals, videos, to keep them coming back to your site for additional useful giveaways. This improves traffic to your site which improves rankings.

**9. Directories.** After designing spankingly beautiful websites a critical stage is usually neglected- submitting the site to leading directories and search engines. It can take up to several weeks before your site is listed in these directories and ignoring this step can result in very low rankings.

**10. Incorporate Social Media** networks into your site to drive more traffic as web visitors can recommend your content to millions of people via these networks. **ET**

## TREND WATCHER: MOBILE MARKETING

Although mobile marketing has received its share of bad press- from clients frustrated about the lack of useful databases to reach high value prospects, to message recipients complaining about unsolicited messages, the biggest problem is the lack of understanding of how mobile marketing should be done. Thus the launch of The Mobile Marketing Association, (MMA) (www.mmaglobal.com) Council in East Africa on March 8th in Nairobi, Kenya is a good indicator that East Africa is largely ready to embrace mobile marketing as an integral part of the marketing mix. The event which brought together media agencies, mobile telecom service providers, and leading brands in East Africa sought to establish partnerships and according to the East Africa Mobile Marketing co-Chairman, Frank Maina, "we will work to make the mobile marketing landscape across East Africa a lot more visible and easy to navigate."

**MUST ATTEND: Mobile Web East Africa: 25th-26th May 2011, Nairobi, Kenya**



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## The benefits of Social Media Marketing

Source: Social Media Marketing Industry Report © 2009 Michael Stelzner



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