Title: Uganda Update (Nurturing a Nascent NREN)

Theme: Challenges of building and operating NRENs in Africa.

By: Isaac Kasana, CEO Research & Education Network for Uganda
Initial Challenges encountered by RENU

- International connectivity still very costly
- Very Fragile Financial State
- National Infrastructure (NBI) not fully operational.
- Connectivity gaps in inter-town fiber
- Infrastructure management in state of quagmire
- Costly Last-mile Options
- Even where there is fiber coverage, poor availability
- Unreliable Power in upcountry locations
- Changing regulatory environment
- Very Low National competitiveness
- Inadequate Network Engineering skills
- Waning Cooperative/Collaboration Spirit
- Poor bill-settling culture leads
Operational Status as at Q3 of 2013

- High cost of Internet connectivity  
  @ US$ 630/Mbps
- Typical Inter-city point to point  
  @ US$ 330/Mbps
- Weak RENU Financial position  
  Still in red (had raised only 30% of amount needed for AC contribution).

- Sparse upcountry connectivity

Only small sections of NBI were usable & ISP capacity was still too expensive.

Last-mile (privately laid) @ $10,000

<< General Infrastructure state: Quagmire

RENU grant equipment withheld by former (BWC) Partner.

At end of Q3, regulator topped up RENU’s subscription & made it eligible to participate in AC1 (spark).
3 Key Transformative Actions

- Regulator supplemented RENU contribution to AC resulting in its access to international connectivity through AfricaConnect.

- RENU negotiated & entered into agreement with Google Project Link: This yielded more affordable last mile options @ 1Gbps for RENU.

- Regional & National Capacity Building Support encouraged faster membership growth & revived collaboration & buy-in.
## Summary of challenges & how they were addressed

<table>
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<tr>
<th>Challenge</th>
<th>Remedy</th>
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<tr>
<td>International connectivity still very costly</td>
<td>AfricaConnect Intervention</td>
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<tr>
<td>Very Fragile Financial State</td>
<td>Frugal &amp; Sacrificial Service</td>
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<td>NBI not fully operational.</td>
<td>Coax NITA &amp; improvise where needed</td>
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<td>Connectivity gaps in inter-town fibre</td>
<td>Make bridging arrangements via other PIP</td>
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<td>Available Infrastructure in quagmire</td>
<td>Project Link intervention</td>
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<tr>
<td>Costly Last-mile Options</td>
<td>Project link for metro &amp; best fit upcountry</td>
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<tr>
<td>Low local-connectivity resilience</td>
<td>Project link network design is resilience</td>
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<tr>
<td>Unreliable Power in upcountry locations</td>
<td>Where needed augmented with Solar</td>
</tr>
<tr>
<td>Changing regulatory environment</td>
<td>Caution &amp; Consult widely &amp; frequently</td>
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<tr>
<td>Very Low National competitiveness</td>
<td>Patience &amp; slower unit price reduction</td>
</tr>
<tr>
<td>Inadequate Network Engineering skills</td>
<td>Intensive Capacity building Support</td>
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<tr>
<td>Waning Cooperative/Collaboration Spirit</td>
<td>DEAs had great impact, VCF &amp; supportive friends helped a lot.</td>
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<td>Poor bills-payment Compliance rate</td>
<td>Case by case handling, harnessing any sympathetic contacts.</td>
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Progress at start of Q1 2015

January 2015

Legend:
- RENU PoP
- Member Campus
- Existing Link

K’la PoP 2
CoHS Mulago

MUHIMBI

K’la PoP 1
Statistics H’se

RENU PoP
Mbarara

RENU PoP
Kabale University & UCU Kabale

MUST

12 Campuses in Kampala & Central Ug.

3 PoPs, 16 Campuses, NOC ~ 420 Mbps internet traffic
RENU Current Status

- Number of PoPs is now five including one in Entebbe and now there is PoP redundancy (2 PoPs) in the Kampala metro-area.
- Network monitoring service now active.
- Connected Sites have exceeded 20.
- Internet traffic has reached 550Mbps.
- More than 30 institutions’ campus network support staff have benefitted from network engineering training.
- 5 Campuses have benefitted from DEA.
- Hosting services are now available.
Lessons

- NREN development requires endurance.
- It is important to get local-network growth & human capacity-building right.
- Collaboration & partnerships are vital assets for NREN growth.
- Establishing Cooperation is as harder as it is important and clear communication & coordination are essential for success.
- Sole provider situations with private-sector players increases the risk of poor QoS.
RENU near-future growth goals

- Grow Aggregate Usage beyond 1Gbps To drive bandwidth unit-price down.
- Support commencement of federated services
- Introduce other payable services to allow room for further bandwidth unit-price reduction & achieve set price targets.
- Partner with some colleges for early-bird NE skills training for some undergraduate students.
- Develop Partnerships with some local corporates.
- Explore ways to Cater for “RED” needs of the wider community.
- Establish a RENU “Innovation Hub”
Addressing R&E Networking Challenges in Africa has been like Holding Hands Across the Globe to Bridge the Gap

Thank you