Promoting African Research & Education Networking – Internet Bandwidth Challenges and Opportunities

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for the IDRC
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Higher Education Institutions in Africa

ATICS
83 Institutions

PAREN
646 Tertiary Institutions Mapped

Bandwidth:
1) Too Little
2) Too Expensive
3) Poorly Managed

Division between research and education

Source: Paul Hamilton, PAREN Study
Average Bandwidth Costs

Source: ATICS Survey 2004

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean Cost $USD/Kbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Africa</td>
<td>8.00</td>
</tr>
<tr>
<td>Average</td>
<td>5.46</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>4.70</td>
</tr>
<tr>
<td>East Africa</td>
<td>4.38</td>
</tr>
<tr>
<td>Central Africa</td>
<td>3.63</td>
</tr>
<tr>
<td>North Africa</td>
<td>0.52</td>
</tr>
<tr>
<td>US University</td>
<td>0.12</td>
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</tbody>
</table>
Terrestrial/Sea Networks Growing

Source: IDRC
Planned Backbone Expansions

Source: IDRC
Satellite coverage increasing

Currently 13 satellite operators have 51 satellites deployed with coverage over Africa

Source: IDRC
African National Networks - Examples

Morocco

TENET

Tunisia

KENET

NUNET

Tanzania

Other NRENs include Egypt, Malawi and Algeria
Other multi country networks involved with/proposing bandwidth purchasing include SARUA, Mimcom
Bandwidth requirements and potential consortium savings

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**Estimated Total Bandwidth Requirements**

- Bandwidth required: 816 Mbps
- Current bandwidth: 59 Mbps

**Annual Cost of Bandwidth for 65 institutions**

- Expected yearly consortium cost of bandwidth for 65 institutions: $1,456,848
- Annual Cost of Bandwidth for 65 institutions: $2,906,568

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Consortium can reduce costs by 50%

Requirements are over 10 times current available
Potential Consortia

- All Africa VSAT Consortium
- SAT 3 Consortium
- EU Med Connect
- East African Fibre Consortium
Barriers and Solution

Primary barriers to effective communication in African universities

- Available bandwidth (both cost and quantity)
- Adequate systems management, and
- Regulatory issues.

A Consortium - centrally managed network using (at this time) satellite technology would address all these issues.
VSAT Consortium Options

- **Types of Consortium**
  - Multiple regional consortia
    - Established Entity takes the lead – i.e. AVU (The African Virtual University)
    - New independent entity
      - French, West Africa, Health etc
Recommended Structure

Key Characteristics

- Independent board to ensure fairness and focus on best interests of the network as a whole

- Small operational staff focused on contracting services and management

R. Steiner, K. Gakio
Learning from other successful models

- Initial Donor/Government Funding important
- Consortium must negotiate with governments to eliminate license fees and monopoly pricing – diplomacy key
- Consortium governance must be non-profit, participatory and transparent
- Partnerships with private sector can be beneficial
- Sustainability must be built into the model