IXPs | Considerations and Best Practices (some)

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Port Moresby, Papua New Guinea
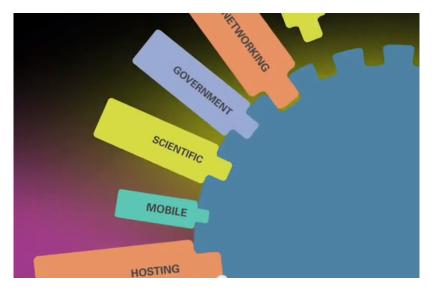
The Opportunities

- Local hosting and content development e.g Google Cache model
- Approach the existing content providers like the online newspaper company and suggest that they consider local hosting as an option.
- Develop the hosting products
- Reviewing the current hosting solutions and products available
- Working in partnership with local web developers
- e-Government Services
- Building carrier neutral datacenters
- Relevant local content
- Develop local language content for e-learning, e-government services, IPTV and Software solutions.
- Regional interconnection - peering and transit opportunities.
- Voice Over IP Services

Internet Society

Location and Neutrality

- Location and neutrality are critical "deal breakers" for the establishment of the IXP.

- **Reach consensus on** a potential location and **neutrality of the IXP**

- Note: Content from AXIS I Best Practices Workshops

Location

- **Location is very important**

- **The IXP location should be neutral and low cost**

- **In considering the location of the IXP – these factors should be considered:**

  ✓ **Space**

  ✓ **Environmental Control**

  ✓ **Security**

  ✓ **Power**

  ✓ **Access to terrestrial infrastructure**

  ✓ **Cabling**

  ✓ **Support**

Neutrality

- All IXPs are **owned and managed neutrally** with respect to all operators (members and non-members.

- Many ISPs have expressed strong feelings about the importance of neutrality of IXPs.

- IXPs generally abstain from carrying out any activity that may compete with member business activities or opportunities.

  - If an IXP competes with members, it may lose member support.

- The Important Point is that the ownership and management of the IXP should always remain netural

Ownership

- Many IXPs begin with donations of equipment, rack space, labour, and other assistance. This is part of the cooperative nature of most start-up IXPs.

- For donations, written agreements are necessary to define the transaction and ownership thereafter.

- Neutrality can be at stake if one member owns parts of the IXP.

- Therefore the IXP should always maintain ownership and responsibility of its assets.

Key Considerations l Location, Neutrality, Ownership

Location's Neutrality

- The ownership of the facility that houses IXP location is often a cause for mistrust. It is often viewed that if a member hosts the IXP, they stand to benefit more than others.

- For instance when other members pay circuits to the IXP the host does not pay circuit leasing costs.

- In such an case the member should offer the hosting service at no cost to the IXP and its members.

- Meaning the host pays costs associated with hosting the IXP equipment such as power, cooling, security, etc.

Location Costs

- In some instances the members may feel very strongly about being hosted in a members facility.
- In such cases the ideal situation is to find a neutral facility. There are two types of facilities;
  1. **A carrier neutral data center**
  2. **A non-data center facility neutral to all members**
- Type 1; may require an initial infrastructure investment for rack
- Type 2; will require initial infrastructure investments on power backup, air conditioning, security, racks, etc.
- Both types are subject recurring monthly operational costs unless paid for by the respective hosts.
- In most African countries Carrier Neutral facilities are not available
- Many IXPs that have started with type 2 have outgrown the space over time requiring them to move. Moving an IXP is not a simple task.
- These considerations are important to make the right decision on the location from the start

Location Requisite Priorities

- Not all locations will meet the IXP requirements discussed earlier

- Therefore some flexibility is necessary to settle on a location

- The priorities that should be given to any location are in the following order;

  1. Space
  2. Reliable Power supply
  3. Access to terrestrial infrastructure
  4. High-sight for wireless connectivity
  5. Security

Business Models

Option 1: Free IXP

- The Uganda IXP (UIXP) and Seattle IXP are good examples of IXPs modeled on the Free business model

- The IXP location is donated or paid for by a willing sponsor.

- No membership, joining or monthly fees are charged to IXP participants

- Members contribute (donate) equipment, money, human resource and time to the IXP based on their ability and the needs

Option 1: Free IXP ... (cont'd)

- **Pros;**
  - Low cost of peering for members with no additional costs other than capacity to IXP
  - Low operating costs for the IXP organization
  - Volunteer driven; less complexity on organizational structures and management
- **Cons;**
  - Difficult to scale growth when largely dependent on donations and contributions.
  - Inconsistencies and inefficiencies can arise when dealing with volunteers
  - Neutrality concerns can arise where one member is the largest contributor

Option 2: Subsidized Business Model

- The Nigeria IXP (IXPN) and Malaysia IXPs are good examples of IXPs modeled on the subsidized business model

- Certain aspects and operational costs of the IXP are met by a sponsor for a sustained period of time.

- In most cases the Governments through development fund subsidize the IXP operating costs

- The IXP meets some of the operating costs by charging members a nominal fee.

Option 2: Subsidized Business Model …. (cont'd)

- **Pros**
  - Low-medium cost of peering for members in addition to the cost of leasing capacity to the IXP
  - Sustained revenue to meet operational expenses
  - Easy to scale and grow due to ability to implement and maintain management/operational structures

- **Cons**
  - Uncertain future should subsidies be withdrawn or main sponsorship lost
  - Neutrality or fear of capture/control by main sponsor
  - Increased commitment for members on Governance aspects and reporting to sponsor
  - Complex operational structures and management

Option 3: Independent Business Model

- The Kenya IXP and Johannesburg IXP are good examples of IXPs modeled on the independent business model. Most developed IXPs in Europe have an independent business model.

- All aspects and operational expenses of the are met by the IXP.

- The IXPs generate revenue by charging fees for the services provided on a monthly, quarterly, bi-annually.

- Additional revenues from value added services, one-time fees, etc

Option 3: Independent Business Model

- **Pros**
  - Neutrality of the IXP is guaranteed in a self-sustained model
  - Sustained revenue to meet operational expenses
  - Easy to scale and grow due to ability to implement and maintain management/operational structures

- **Cons**
  - Medium-high cost of peering for members in addition to the cost of leasing capacity to the IXP
  - Increased commitments for members on Governance issues and reporting
  - Complex operational structures and management

Additional Best Practices

- Work with local Government

- Know legal and regulatory parameters in advance of getting started

- Obtain ASNs and IP Addresses from APNIC

- Partner with Internet organizations/others for mentoring opportunities

- Avoid giving members "weighted" roles – equals at the IXP

- Encourage Google cache at IXP

- Check your fuel and energy "cut-off" situations

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