IXP AND CACHING WARRANTS REVIEW OF BROADBAND SUPPLY

Overview of Broadband Networks
- Broadband Provider classes
- Defining what is meant by an IXP

Pros and Cons of Establishing an IXP
- Benefits and Cost of Establishing an IXP
- Countervailing Positions of ISPs

Exposing Anti-Competitiveness
- Importance Caching
- Populating the Cache

Recommendations and Conclusions
- Study the Submarine Cable Landing Industry
- Ensure fair rates for International Wholesale Bandwidth
BROADBAND PROVIDER CLASSES

- Two Classes of ISPs
  - Submarine Cable
  - Non-submarine Cable
DIFFICULTY IN OBTAINING DATA

- Customers are other telcos
- Reciprocal Agreements exist
- Capacity into and out of Dominica
  - >9 Gbps cumulatively
  - Traffic <2 Gbps
- Typically Responses
  - This information is confidential and highly sensitive
  - Confidentiality covenants exist with subscribers

Questions:
- Price of service?
- Customer Bandwidth?
- Total Revenues Earned?
- Actual Capacity used?

Act & Regs
Submarine Cable Operators
NTRC
IXP ESTABLISHED

Cost/Cons

- Capital Outlay US $15K
- Monthly cost < US 2K
- Potential Revenue Loss for submarine cable ISP
- Time ~ 2 Years

Benefits/Pros

- Global Partnerships
  - Google Global Cache
  - AKAMAI Cache
  - DNS Root Server mirror
- Efficient Routing of Local traffic
- Entrepreneurs have a local point of connection to all ISPs
- Reduction in Anti-competitive practices
  - Local content on Major ISP only
- Savings on International Wholesale Connectivity
- Manifestation of ISP Countervailing positions
- Increased Transparency on International Bandwidth Prices

DANIX
Very Small
200 Mbps Peak
5 Members

AMS-IX
Among Largest
1.1 Terabytes of traffic peak
> 300 Members worldwide
COUNTERVAILING POSITIONS ON IXP IMPLEMENTATION

Resellers of International bandwidth
- IXP results in potential revenue loss
- International Bandwidth is affordable
- Caching already implemented regionally

Consumers of International bandwidth
- IXP saves costs
- International bandwidth is expensive
- Global Partnerships for Caching realized
IMPACT OF CACHING

Internet Cable ISP Cache Local International Logical Topology

Cache Internet Populating the
POPULATING THE CACHE

• Tender Issued from DANIX (IXP) to all ISPs to Populate the cache
• Bids Received from two ISPs
  • ~1st Bid: 5000 USD/Month for 150 Mbps ~$33.00/Mbps
    • Plus a cost of $50,000.00 USD for anyone joining the IXP
  • ~2nd Bid: 13,000 USD/Month for 150 Mbps ~$86.00/Mbps
• Non-submarine ISP informed of Prices:
  • Pre-bid 2014: 80 Mbps ~$50,000 USD/Month ~$277/Mbps
  • Post-Bid 2015: 400 Mbps ~$60,000 USD/Month ~$150/Mbps
CONCERNS

• Price to non submarine cable ISPs and others is highly variable
• Price charged by submarine cable ISPs to themselves is unknown
  • Submarine cable ISPs share peering agreements
    • Free/cheap redundancy
• Submarine cable ISPs may be engaging in Margin Squeeze.
• Submarine cable companies are not forthcoming with data
  • Hide behind the veil of confidentiality agreements
• Submarine cable service is deemed a competitive service by ECTEL
  • Not subjected to regulatory price controls like the fixed line service
RECOMMENDATIONS

- Initiate a study into the cost of International Wholesale Connectivity
  - Fair Pricing
  - Collusion
  - Margin Squeeze
- Implement rate publishing measures of the Retail Tariff Regulations on Submarine Cable Operators
- Initiate the breaking up of vertically integrated Submarine Cable Landing Operations and Internet Service Providers.
CONCLUSION

- IXP is not equally beneficial to the submarine cable ISP and the non-submarine cable ISP.
- Bids received for populating of the cache revealed potential anti-competitive practices.
- Further studies and implementation of stricter measures on Submarine Cable Operators.
QUESTIONS OR COMMENTS

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