

# 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

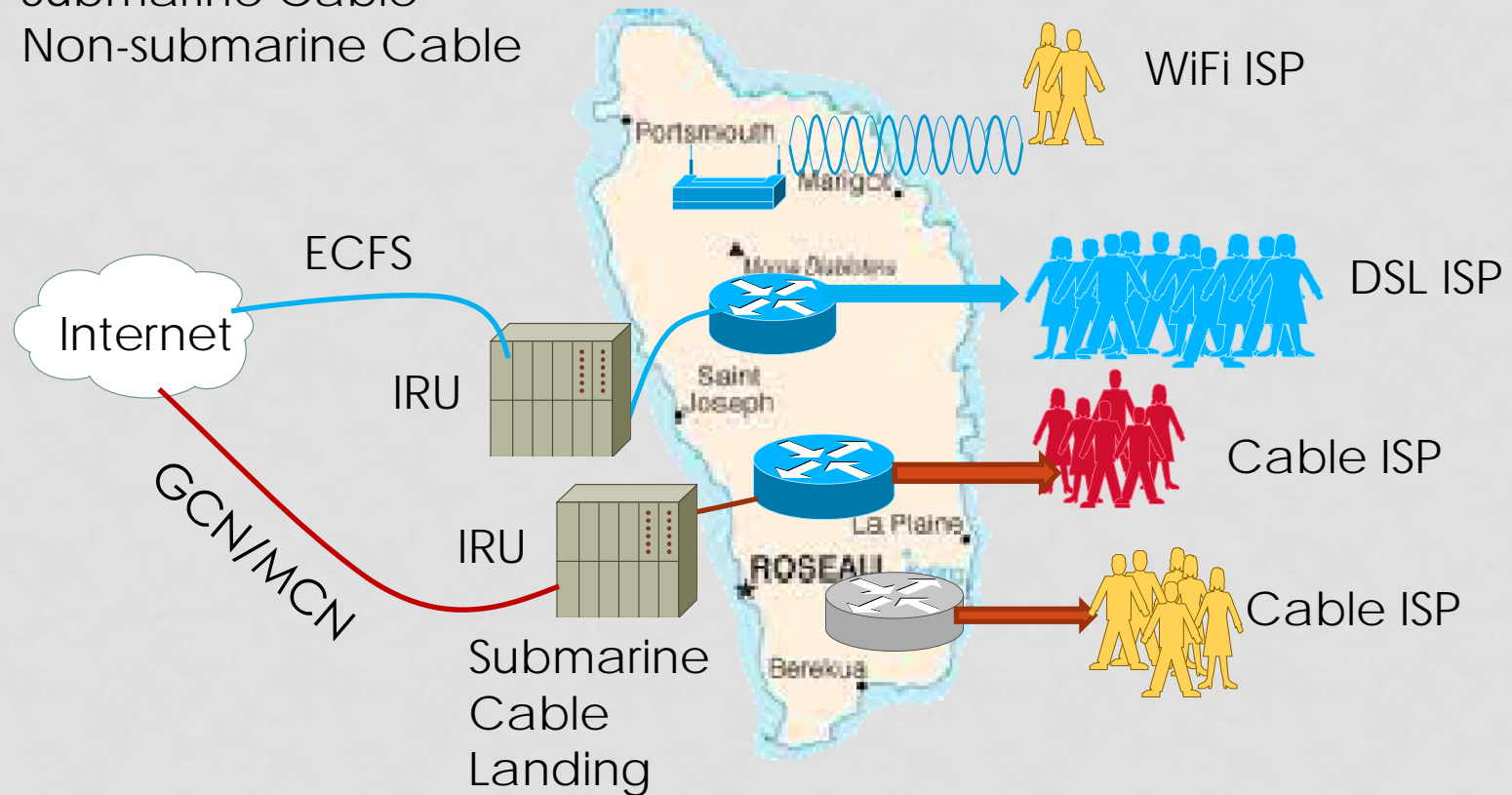
- Importance Caching
- Populating the Cache

## Recommendations and Conclusions

- Study the Submarine Cable Landing Industry
- Ensure fair rates for International Wholesale Bandwidth

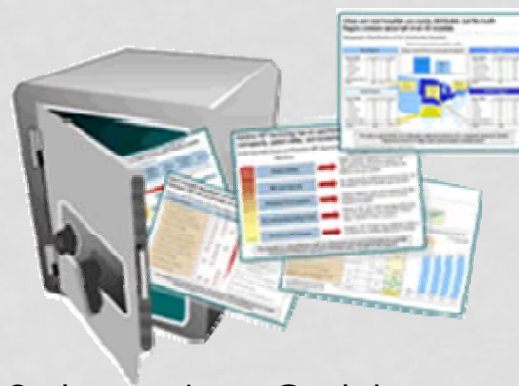
# BROADBAND PROVIDER CLASSES

- Two Classes of ISPs
  - Submarine Cable
  - Non-submarine Cable



# DIFFICULTY IN OBTAINING DATA

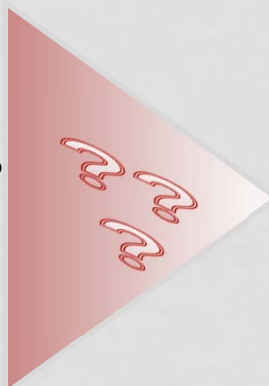
Act &  
Regs



Submarine Cable  
Operators

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

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



NTRC



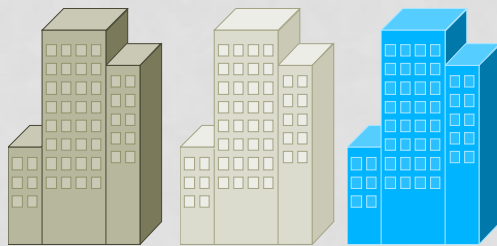
# IXP ESTABLISHED

## Cost/Cons

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



DANIX  
Very Small  
200 Mbps Peak  
5 Members



AMS-IX  
Among Largest  
1.1 Terabytes of traffic peak  
> 300 Members worldwide

## 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

# COUNTERVAILING POSITIONS ON IXP IMPLEMENTATION

Submarine Cable ISP

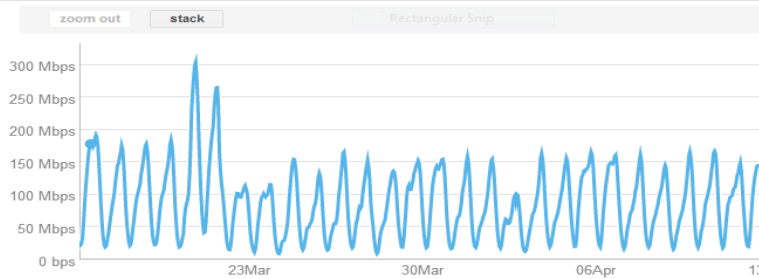
Resellers of International bandwidth  
IXP results in potential revenue loss  
International Bandwidth is affordable  
Caching already implemented regionally

Consumers of International bandwidth  
IXP saves costs  
International bandwidth is expensive  
Global Partnerships for Caching realized

Non-Submarine Cable ISP

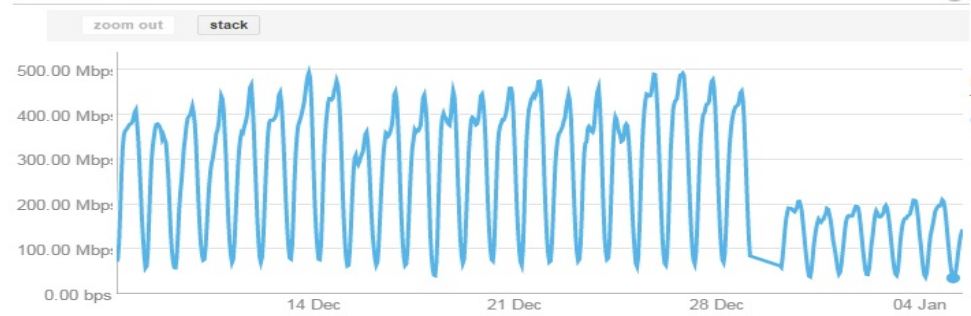
# IMPACT OF CACHING

Direct Traffic



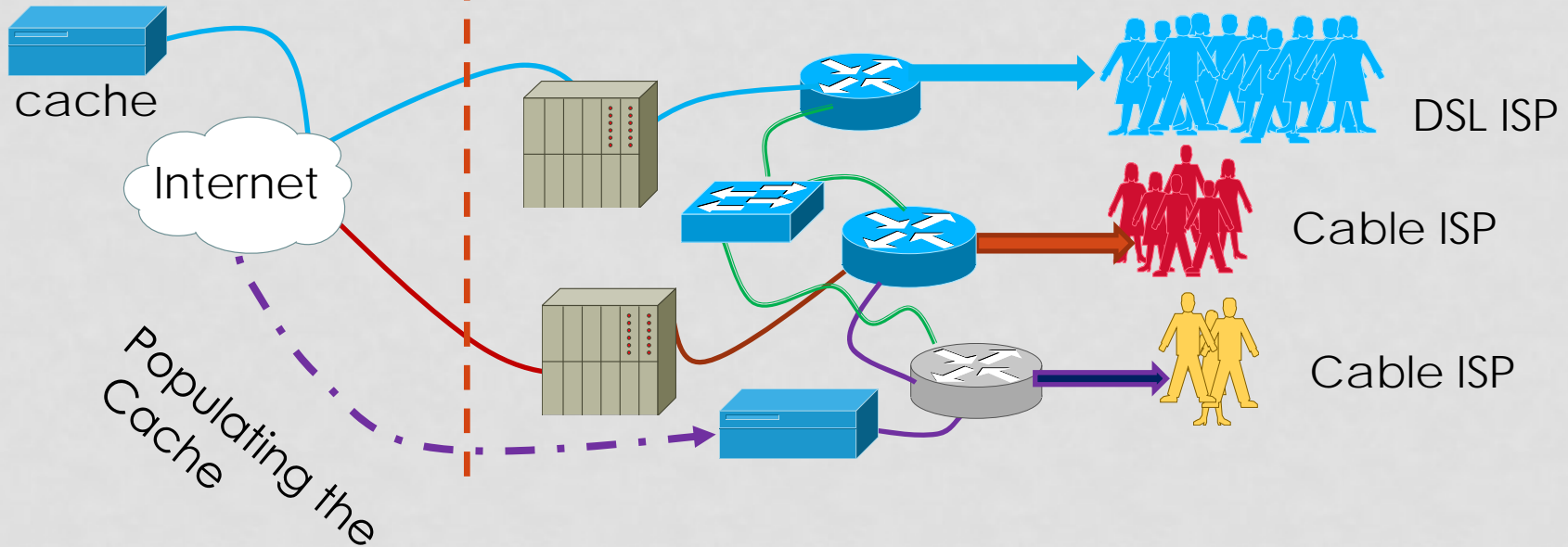
International

Direct Traffic



Local

Logical Topology



# POPULATING THE CACHE

- Tender Issued from DANIX (IXP) to all ISPs to Populate the cache
- Bids Received from two ISPs
  - ~ 1<sup>st</sup> Bid: 5000 USD/Month for 150 Mbps ~ \$33.00/Mbps
    - Plus a cost of \$50,000.00 USD for anyone joining the IXP
  - ~ 2<sup>nd</sup> 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

Craig Nesty  
Executive Director  
NTRC Dominica  
Email: [cnesty@ectel.int](mailto:cnesty@ectel.int)  
Mobile: 1(767)235 1245  
Office: 1(767)440 0627