ESTABLISHING PEERING ONE SMALL STEP AT A TIME

APRICOT 2012
27 Feb – 2 Mar
New Delhi, India
Our problems (so do many countries in AP)

- Incumbent monopolized the international gateway
- IPLC is expensive
- Difficult to obtain license
- Lack of understanding of international Transit/Peering
- Customers demands getting more sophisticated
THE SOLUTIONS — OR OUR SOLUTIONS

- Incumbent monopolized the international gateway
  - Liberalization of telecom market by regulator, BIG HURRAY!
- IPLC is expensive
  - We built our own cable system, BIGGER HURRAY!
- Difficult to obtain license
  - Not true, if we try hard enough anyone can get it
- Lack of understanding of international Transit/Peering
  - Everybody need to start somewhere
- Customers demand getting more sophisticated
  - Trying to make customer happy is a never ending job
**MILESTONES**

- **2000**: Company established
- **2007**: Domestic Peering IIX & OIXP
- **2008**: 08.08.08 MCS Launched
- **2009**: MCS Start Construction
- **2010**: CDN Boxes CDN Boxes CDN Boxes
- **2011**: Peering Live @EQX SG
- **2012**: Peering Live @HKIX
- **2012**: Next: ASEAN, AU, USA, EU

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As a domestic ISP: 2 Upstreams + 2 IX connection
- Transit was very expensive
- ID is fortunate to have IX since early days
- Own NSP license but IPLC price is insane.
TELECOM LIBERALIZATION BY THE REGULATOR

- 2 incumbent operators: Indosat and Telkom Indonesia
- Indosat control international, Telkom Indonesia control domestic
- In 2002 major telecom liberalization begun
- Booming of new player: ISP, mobile operator, IDD operator, Sub Sea Cable operator.
STUDY YOUR GEOGRAPHY

Tokyo – 5700km
HK – 3200km
Mumbai – 4600km
SG – 900km
Jakarta
Perth – 3000km
Sydney – 5700km
- FBO license (SG) and JarTaTup license (ID)
- Designed capacity 2.5Tb
- Gen 3 TYCO
- Distance 1,055 km
- 3 BU from Singapore to Jakarta:
  - To Batam, Indonesia
  - To Kalimantan, Indonesia
  - To Perth, Australia
- Repeater system
- Buried 1-10 meter
- Life span 25 years.
First International Node

- Pick the right DC
- Study your options carefully
- Every DC is unique

- 4 nodes in Singapore
- IX availability in nodes (peeringdb.com is good start).
Join the IX where your nodes located

Connected to Equinix Exchange – 1\textsuperscript{st} intl peering
  - Start with Fe, upgrade to Ge within 3 months
  - Peering events, peering list, lots of emails
  - Ge to 2xGe to 10Ge takes slightly longer

Connected to SOX – 2\textsuperscript{nd} intl peering
  - Port charge is FOC, ask for 1G immediately
  - Xconnect cost is $$$

Turn up multiple session whenever possible

Prioritize IX for traffic engineering

Ratio: 25% traffic coming from peering pipe

Life is good 😊
PRIVATE PEERING

- Explosion of mobile user + home internet became more affordable in Indonesia
- Private peering is the way to go
  - Shorter hop
  - Direct connection (no IX involve)
  - Rule: traffic ratio requirement
- Private Peering in nodes with least expensive cost (xconnect is $$$)
- Go for the highest port available

Ratio: 15% public, 25% private

Life is good 😊
STUDY YOUR GEOGRAPHY — ALWAYS

Major cable hub in NE Asia: HK, TW, KR, JP

1. HKIX @ HK
   - 166 G 101 1995

2. Equinix Exchange @ HK
   - n.a. n.a. 2009

3. TWIX @ Taipei, TW
   - 4.9 G 39 1997

4. KINX @ Seoul, KR
   - 71.9 G 42 1999

5. JPIX @ Tokyo, JP
   - 153 G 124 1997

6. JPNAP @ Tokyo, JP
   - 210 G 81 2001

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BEYOND SINGAPORE

- Shortest path, Cost effective, Matured IX = HKIX
- HKIX - [www.hkix.net](http://www.hkix.net)
  - Layer 2 IXP with mandatory MLPA for HK routes
  - One of the oldest IX in Asia
  - A healthy IX with very diverse participants
  - Port charge = FOC
- IPLC portion is no longer “Free”
  - SG-HK plenty of capacity
  - BW scaling must be plan carefully ( Fe > Ge > 10G )
  - Protection ?

Ratio: 20% public, 25% private

Life is almost perfect 😊
CDN BOXES

- CDN next to eye balls
- 2010, deployment of numerous CDN clusters
- Same rule: traffic ratio requirement
- Win-Win solution:
  - CDN distributed content closer to eye balls
  - Our customer enjoy better surfing experience

Ratio: (Peering+CDN boxes) : Transit = 55% : 45%

Life is almost perfect 😊
Peering traffic ratio
- More BLPA on existing IXs
- More CDN companies + upgrade of current CDN deployment
- More IX presence: ASEAN, AU, USA, EU

Traffic Engineering
- Routing issue (asymmetric routing)
- Increase efficiency
PROBLEMS ALONG THE WAY

- 1st International Node
  - Very expensive start up cost (Cable Construction, Nodes setup, etc)

- Public Peering Exchange
  - New kids on the block, nobody know us

- Private Peering
  - Router/Switch ports and Xconnect (who pays what)

- CDN Boxes
  - Convincing content operators

- Beyond Singapore
  - Layer 8 issue (persuading the upper management)
GOOD TOOLS

- PCH IX DB  - https://prefix.pch.net/applications/ixpdir/
- PeeringDB  - http://www.peeringdb.com
- HE BGP    - http://bgp.he.net
LESSONS

- \((\text{Transit} \rightarrow \text{Peering}) = \text{FALSE}\)
- Peering quality could be worse than Transit
- Policy = Close, it may not be true 😊
- Try to deploy as many CDN boxes
- Constant monitoring Cacti/MRTG/Netflow
- peeringdb.com > visit regularly
- Who is the peering coordinator
- Attends gathering: * Peering Forum, *NOG, BnP
QUESTIONS?

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