Nepal Internet Exchange (NPIX)

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Some History

- Initiated after APRICOT, on 22 April, 2002
- First Meeting of the Working group on 1 March, 2002
- Very active participation from WG members
  - Ritesh Joshi, Rupesh Shrestha, Binay Bohra, Dileep Agrawal, Gaurab Raj Upadhaya, Krishna Shah, Alok Tuladhar
  - Bill Woodcock, Philip Smith, Brian Longwe
- First npIX workshop organized at Kathmandu College of Management on 25-29 August, 2002
- IX powered 'ON' on 30 August, 2002 with 3 ISP
- Details available on npIX working document

First seven months

- The IX didn't function for the first six months, as no circuits were available to the npIX

- Mercantile hosted the npIX switch on its system to enable immediate traffic exchange on 3rd April 2003
  - MOS, Wlink, Infocom, Vianet, E-net, CCSL connected in April 2003

- All ISPs using static routes, mostly 2500 routers.

April 2003 – April 2004

- npIX functional courtesy of Mercantile
- Major ISPs migrated to BGP / dynamic Peering
  - July, 2004 Workshops and migration held with help of Philip Smith, Cisco
- Connected ISPs announce prefixes of other non-connected providers
- NPIX hosts the first APNIC training for local ISPs on March 20, 2004

April 2004 – December 2004

- The npIX switch started to be made functional with radio links

- NPIX successfully hosts SANOG 4 in Kathmandu in July 2004 and all peering ISPs migrate to using BGP (one exception)

- Nepal Telecom finally starts peering in August 2004
  - They had to procure new routers....

2005

- First npIX general Meeting held on 16 January 2005.
  - Looking back I had reported in the meeting
    - "Our recording show about 2 Megs of local traffic going through the npIX in average at the two switches"
    - But each ISPs traffic was still growing at more than 100% at that time.

Organic Growth

- June 2005 : Two Switches, 10 members, 8 Mbps of traffic, around /17 address space. Providers brining in Fiber. 50% on fiber
  - Starting Collecting Fees from Early 2005. Six ISPs as founding members.
- January 2006 : Two Switches, 12 members, 15 Mbps of Traffic. Around /17.25 addresses.
  - Fees for 2006 waived off.
- April 2007 : Two Switch, 12 members, 20 Mbps, /17.6 space, all ISPs with Fiber, mostly 2600 routers

2008

- January 2008 : One switch, 15 Members, 25 mbps of traffic, /16 addresses, all members on Fiber

- Hired part time project officer for administration and management

- Hosted SANOG 12 in Kathmandu again

- Strong proposal for second switch again

2009

- 15 Members, (one left, one new), 80mbps, two switches, /16 + /17 space
  - Government and R&E Network connected
- Reason for high traffic growth
  - Arrival of International Fiber
  - DSL and rapid cable deployments by ISPs
  - Just more people connected

Major Points

- Joint ownership of Peers.
- Legally under the ISP Association of Nepal
- Location decided unanimously by the Working group after long discussions.
- First Switch and Route Server provided by PCH (www.pch.net)
- First round of IX training done by PCH, later at SANOGs and with others.

Management / Financials

- **Independent Board constituting of the following**
  - General Secretary of ISPAN
  - Representative of Computer Association of Nepal
  - CEO/Technical Chair (ex officio)
  - Representative from the participant
  - Representative from the Government
  - Representative of House Owner (non voting)
- **Financially independent from ISPAN.**
- **Peering participant pay on a cost recovery basis, reviewed every year.**
- **Spaces donated by the building owner. We manage the power and pay for it.**

Problems

- **Initials**
  - Migration from static routes to dynamic routing.
  - Had to get AS Numbers from APNIC, help ISPs configure routers and also upgrade software etc.
  - Non-availability of circuits
    - Used wireless initially, later used fiber by ISPs

- **Current**
  - Power issues
  - Getting ISPs to update prefix lists
  - Staff turnover and growth issues

Ongoing work

- Management / Financials
  - NPIX has outsourced the administration and financial management to the Nepal Research and Education Network
  - Technical management still volunteer managed
  - New regulations allow us to form a non-profit company, so currently finalizing the modality of doing this.

Future work

- We expect traffic to grow rapidly during this and next year.
  - Some ISPs need to re-engineer to adapt to demand and are currently doing so.
  - Make the root-server functional again
  - More ISP, more content providers etc
  - We don't expect any major upheaval.

Questions ?????

Thank You

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