exchanging traffic in Paris

a new proposal

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...the more successful Internet Exchanges have evolved from “collaborative efforts to improve connectivity in local markets” to “organizations that provide essential value to the Internet Industry”
an ‘outside’ perspective

• Challenges in France to exchange traffic
  – Return on Investment increased with density & reach

• Attract for foreign networks to Peer in Paris
  – Examples - Netherlands, German, UK majority of networks connected are not native to host countries
  – Where are the Spanish & Italian ISPs?

• SMW-3/4/5 lands in Southern France, connects over 20 countries few peer or buy traffic in Paris
• New & developing markets: North & East Africa, Middle East & East Asia

• Growth: Mobile Data & Voice
DE-CIX: 200G to 600G in 12 months

last update: Thu Dec 11 18:00:01 UTC 2008

- Average traffic in bits per second: 150.5 G
- Peak traffic in bits per second: 592.0 G
- Current traffic: 298.5 G

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AMS-IX: 350G to 550G in 12 months

Bits per second

Input
Peak 5 Minute Output
Output
Peak In : 608.765 Gb/s  Peak Out : 608.242 Gb/s
Average In : 263.148 Gb/s  Average Out : 263.194 Gb/s
Current In : 383.587 Gb/s  Current Out : 383.060 Gb/s

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Traffic Distribution – A Content Perspective

There is a long tail (90%) of medium and small networks, that represent 20% of the Internet traffic.

= Cost/Mbps better optimised with public peering as large aggregator
What is the need?

- Infrastructure that recognises Peering as critical business function: ‘Next Generation’ IXP
  - Robust, terrabit scalable networking
  - Advanced route servers (route policy/filtering)
  - Session management features
  - Session/Contact management
  - sFlow, MAC accounting data for monitoring & reconciliation
  - IPT – VoIP – GRX - MDX ‘market place’ to exchange or trade access, routes or assets. Infrastructure to enable services via partnership
  - Voice, Video & Mobile – need multi-access platform for trading routes, access and assets - an IXP for Fixed/Mobile services

- ...how?
Federate, don’t build a new exchange

What is federation?
- Not a Google or NeoTelecoms IXP,
- **non-profit** organisation evolution path for existing exchange infrastructure
- **Participants** are shareholders
- Design for **scale**
- Build **service layer** to meet new demands
- Attract overseas ISP’s/Content/Mobile
- Contract out **Operations Management**
  - SLAs, backoffice & executive mgnt
- Partner with **specialist next gen applications**
  - Example: Voice/Video Marketplace
Organisational Structure

- Structure an organisation combining shared ownership of exchange among participants and contract neutral 3rd party for operations management
- For example, the AMS-IX & DE-CIX structure:
  - Non-profit society working with a limited liability operating company
Ok, but can’t company Y, X or Z do this?

• An opportunity for commercial exchange operators, but a requires substantial capital investment
  – Difficult for purely commercial to build a profitable return with IXP services over infrastructure distributed over multiple locations.
    • Conflicting commercial interests

• Non-profit approach offers
  – Sustain lower internal rate return (IRR) on capital
  – fewer commercials conflicts
  – opens avenue to alternative initial funding

• So, Architecture...
Services

• Tools
  – Sflow stats
    • Exportable for planning, billing/reconciliation
  – Session coordination & analysis – “peering maker”

• VLANs
  – Point to Point VLAN
  – Private VLAN for closed user group

• Service level targets
  – Uptime, support

• 24/7/365 operations team
  – Remote/Smart hands, small factor hosting
Services (continued)

• Promotion of peering social events!! 😊
• DNS: Root Server hosting
• Next Generation Services:
  – DDOS: fingerprint sharing
  – SandBox Resources
    • Infrastructure for research - Routeviews, RIPE, Netlantis etc)
    • New commercial ideas & ventures
  – Settlement Based Route Access
Settlement Based Route Access

Buy/Sell settlement internet peering routes in platform

- Route server based platform with support for settlement peering
  - Policy based filtering and route propagation
  - Online 'click to accept' contract workflow for peer routes policy changes
  - Automated backoffice support for invoice & reconciliation

- Technical Optimisation
  - Port performance – monitoring for congestion
  - BGP route optimization
    - Option to inject port congestion in MED or other preference
Architecture Options

• Cannot just interconnect existing IXP’s
  – Numbering issues
    • Address space shared with owners networks
  – Difficult/impossible to launch next generation services with diverse technical platform
    • Extreme, Foundry, Cisco switches may not like each other
    • Proprietary protocols
  – Answer is to upgrade & standardize existing equipment
Locations
High Level Design Guidelines

• Keep the infrastructure simple
  – 2 cores sites: Telehouse2 and (to be defined)
  – Use passive DWDM equipment
  – Don’t use proprietary protocols
  – Only XFP/SFP card (no 10/100 available)
  – Plan & deploy pre-cabling: No octopus on Equipments 😊

• SLA – Reaching 5 x 9’s
  – Dark fiber on redundant path with 2 fiber operators
  – Utilizing active line protection on backbone
  – Loop or No Loop on the network?
  – Clear labeling of pre-wired cables and other good practice methods
Ask

- Let’s discuss this proposal in detail
  - We’ll use FRNoG mailing list & direct contact to discuss in more depth
  - Socialise the idea in your companies
  - We’ve talked with Free-IX, we’ll continue to talk with IXPs
  - Attend a meeting February 2009
    - 2-3 hours technical discussion & presentations
    - Darn good lunch & then...
    - 2-3 hours commercial discussion

= We want to know which network will be interested

‘Go’ or ‘No-Go’ by March 2009
Questions & Comments?