FRnOG

exchanging traffic in Paris
a new proposal

Maurice Dean & Raphael Maunier

FRnOG

…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?

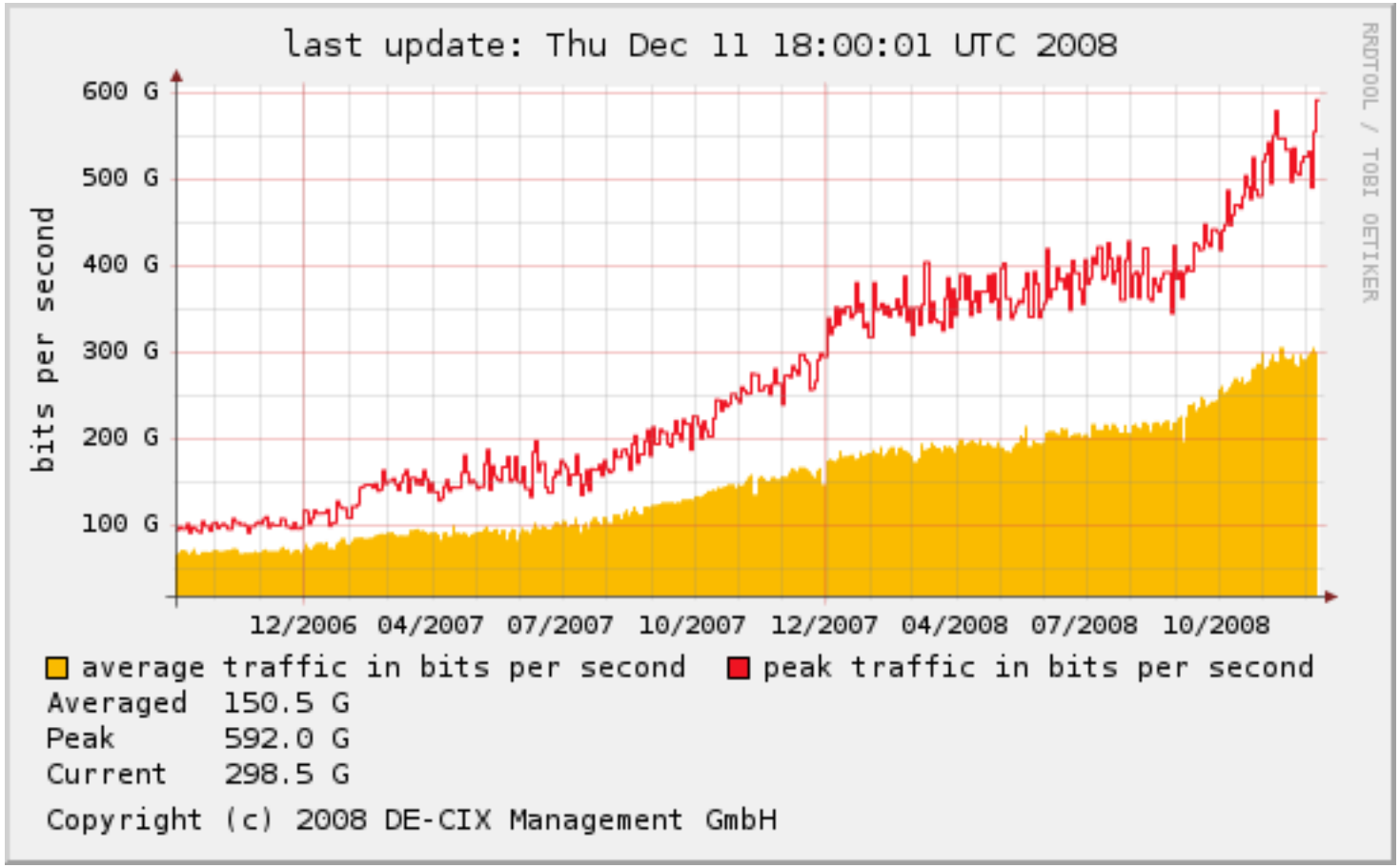
• SMW-3/4/5 lands in **Southern France**, connects **over 20 countries** few peer or buy traffic in Paris

• New & developing markets: North & East Africa, Middle East & East Asia

• Growth: Mobile Data & Voice

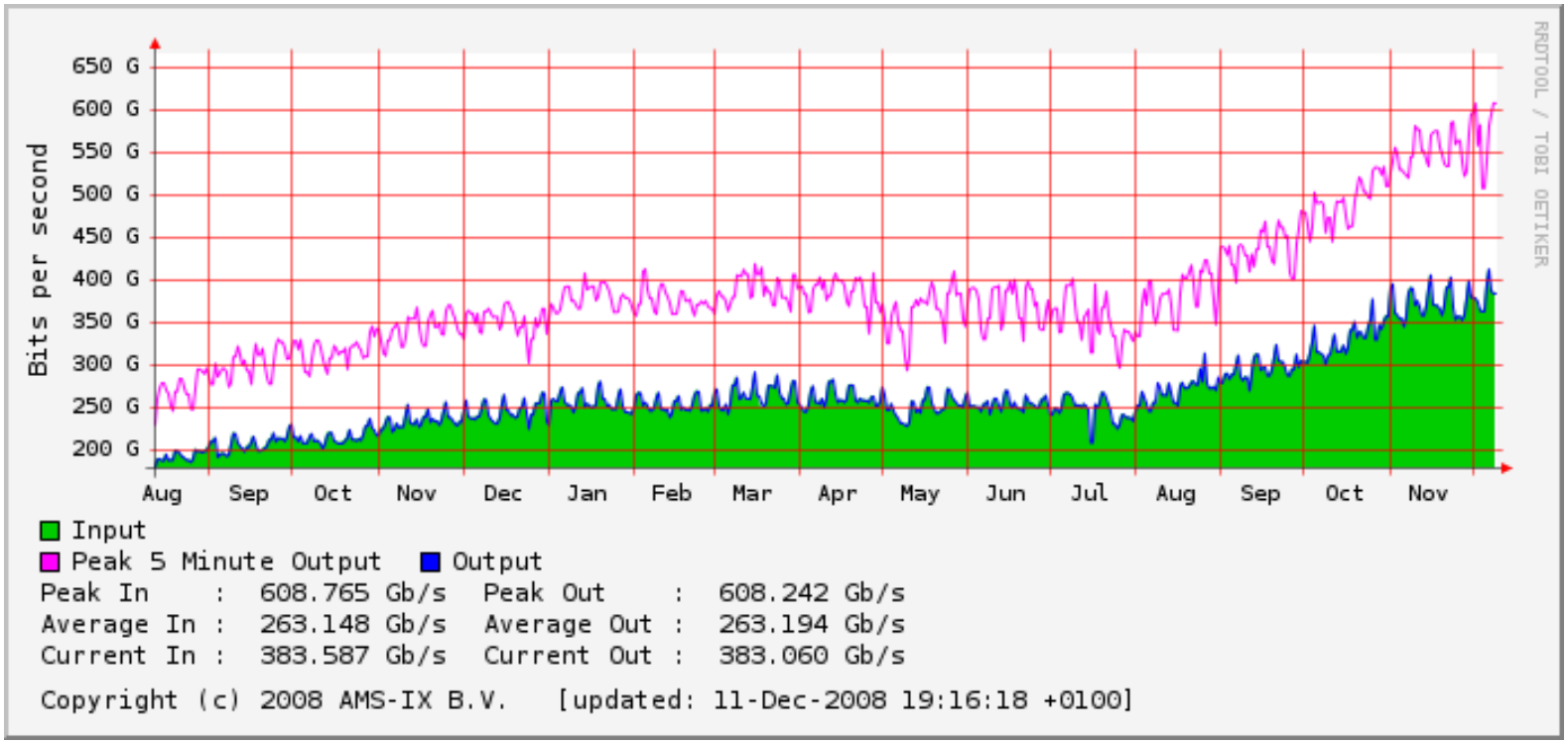
FRnOG

DE-CIX: 200G to 600G in 12 months



FRnOG

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



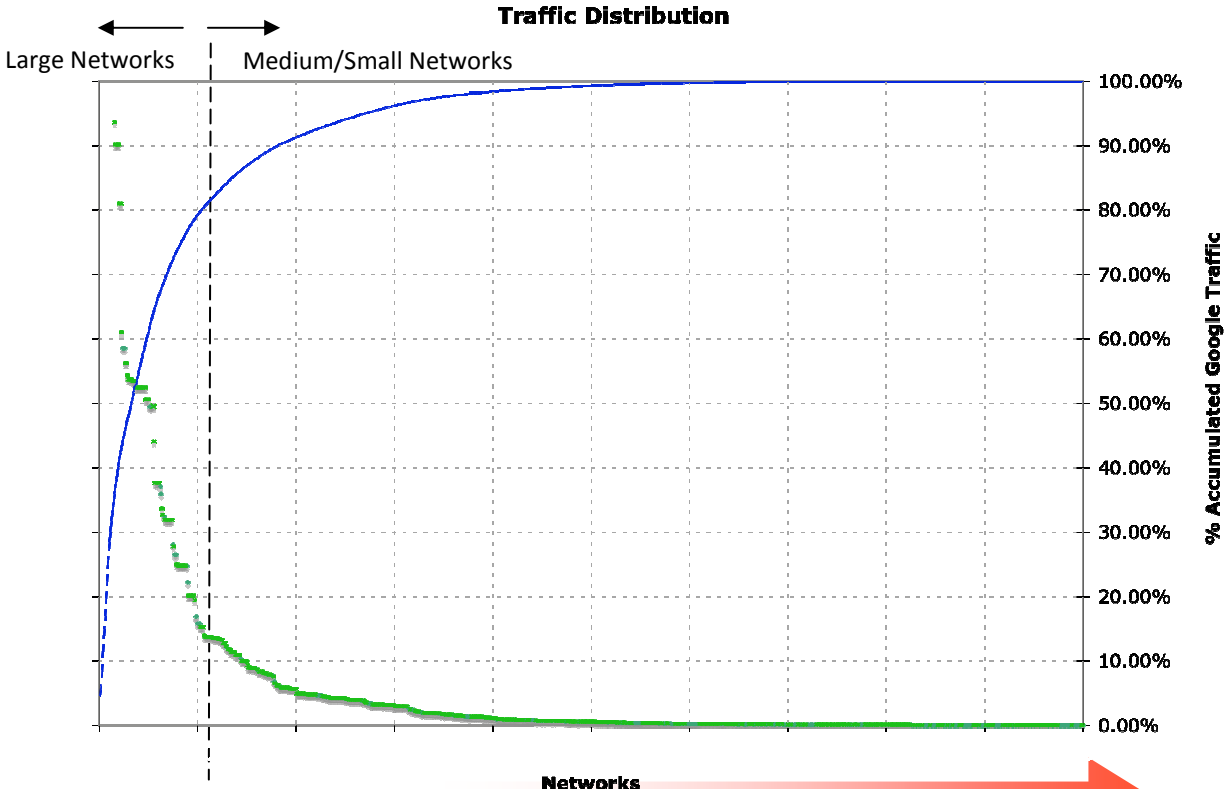
FRnOG

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



FRnOG

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?**

FRnOG

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

FRnOG

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 cordination & 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**

FRnOG

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

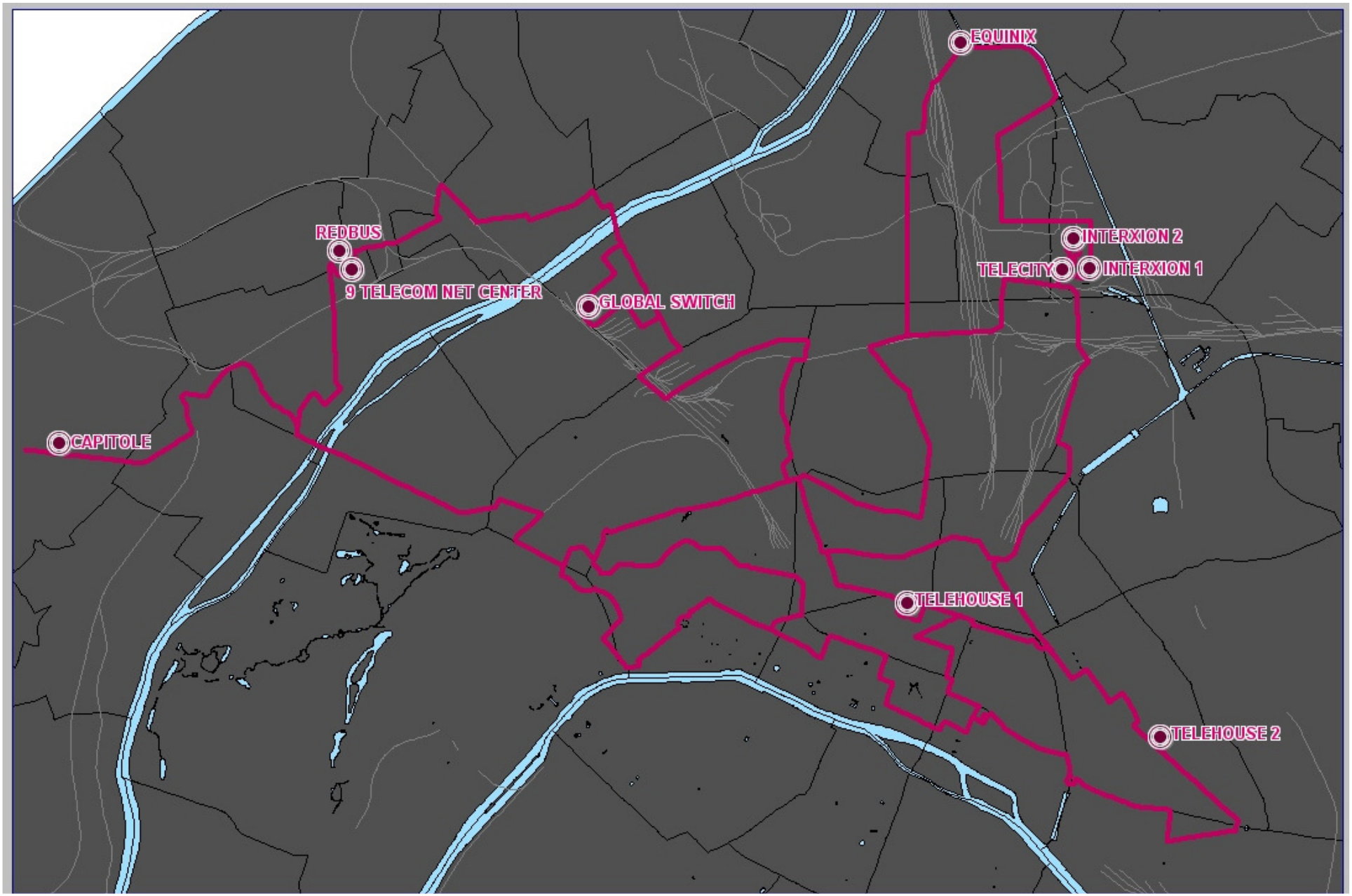
- Technical Optimisation
  - Port performance – monitoring for congestion
  - BGP route optimization
    - Option to inject port congestion in MED or other preference

FRnOG

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


EQUINIX
REDBUS
9 TELECOM NET CENTER
GLOBAL SWITCH
INTERXION 2
TELECITY
INTERXION 1
CAPITOLE
TELEHOUSE 1
TELEHOUSE 2

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

FRnOG

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 Febuary 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**

FRnOG

Questions & Comments?