Designing the Next Internet Exchange Point

GPF 5.0 Keynote Panel

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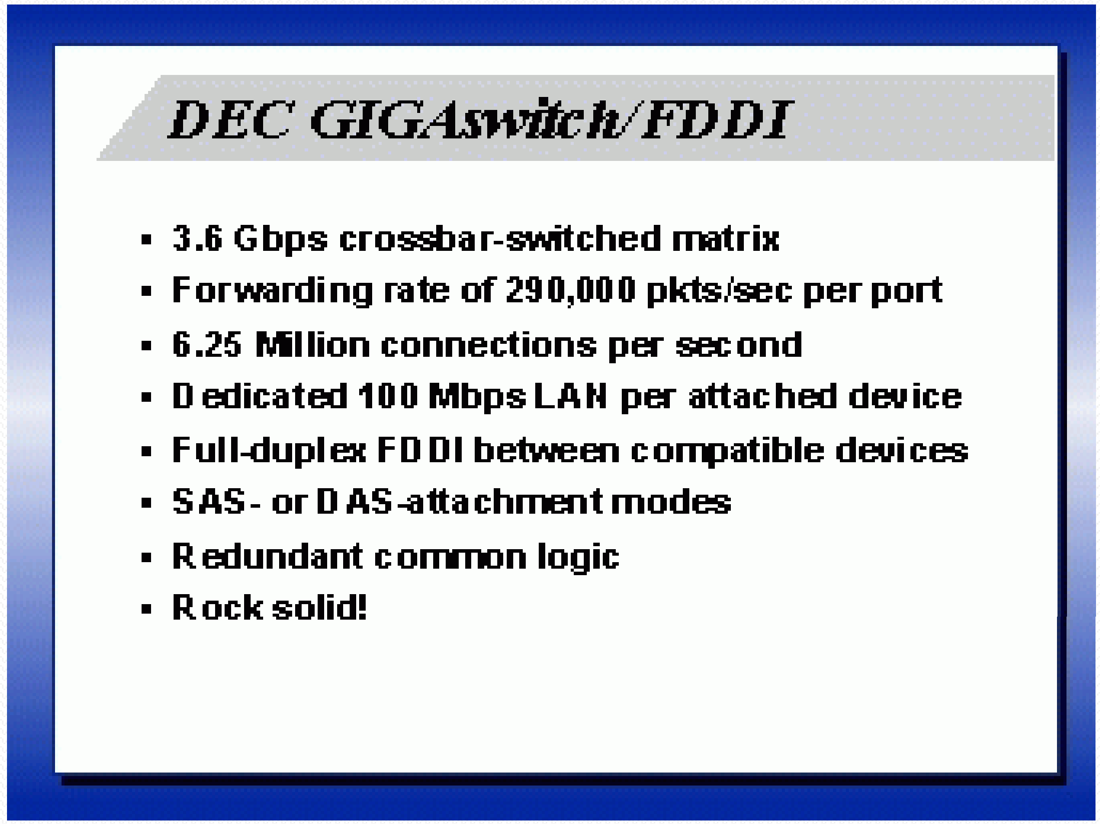
v1.0 2010/04/14

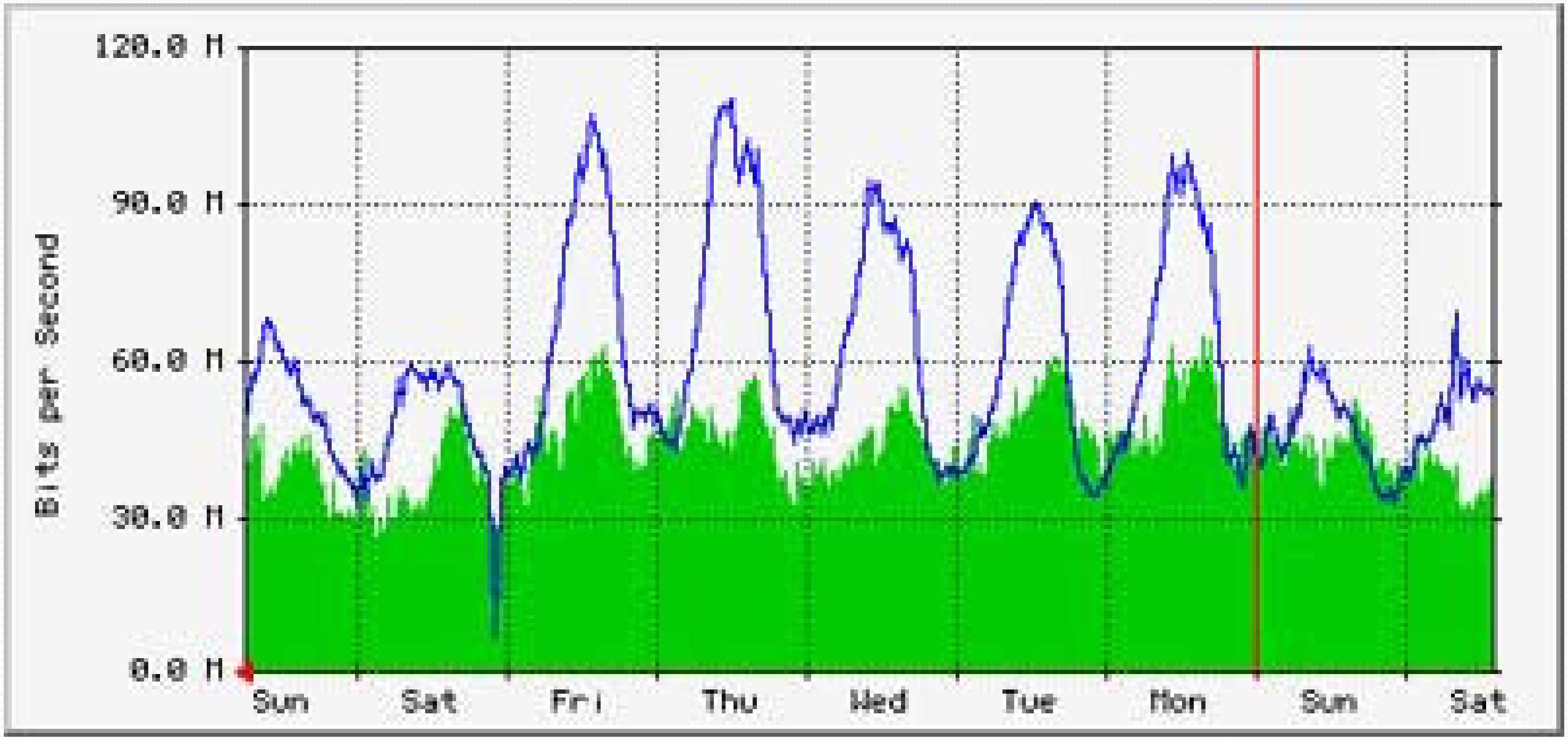
Reflections – 1996

MAE East GIGAswitch



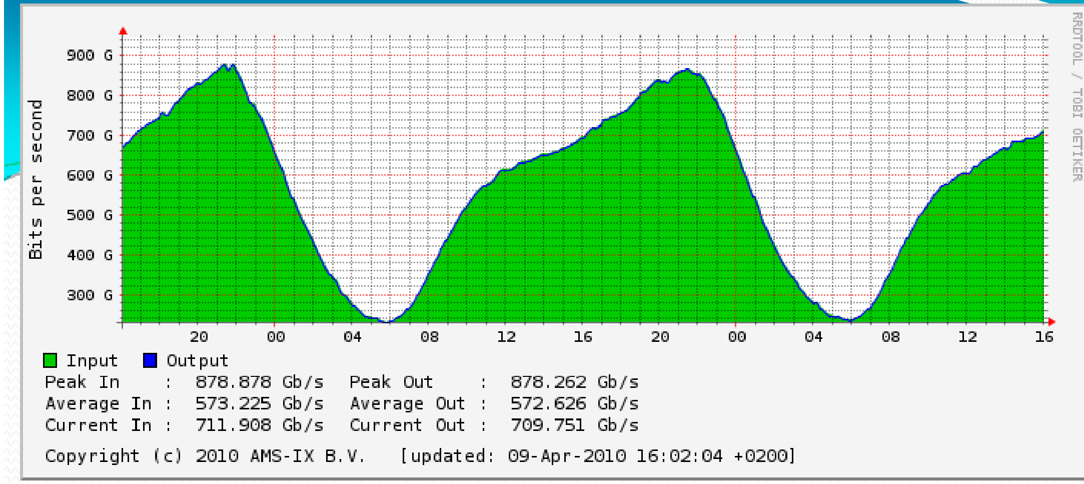
NANOG8 Presentation by Steve Schnell, Sprint

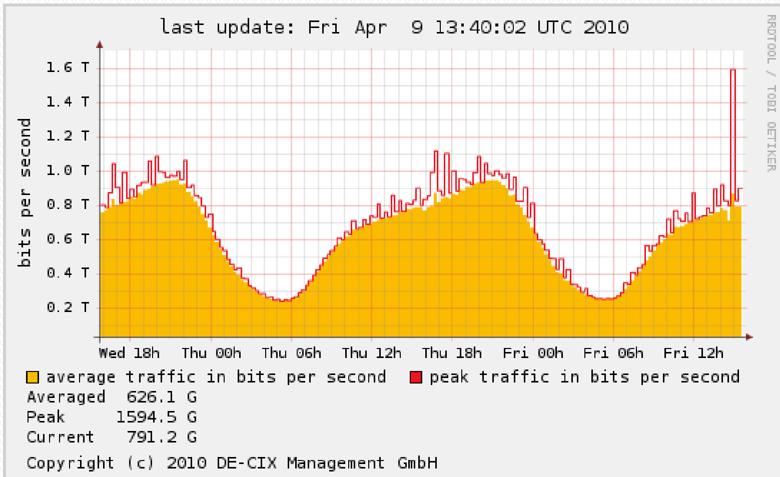
Reflections – 2003

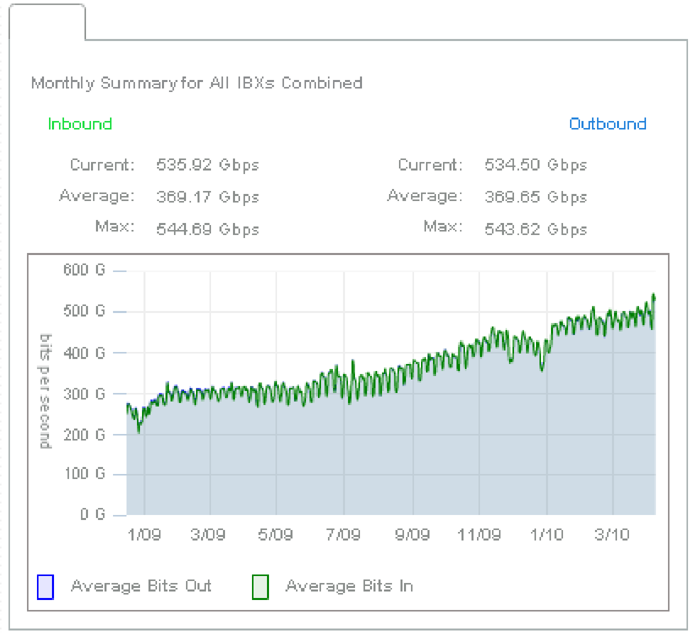


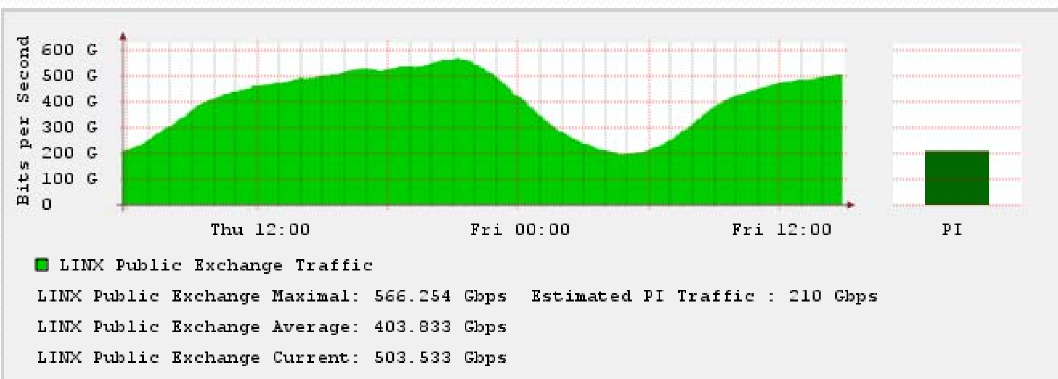
MAE East Traffic February, 2003

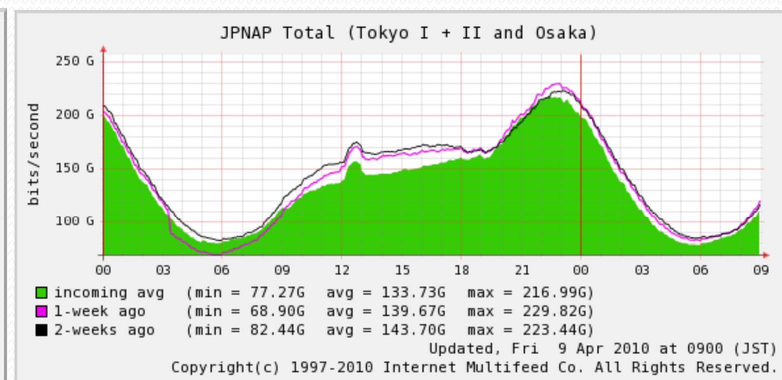
Present – Public Traffic Graphs from Host IXs ~3 Tb/s of World's Traffic





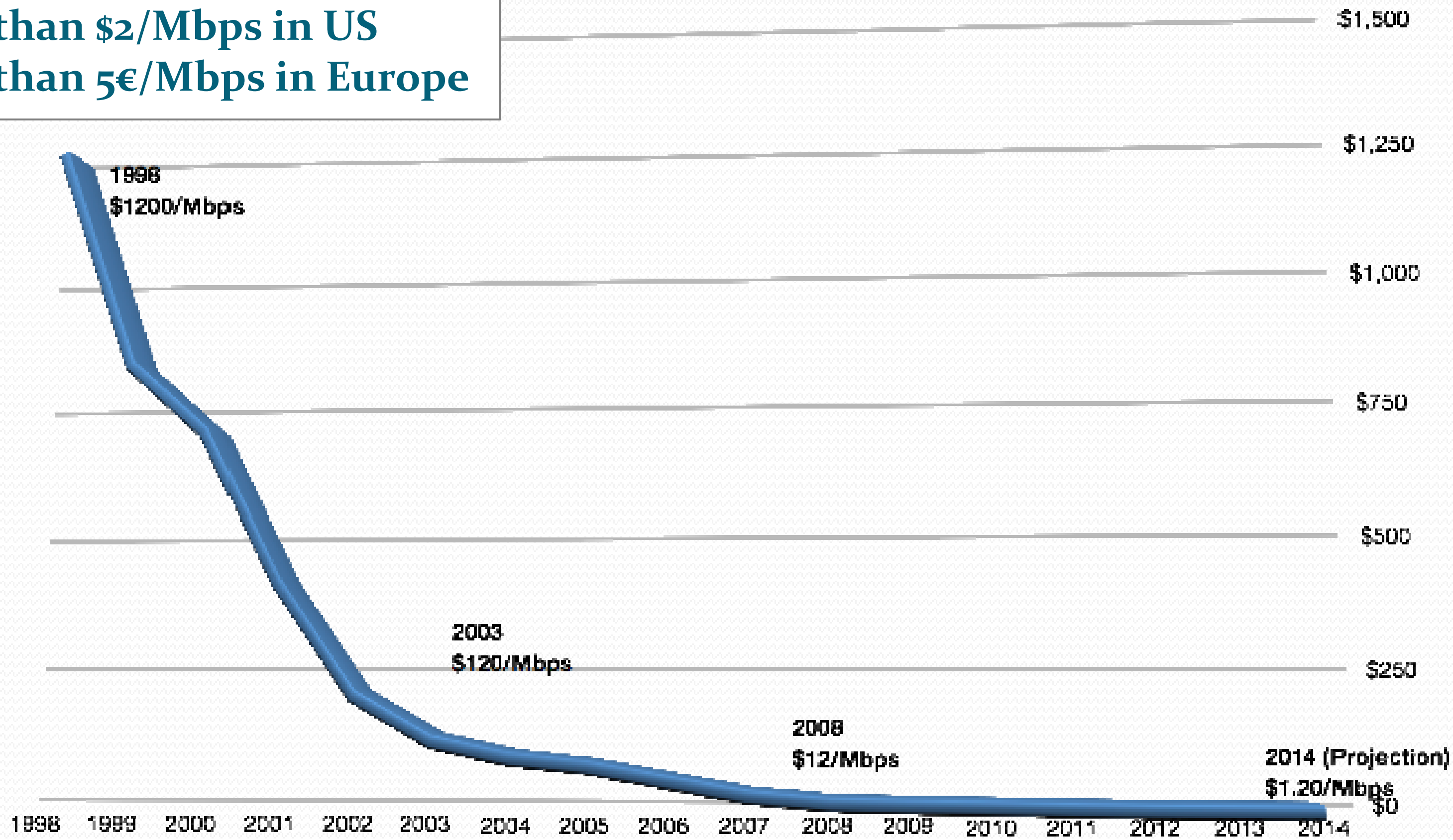






Falling Transit Prices

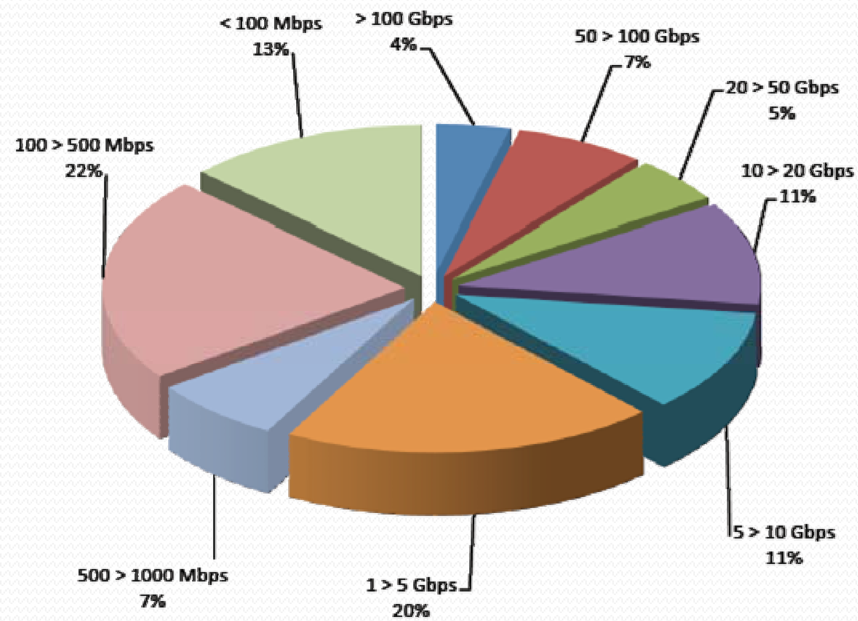
With Volume Commitments:
Less than $2/Mbps in US
Less than 5€/Mbps in Europe



Source: drpeering.net (Bill Norton)

Trends – Traffic Growth

- Traffic at largest IXs doubling every ~18 months
- Several IXs with hundreds of Gb/s and Tb/s traffic volumes this year
- Several "smaller" IXs switching significant traffic volumes
  - MSK-IX 245 Gb/s, BIX 151 Gb/s, NIX.CZ 122 Gb/s, PLIX 84 Gb/s, SIX 51 Gb/s
- High demand for 10 GbE
  - Multiple links with LAG/LACP
- Future demand for 100 GbE interfaces
  - Backbone and customer ports
- How much will falling transit prices impact future IX growth?

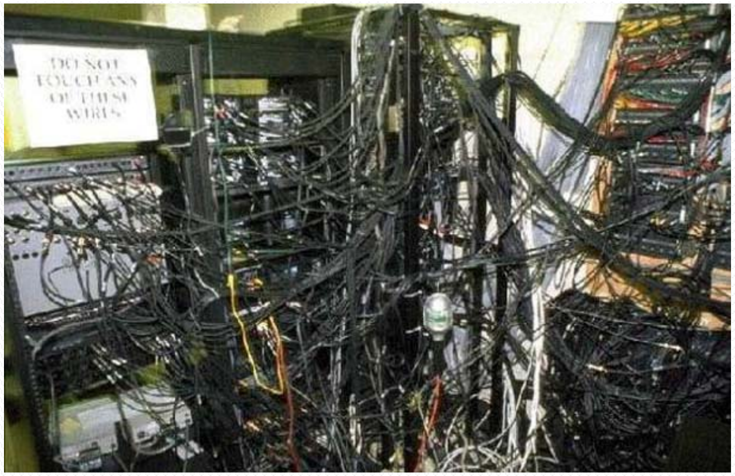


IXPs and their peak traffic
Euro-IX 2009 Report on European IXPs

40% of IXs have > 50 Gb/s Traffic

Trends – Network Architectures

- The days of a "simple" L2 IX switch are over
- Multiple VLANs and protocols for IPv4/IPv6 unicast and multicast
- Redundant switching and optical infrastructure providing 5x9s uptime
- Distributed and metro area architectures
- Advanced network architectures using ring protocols and MPLS/VPLS
- On the bleeding edge for switches with highest port densities and capacities



Trends – Services

- Demand for much more than just a port from IXs
- IX services
  - Root name servers
  - sFlow traffic statistics (2006-2008)
  - Route servers (2009-2010)
  - Carrier Ethernet services
- Customer services
  - 24x7x365 coverage
  - Membership meetings
  - Customer portals and peering analysis tools

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