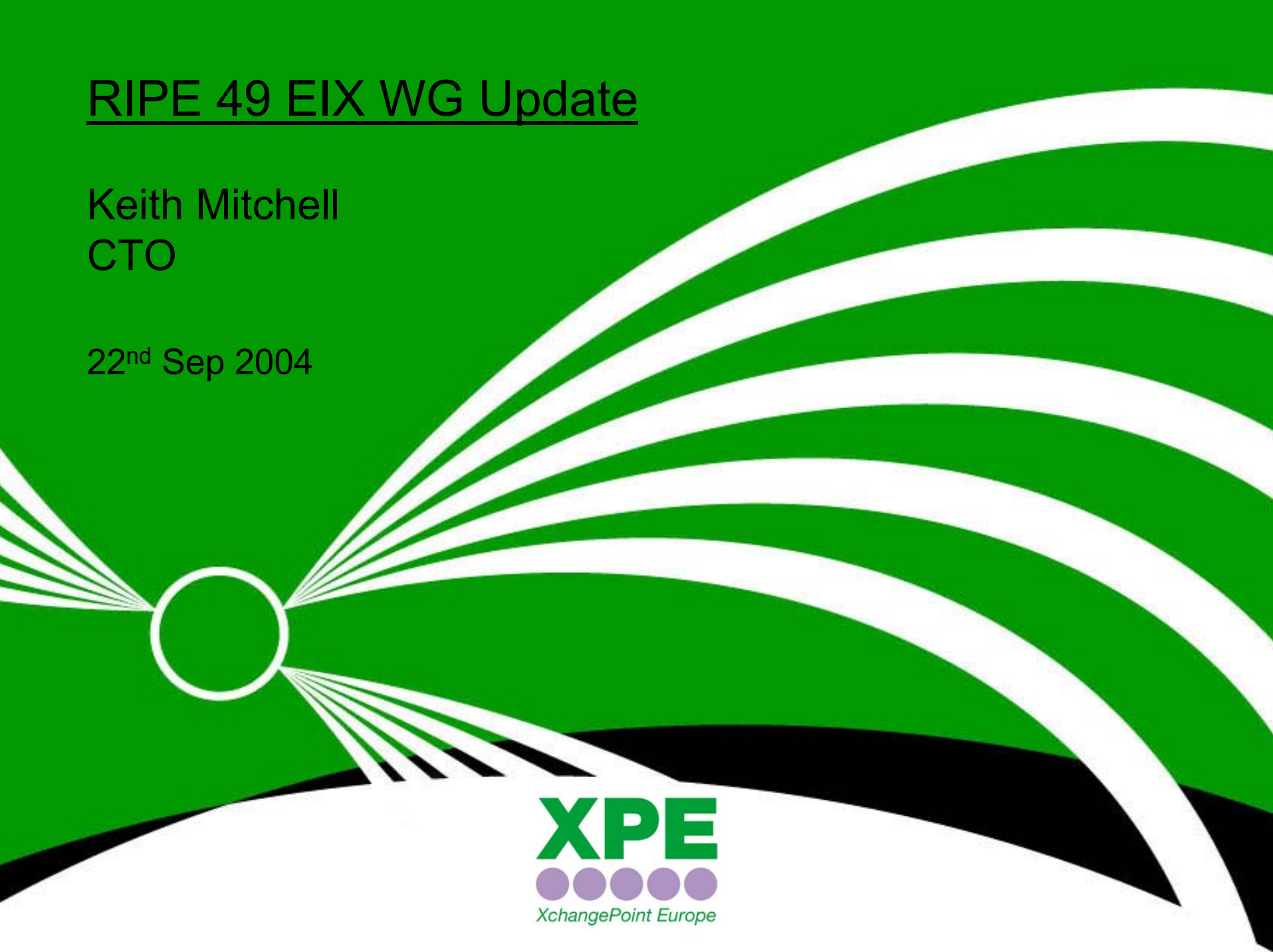
RIPE 49 EIX WG Update

Keith Mitchell
CTO

22nd Sep 2004



Recent Developments

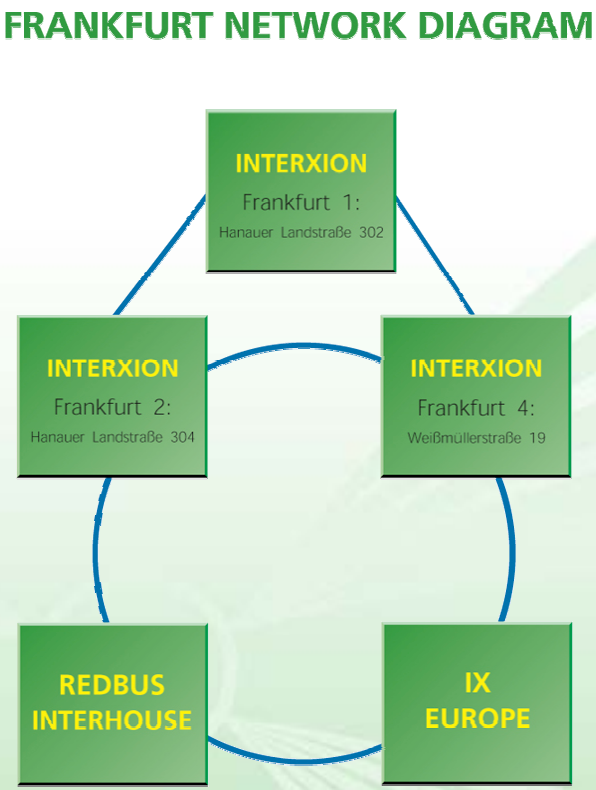
- Over 180 customers
- Fully operational in Frankfurt
  - 5 sites plus manned office
- Fully operational in Amsterdam
  - availability at 7 sites
  - local partner
- Resolved switch hardware London network stability issues
- Have started running European “Peering Forum” events

Locations

- London
  - Redbus Interhouse: 3 sites
  - Telehouse: 2 sites
  - Global Switch: 1 site
  - TeleCity: 1 site
- Amsterdam
  - NIKHEF
  - TeleCity2
  - SARA, TeleCity 1
  - Interxion 2
  - Global Switch
  - Redbus Interhouse
- Frankfurt
  - Redbus Interhouse
  - IX Europe
  - InterXion: 3 buildings
- Hamburg
  - Telehouse

Connections **within**, not between, each metro area

Frankfurt Deployment



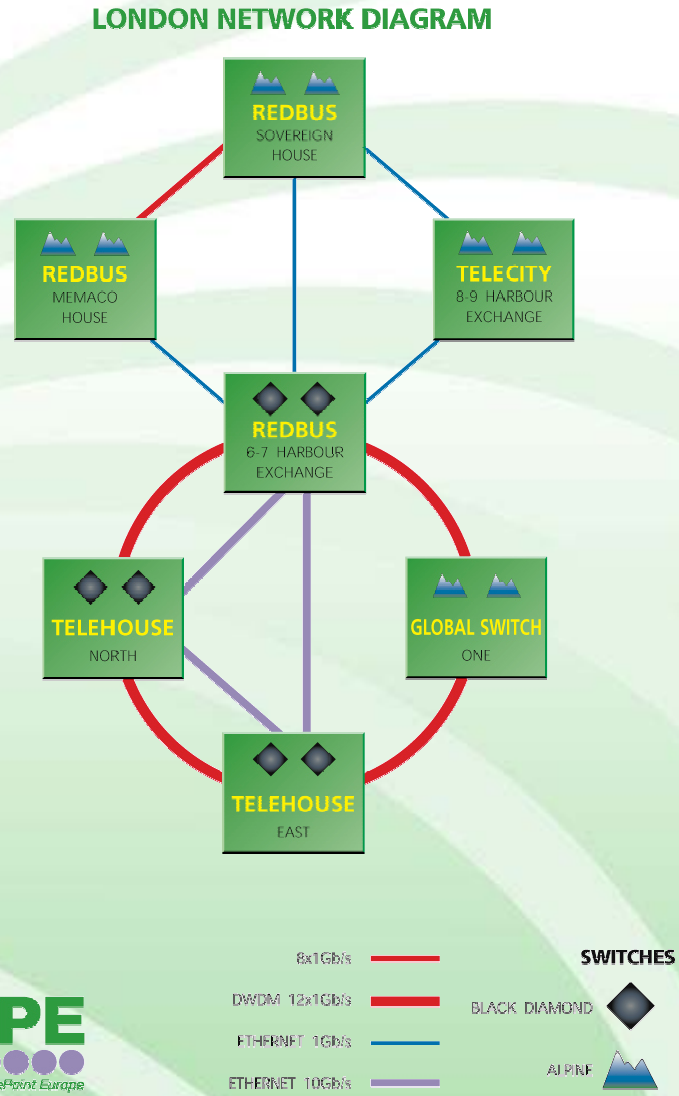
- Operational since early March
- Now 9 customers
- 3 German-based employees
- 2 Foundry BigIron 8000s (JetCore silicon) per site
- 802.1w spanning tree for rapid convergence
- Native 1Gb/s dark fibre between sites

Amsterdam Deployment

- Switches at NIKHEF, TeleCity2
- 2 x Foundry BigIron 8000s (JetCore silicon)
- 1Gb/s dark fibre between these sites
- Long-line access via on-campus fibre to SARA, TeleCity1
- Fibre ring via Interxion 2 Global Switch, Redbus Interhouse adds service at these sites on-demand
- Working with Carrier1 as local sales channel and fibre supplier
- Contact: Marc Gauw

London Status

- Ethernet switched traffic now peaking at about 5.2 Gb/s
- Another 5-6Gb/s estimated DWDM private-interconnect traffic
- Currently 166 customers
- 10Gb/s backbone between Telehouse North/East and Redbus Harbour Exchange
- Recently upgraded switches at TeleCity Harbour Exchange
- Planning 10Gb/s upgrade for remaining 4 sites
  Q4 04/Q1 05



Recent Outages

- We experienced some London network stability problems between Dec 03 and Jul 04
- These were due to 2 underlying causes, both hardware problems with switches:
  - faulty memory/bus transceiver components in some older (~3 years) switches
  - uni-directional link failure mode on 10GLR Ethernet cards
- We have now resolved these and network has been stable with no outages for over 8 weeks
- **Not** an 802.1w Rapid Spanning Tree issue
- See http://www.xchangepoint.net/news/Recent-outages.html for full history

XPE
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Symptoms

- Legacy hardware problems affected individual switches, mainly 10/100Mb/s-connected customers
- Often obvious fix approach aggravated problem
- 10GLR problems were hard to diagnose
  - brief but major impact across whole London network
- Uni-directional link failures
  - not detected by STP
  - best case was network partition and unicast flooding
  - worst case (RIPE 48) was loop & broadcast storm
  - aggravated by customer VLAN leaks, route flap domino effect and customer single router to multiple IXP setups
  - MTBF 4±2 weeks

Resolution Process

- Upgraded all switches to ExtremeWare 7.2.0b25
  - 7.0 and 7.1 diagnostic work-arounds can give false positives and/or reduce hardware stability in some cases
- Ran full 7.2 diagnostics (switch downtime) on all blades individually
- Ultimately replaced about 1/3 of our London legacy switch inventory
- Eventually got vendor to replace 6 suspect 10GLR 10Gb/s Ethernet cards (now EoL) with trusty XENPAK models
- Have changed support organisation to Bedrock
- These measures have been fully effective *so far* and we have learned **a lot** about switch hardware

Contact Details

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Presentations:

- **http://www.xchangepoint.net/info/ripe49-eix.pdf**

Next Events:

- **30th October in Frankfurt: Peering Forum**
- **21st October in London: Beers with Peers**