



Euro-IX Update

CEE Peering Day – Prague, May 2013

Euro-IX - Bijal Sanghani

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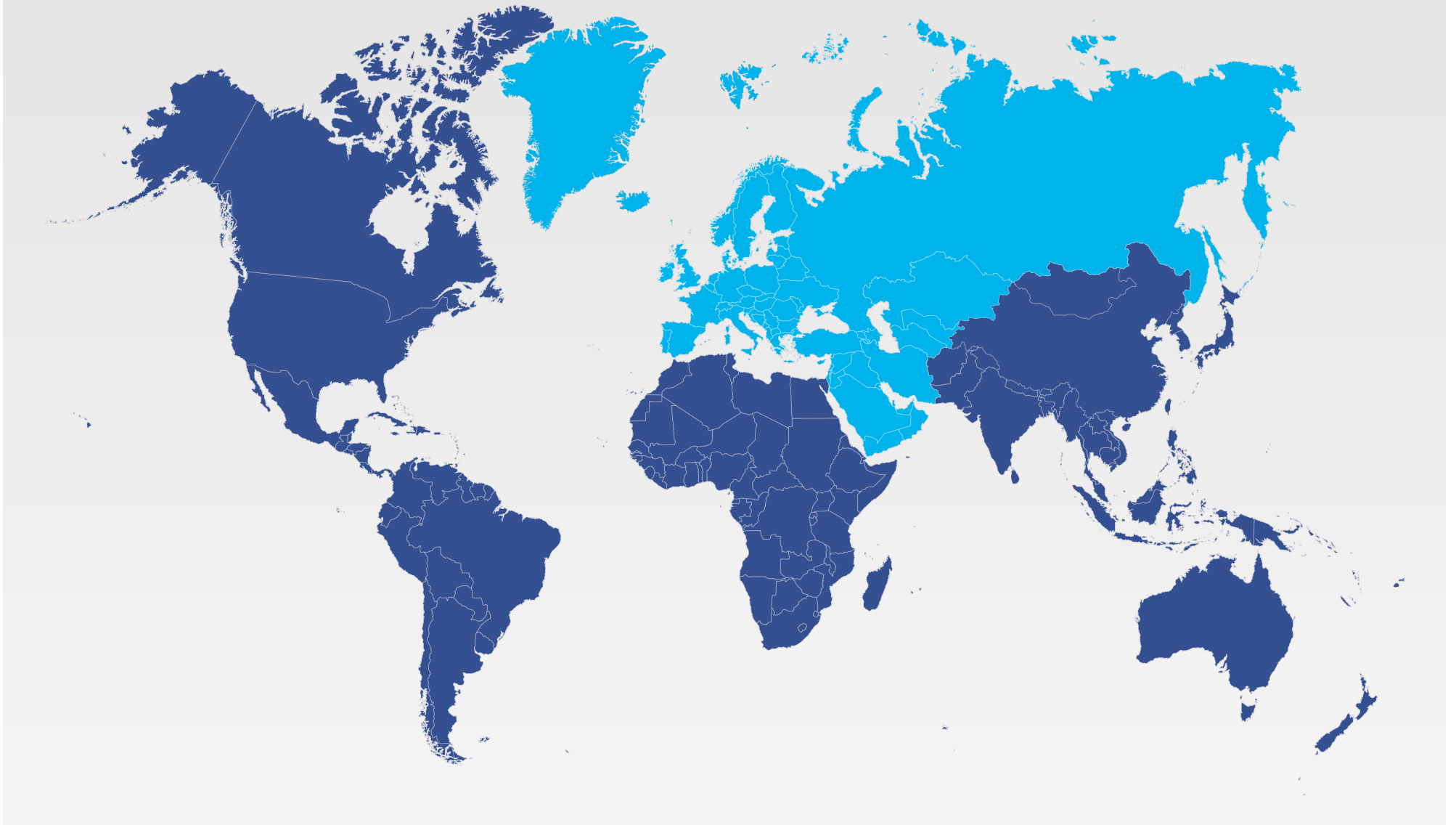
Twitter: @euroix @bijalsanghani



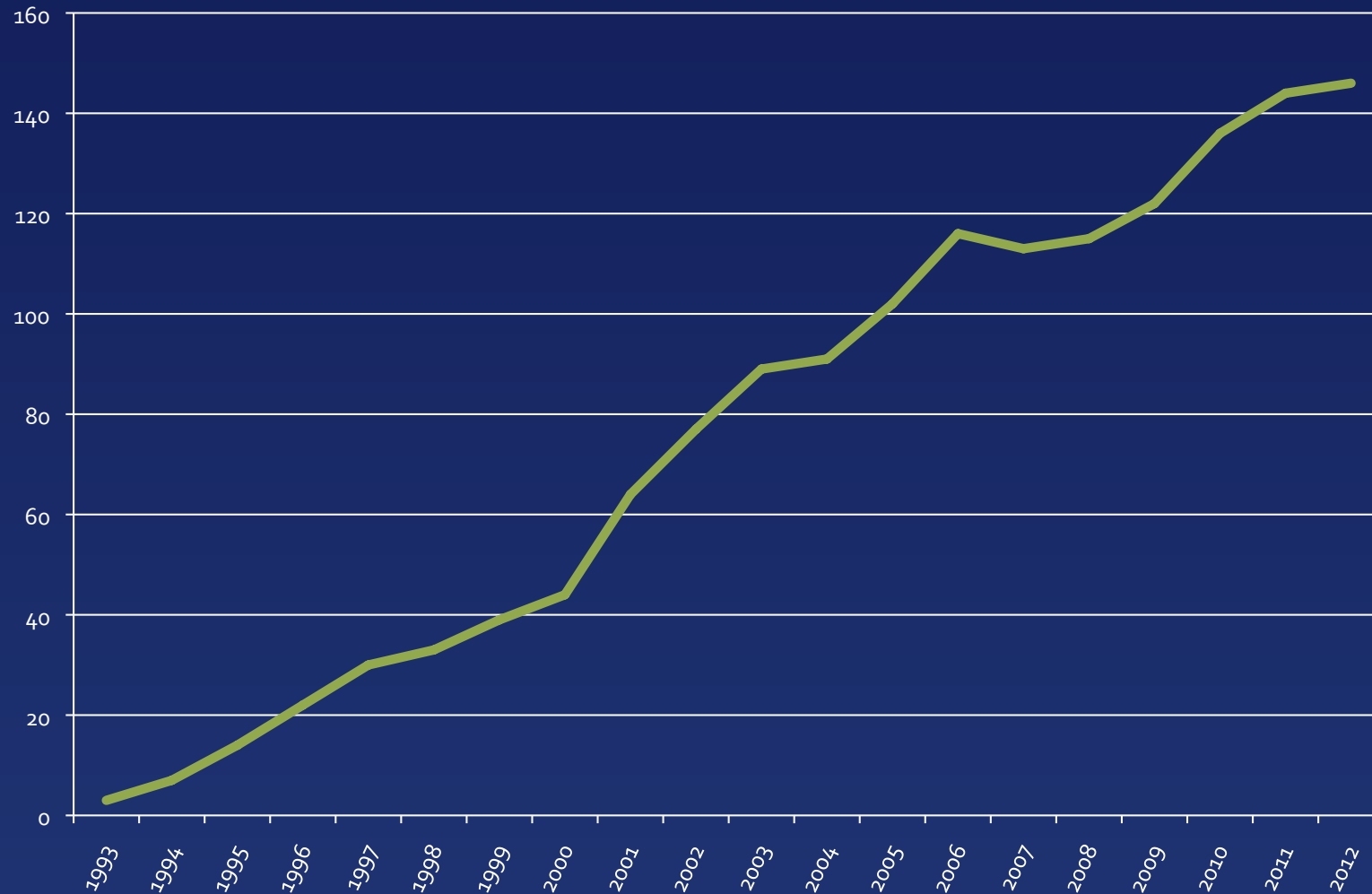
An Association for Internet Exchanges

- 74 affiliated IXPs :
 - 52 IXPs in Europe (30 Countries)
Operating over 100 Internet exchanges
 - 22 IXPs from the rest of the world
 - Newest Members, ALB-IX (Albania), TunIXP (Tunisia), KINIX (Congo), UAE-IX (United Arabic Emirates), ZIXP (Zambia), CyrusOne (USA) and OttIX (Canada)
- 11 affiliated patrons:
 - ADVA Optical Networking
 - Brocade
 - Cisco
 - Extreme Networks
 - Interxion
 - Juniper Networks
 - MRV
 - Telecity
 - Telehouse
 - Alcatel-Lucent
 - Huawei

Euro-IX Region



Growth of IXPs in the Euro-IX Region since 1993



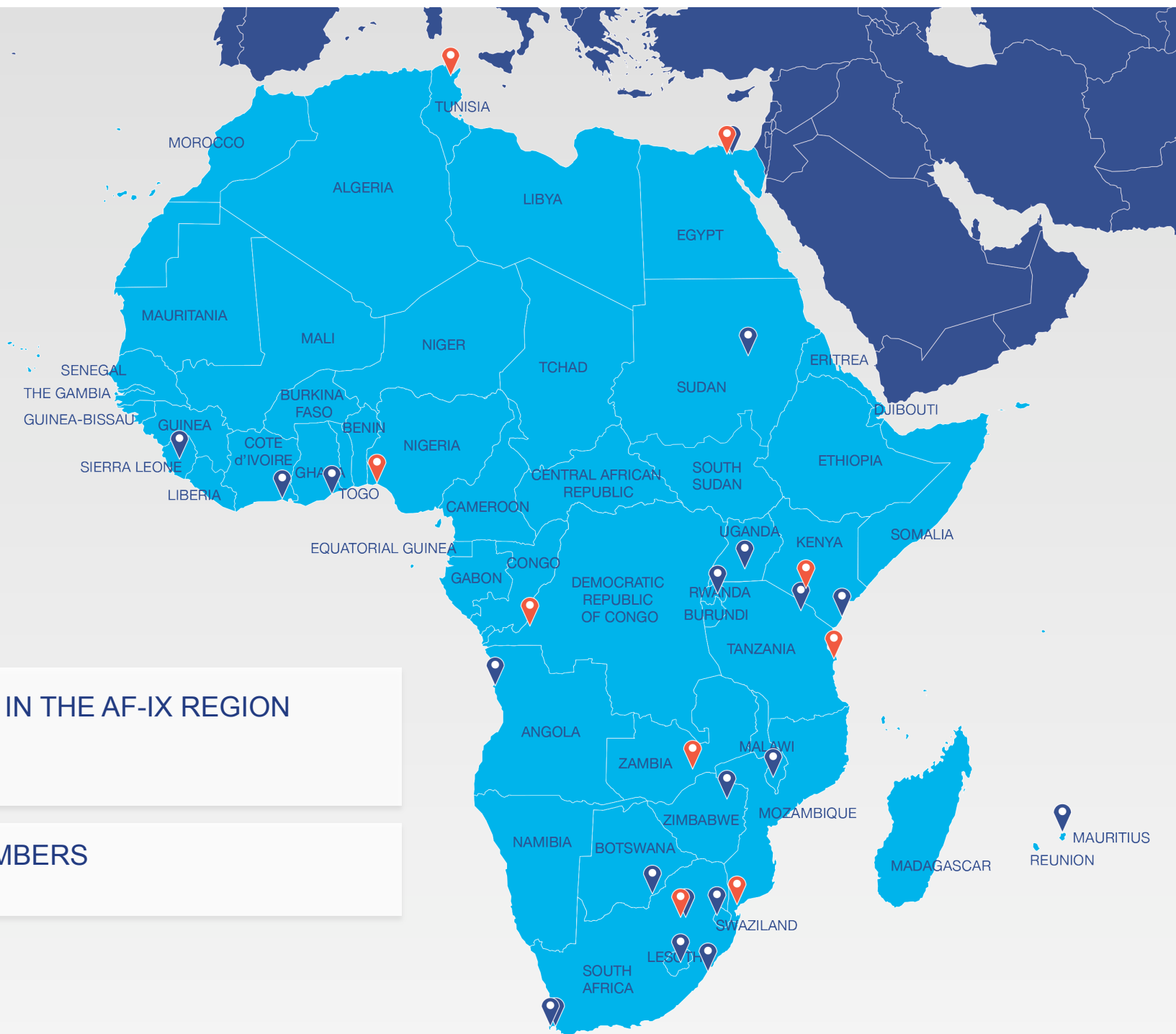
Why does Euro-IX do this?

For the good of the IXP community:

- 2 Forums a year
- Maintaining the Website, database and tools
- Mailing Lists
- Working Groups and Task Forces
- Close relationship with IEEE Ethernet Study Group
- Annual European IXP Report
- Twinning Program
- Other project, e.g., Euro 2012 CL with RIPE NCC

Internet Exchange Federation

- Since 2005 non EU IXPs were invited to Euro-IX
- Formation APIX, LAC-IX and Af-IX (August 2012)
- MoU signed to form the IX-F in November 2012
- Idea to have a Global IXP DB
- Automate Data Collection from all IXPs
- Set standards
- Plans to collaborate with PeeringDB



29 KNOWN IXPs IN THE AF-IX REGION

22 COUNTRIES

26 CITIES

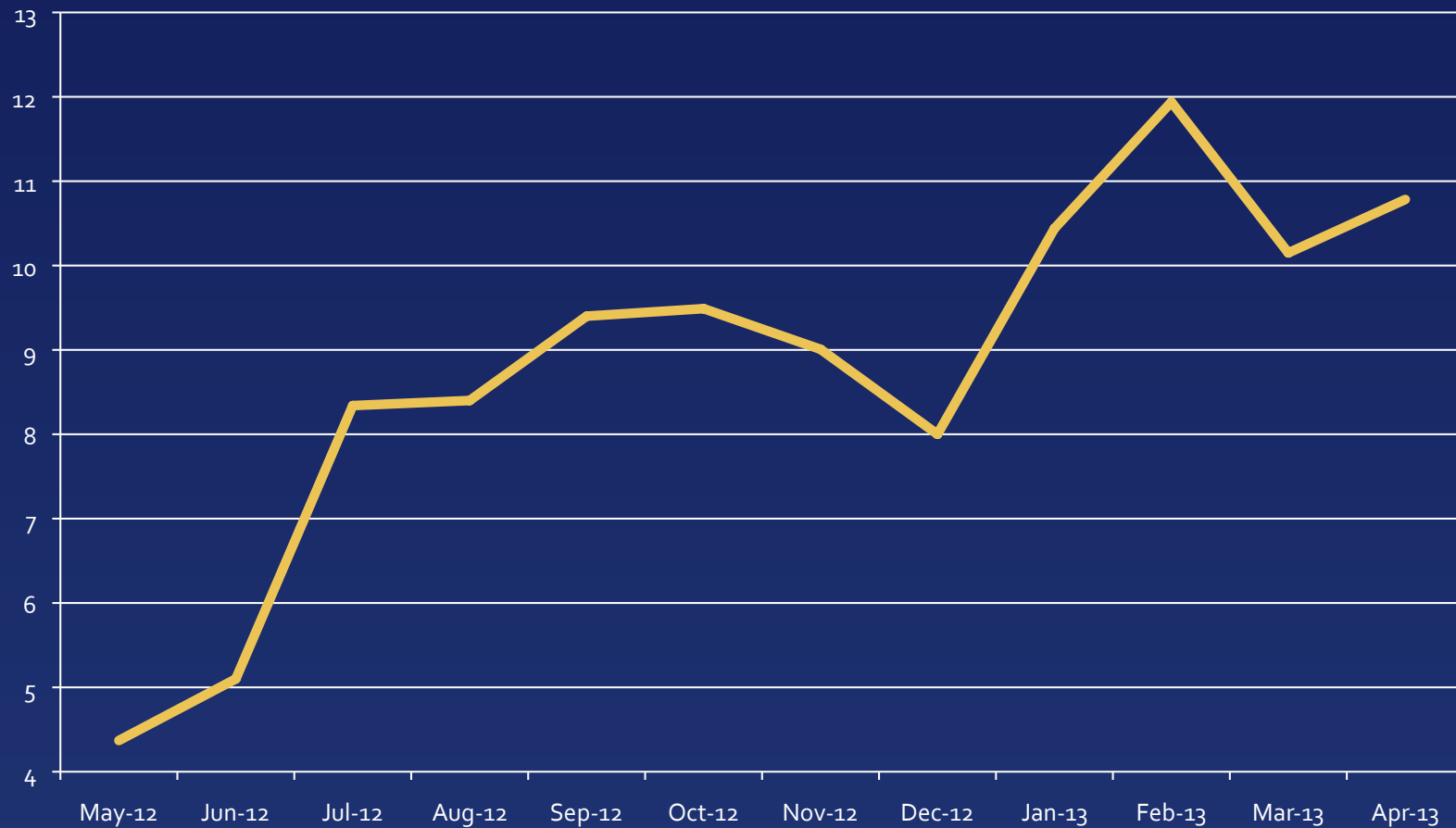
 EURO-IX MEMBERS

 OTHER IXPs



Known Af-IX region Traffic Growth 12 Months in Gbps

(over public peering LAN)



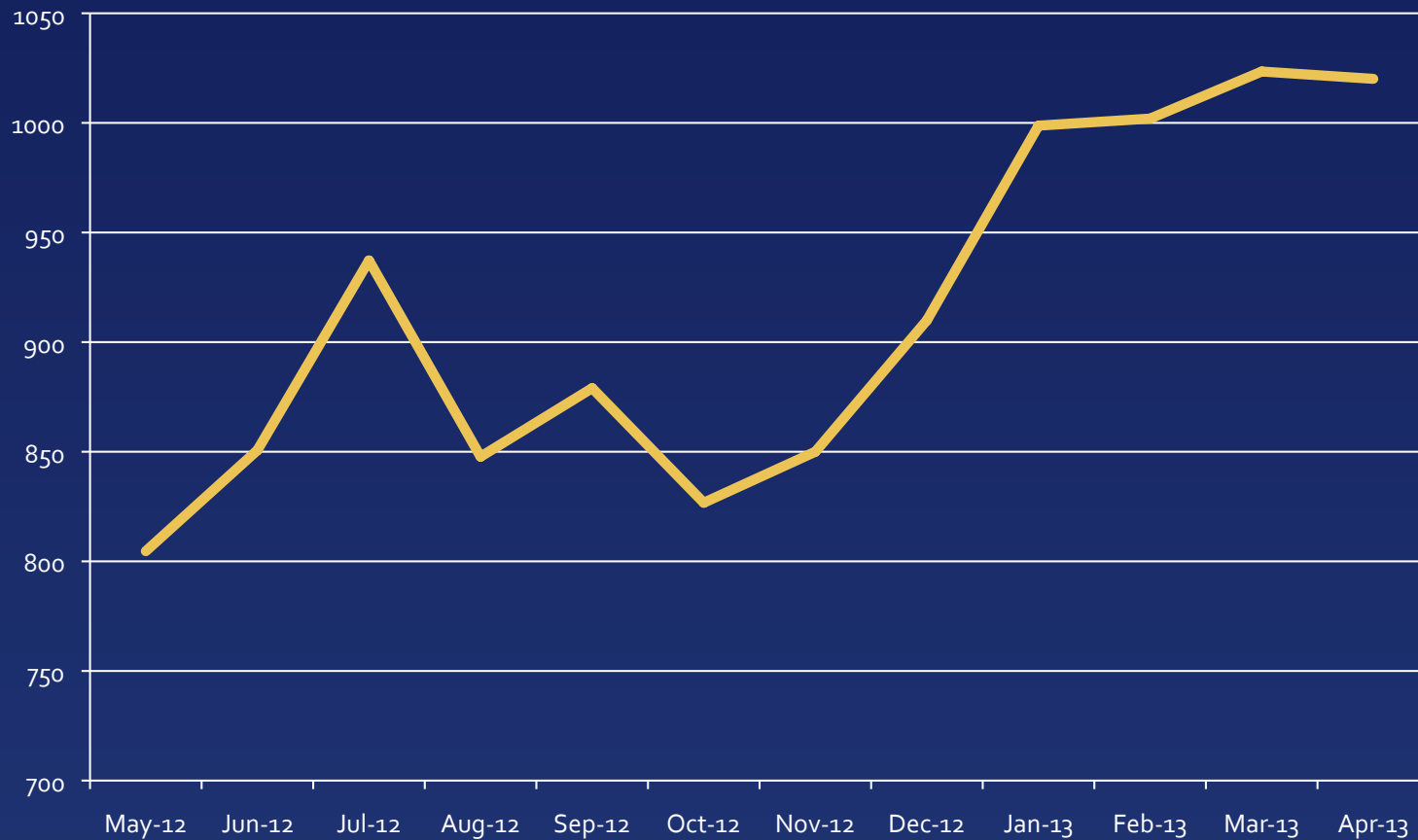
75 KNOWN IXPs IN THE APIX REGION
20 COUNTRIES
45 CITIES

 EURO-IX MEMBERS
 OTHER IXPs



Known APIX region Traffic Growth 12 Months in Gbps

(over public peering LAN)





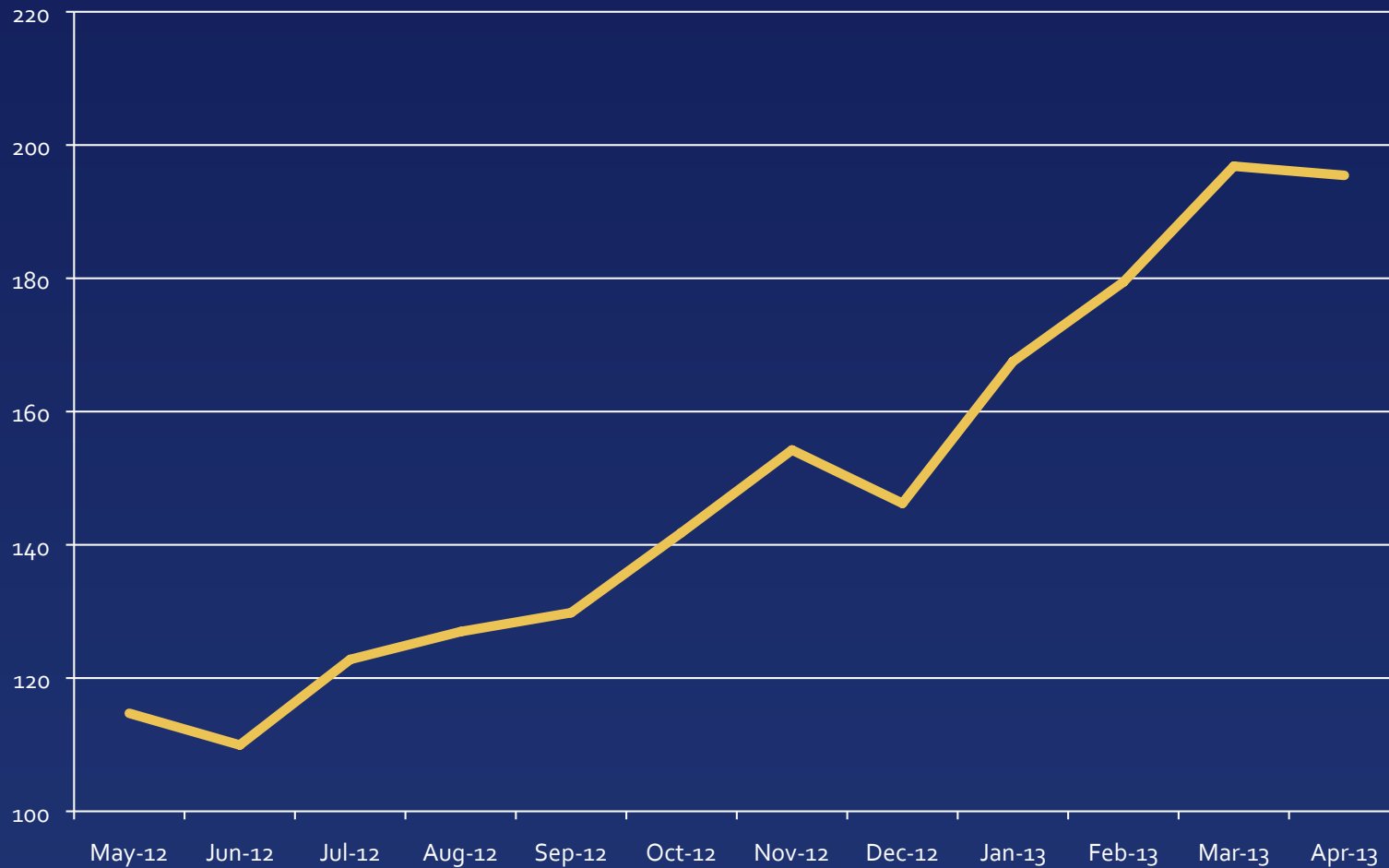
53 KNOWN IXPs IN THE LAC-IX REGION
14 COUNTRIES
43 CITIES

 EURO-IX MEMBERS
 OTHER IXPs

Euro-IX

Known LAC-IX region Traffic Growth 12 Months in Gbps

(over public peering LAN) 80 Gbps increase in 1 year





ICELAND

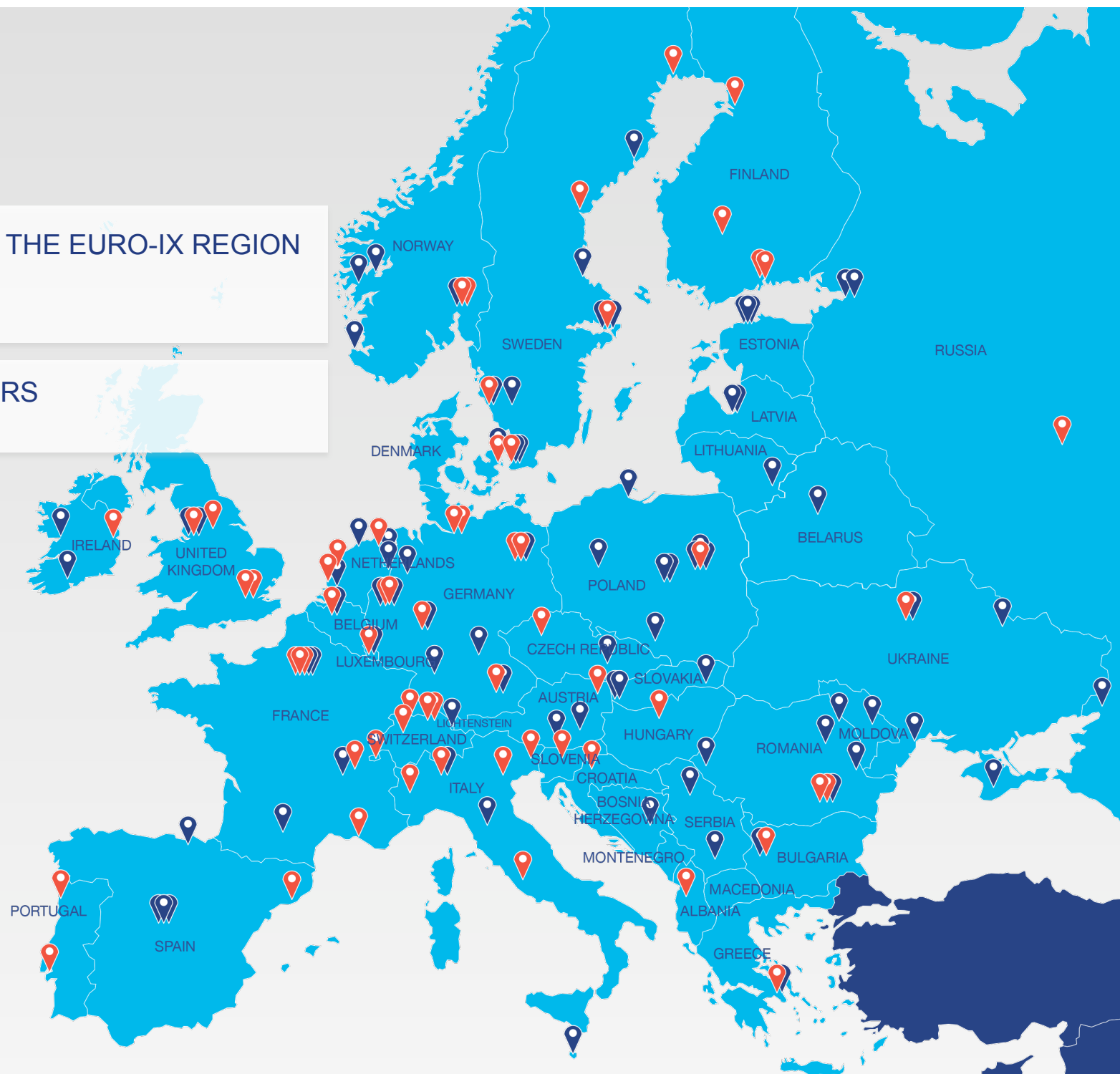
161 KNOWN IXPs IN THE EURO-IX REGION

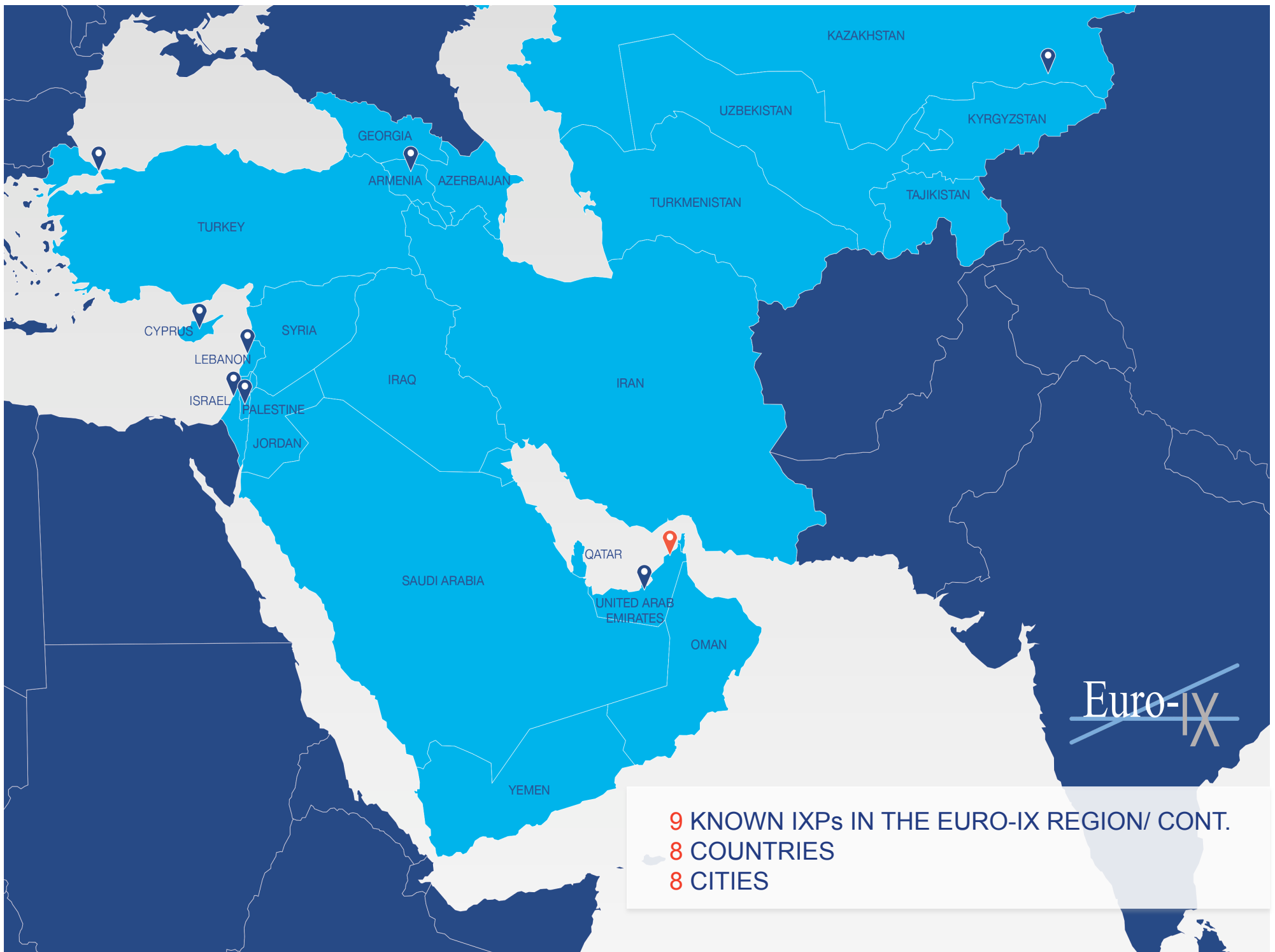
48 COUNTRIES

123 CITIES

 EURO-IX MEMBERS

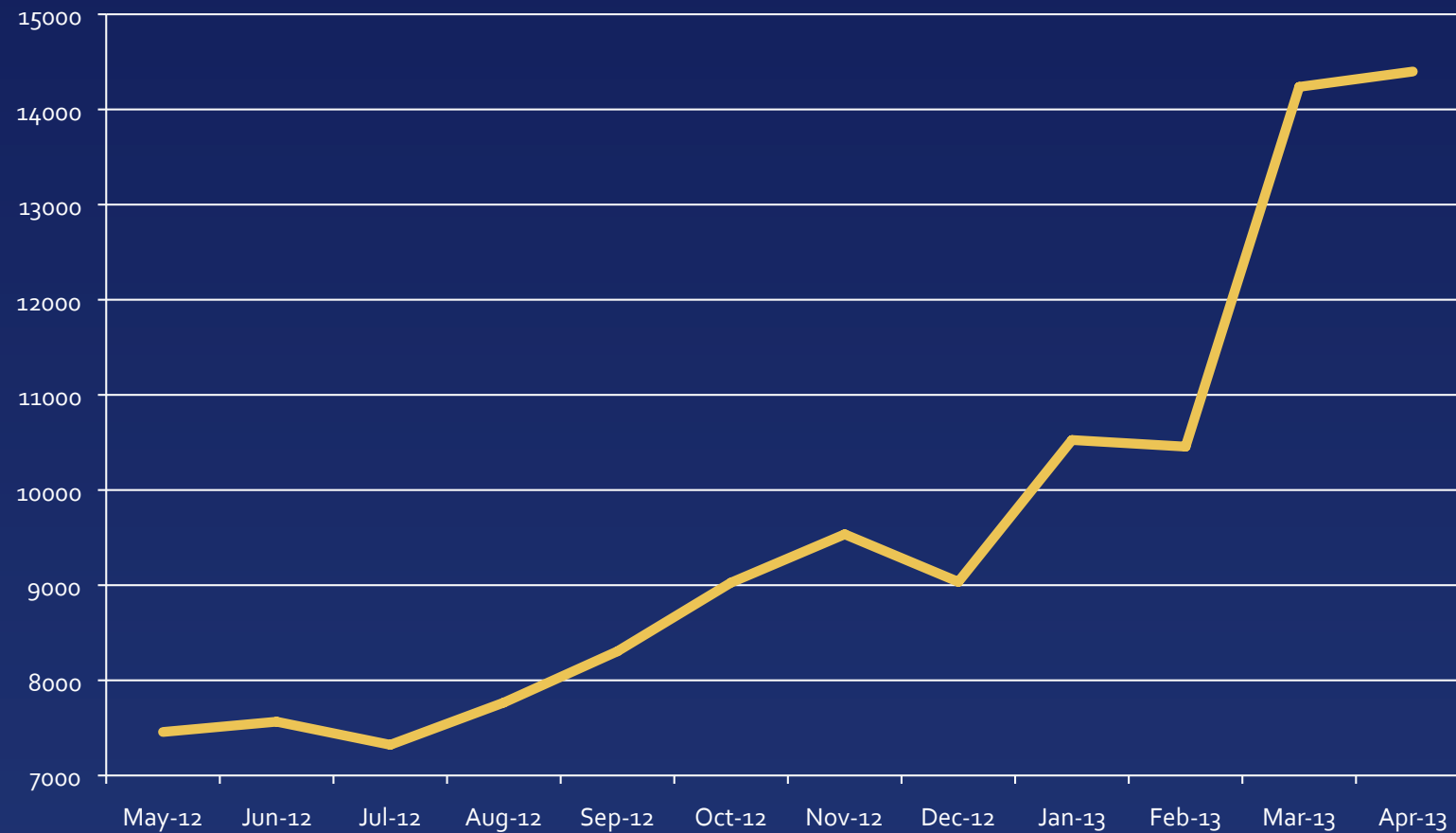
 OTHER IXPs

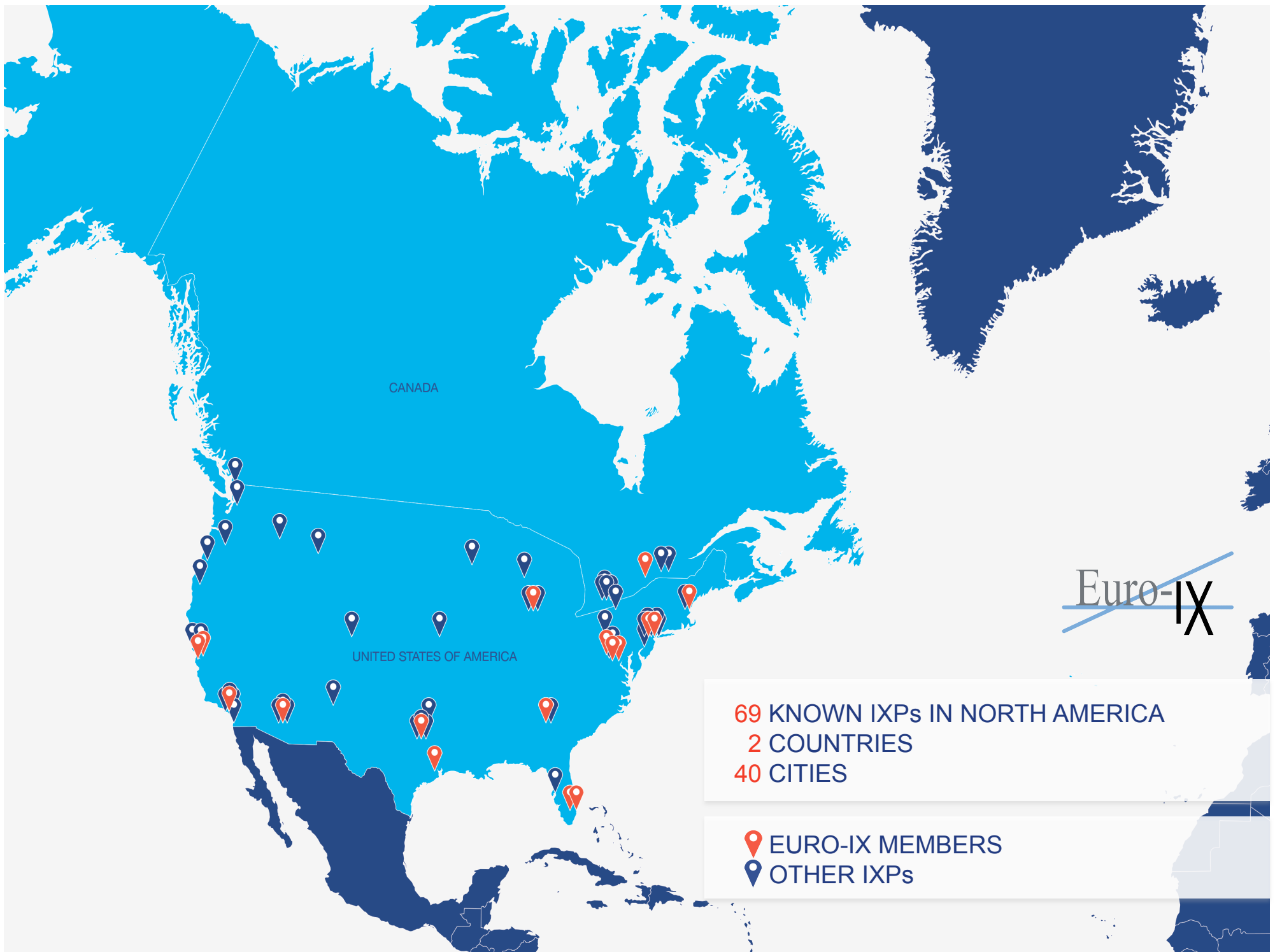


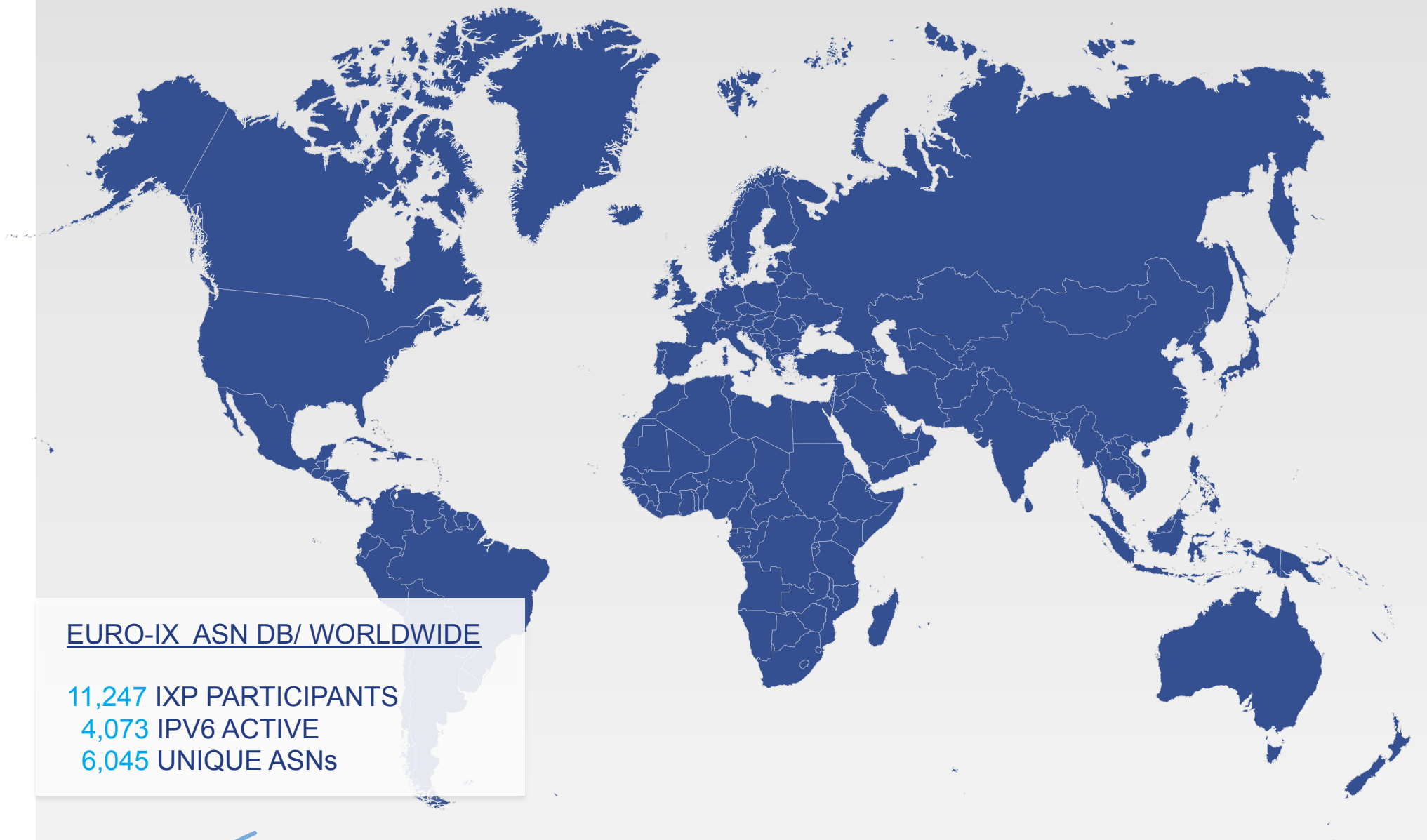


Euro-IX Region Traffic growth past 12 months in Gbps

(known IXPs in Europe, public peering LANs)







EURO-IX ASN DB/ WORLDWIDE

11,247 IXP PARTICIPANTS

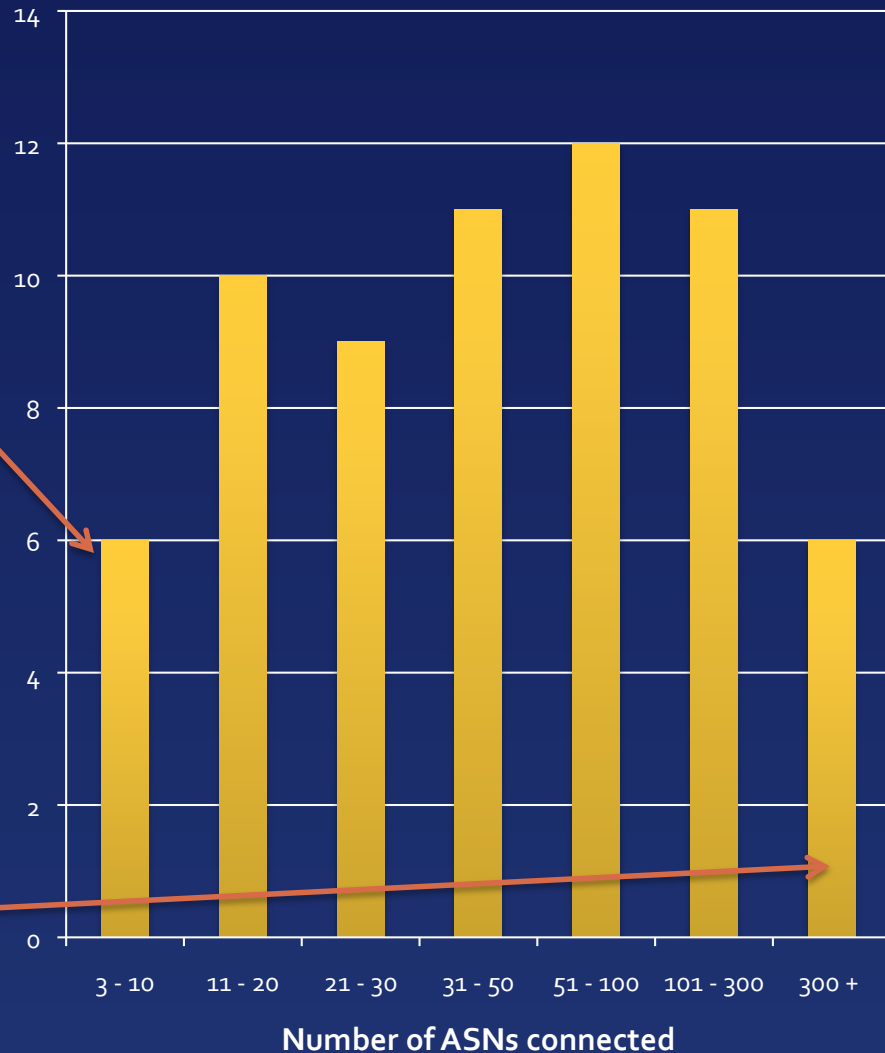
4,073 IPV6 ACTIVE

6,045 UNIQUE ASNs



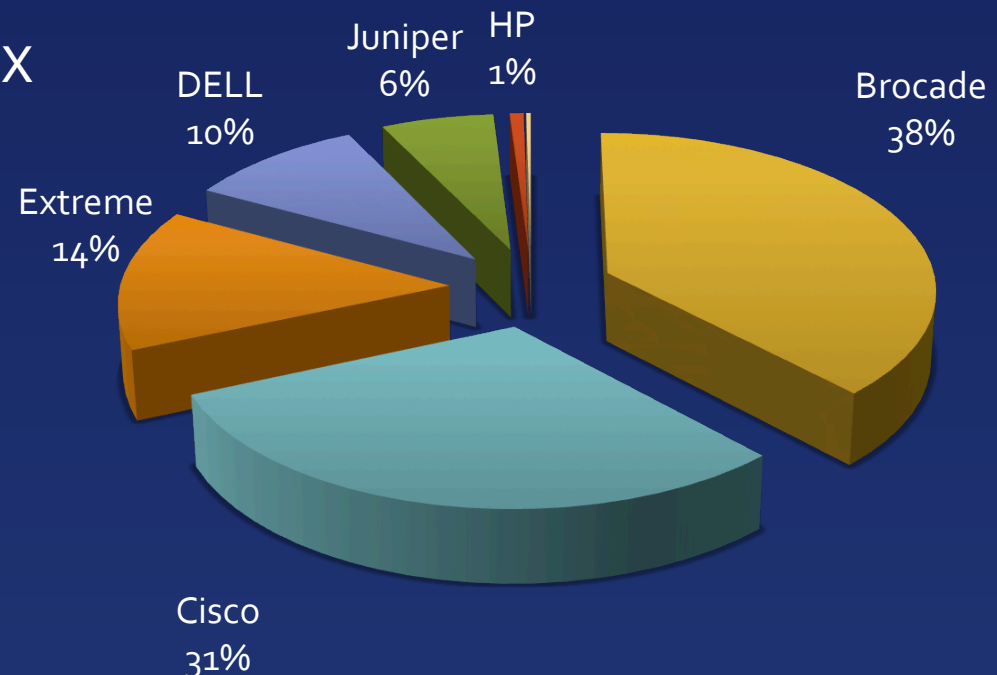
Range of Euro-IX IXPps with a given range of ASNs connected

- 3-10 ASNs connected - KINIX (Congo), TunIXP (Tunisia)
- 11-20 ASNs connected - TREX (Finland), NPIX (Nepal), OTTIX (Canada), GNIX (Netherlands)
- 20-100 ASNs connected - NAMEX (Italy), INEX (Ireland), Netnod (Sweden), JPNAP (Japan), NIX.CZ (Czech Republic), LyonIX (France)
- 101-300 ASNs connected - UA-IX (Ukraine), SWISS-IX (Switzerland), VIX (Vienna), Terremark (USA)
- 300+ ASNs connected - AMS-IX (Netherlands), DE-CIX (Germany), LINX (UK), MSK-IX (Moscow) & PTT.br (Brazil)



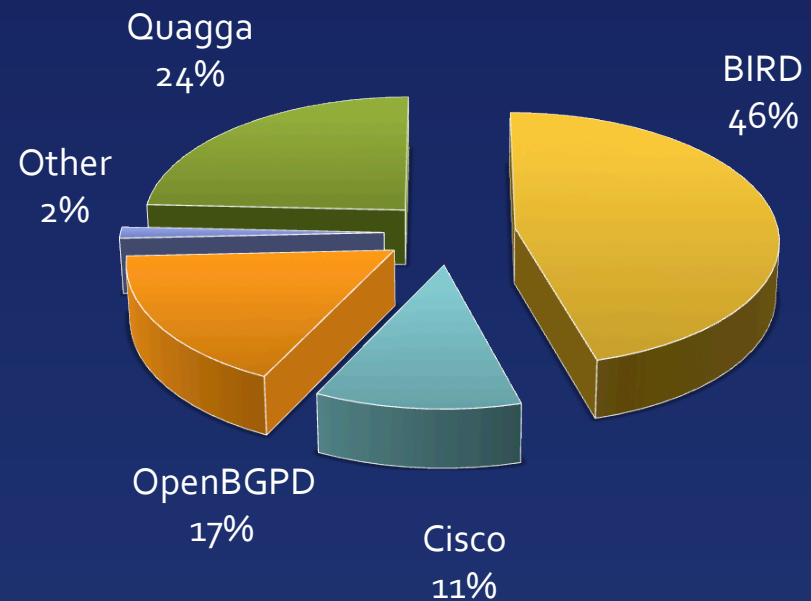
Market share of vendors among EU IXPs within the Euro-IX Membership (%)

- Brocade – AMS-IX, VIX, JPIX
- CISCO – LONAP, NIX.CZ, MSK-IX
- Extreme – PLIX, MSK-IX, LINX
- DELL (Force10) – DE-CIX, BCIX
- Juniper – LINX, VSIX



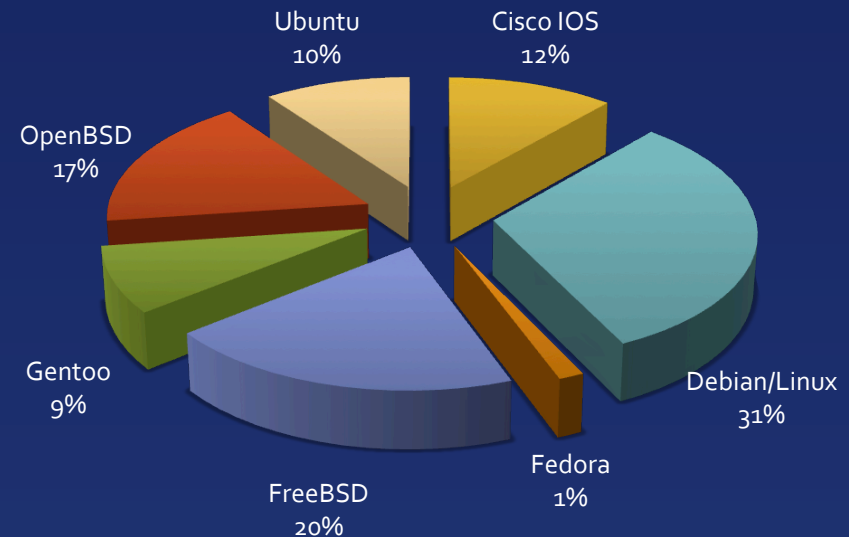
Route server daemons in use within the Euro-IX Membership (%)

- BIRD – LINX, France-IX, NIX.CZ, VIX
- CISCO - AMS-IX, MSK-IX, UA-IX
- OpenBGPD - BCIX, SWISS-IX, NL-ix
- Quagga – PTT.br, JPNAP, ECIX



Route server operating systems in use within the Euro-IX Membership (%)

- Debian/LINUX – AMS-IX, TeIX, DE-CIX
- CISCO IOS – BIX, UA-IX
- FreeBSD – NIZ.CZ, PLIX, LyonIX
- Ubuntu – PTT.br, ECIX

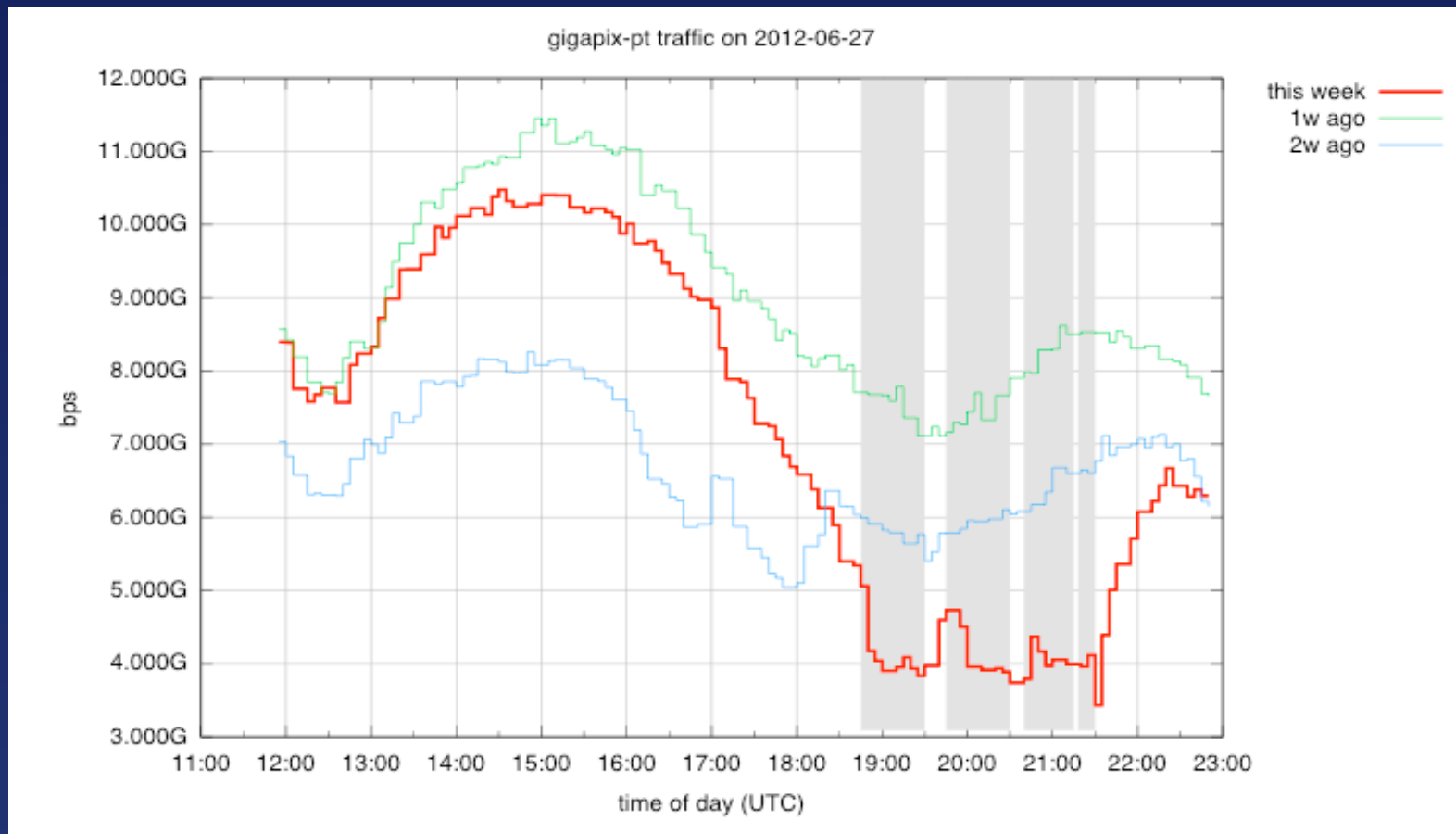


IXP Traffic During Sporting Events

- Asked for IXPs to volunteer
- Observed some interesting patterns during football matches
- Expected different patterns due to different of events during the Olympics
- More difficult to identify typical patterns

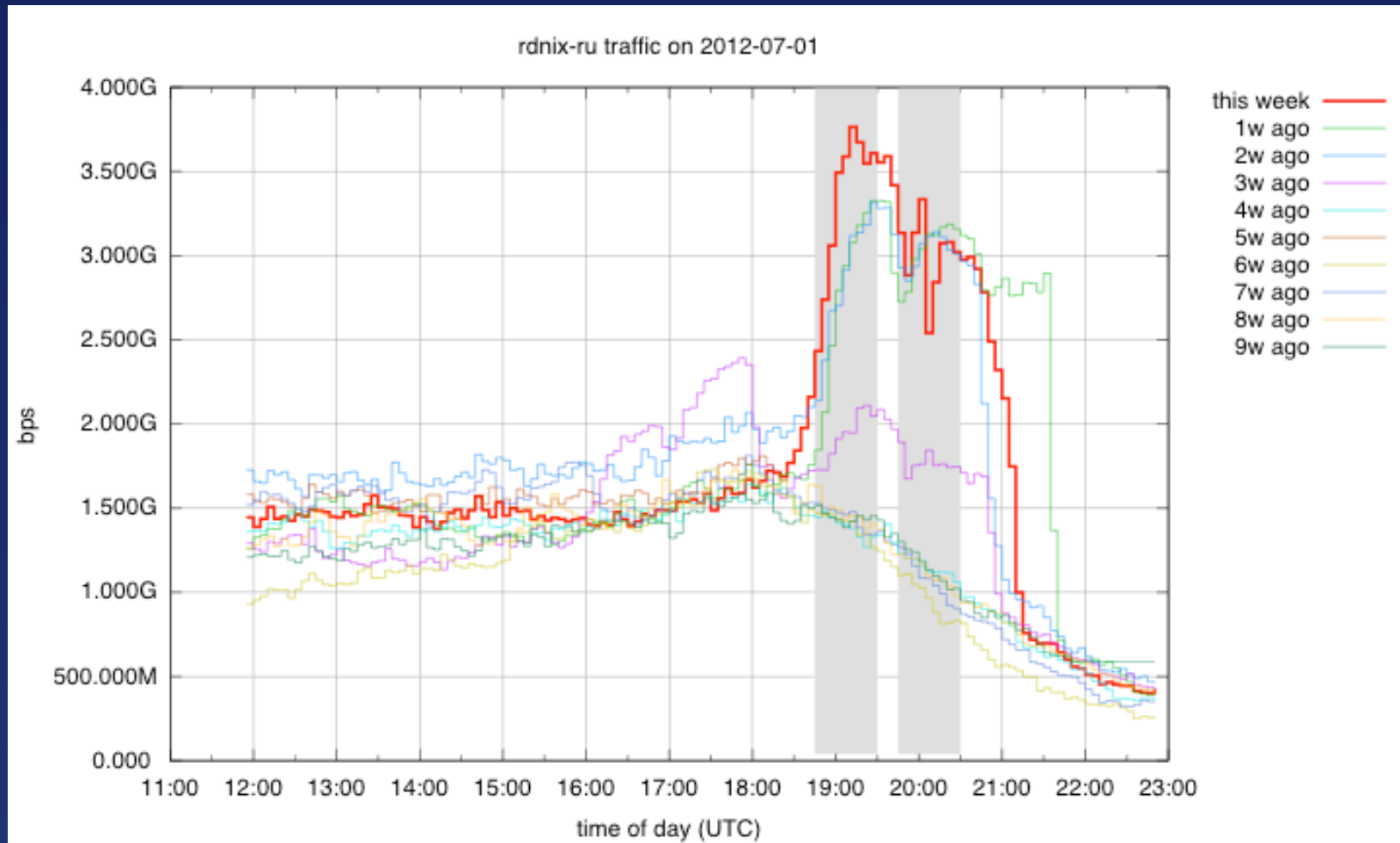
Typical Patterns during Match

- Semi-final Spain-Portugal with Penalties



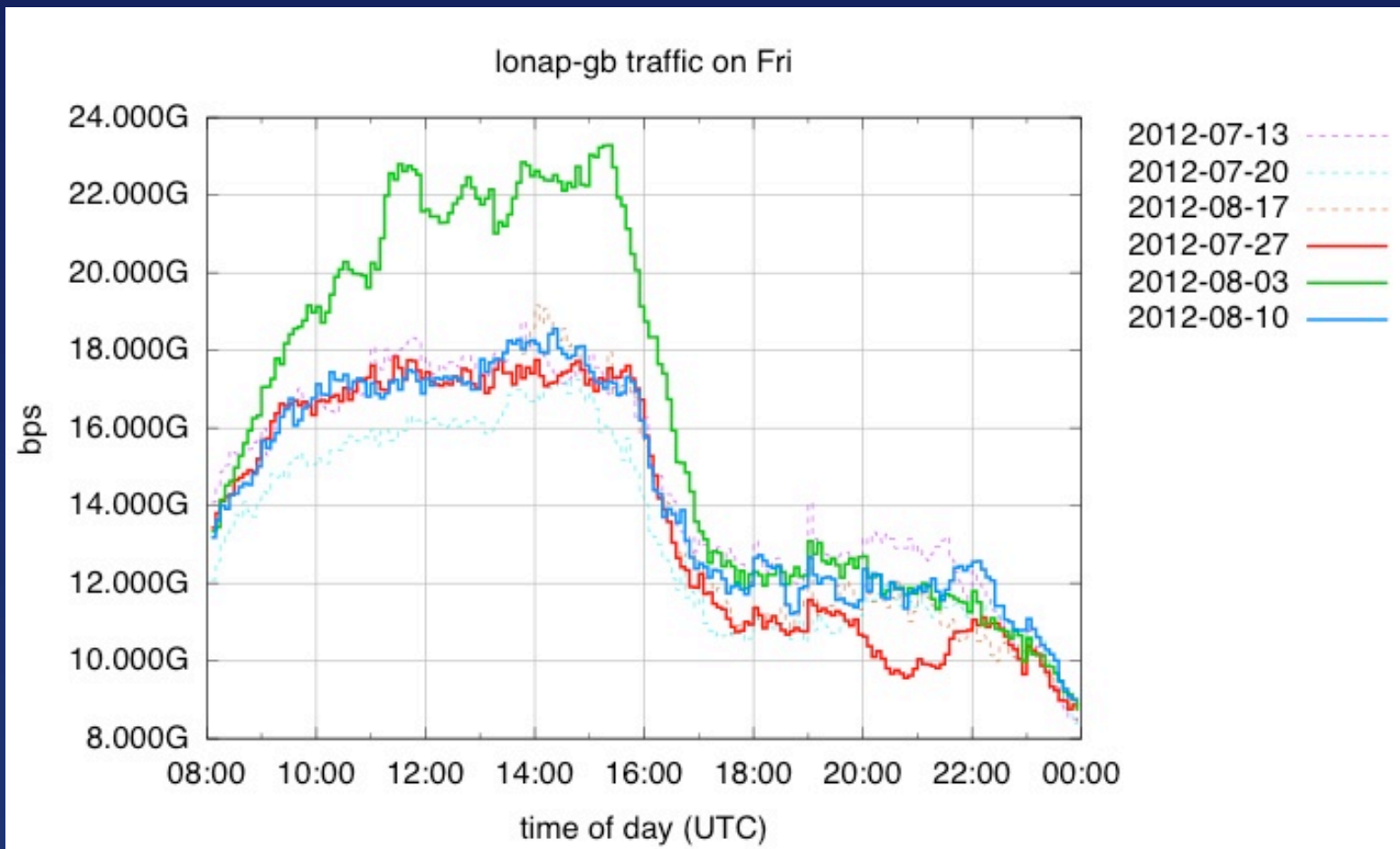
Effects on smaller IXPs

- Big peak in traffic during match, familiar double-bump



Popular events during office hours

- Heptathlon, cycling, tennis in the UK



Conclusions

- Great participation by all
- Sports events are reflected in traffic volume
- Discovered typical pattern for football matches
- Despite big peaks at times, internet can cope!
- Good exercise for other major events

Redbull Stratos Skydive

Request came in via twitter, everything was already in place, below traffic at LONAP during jump

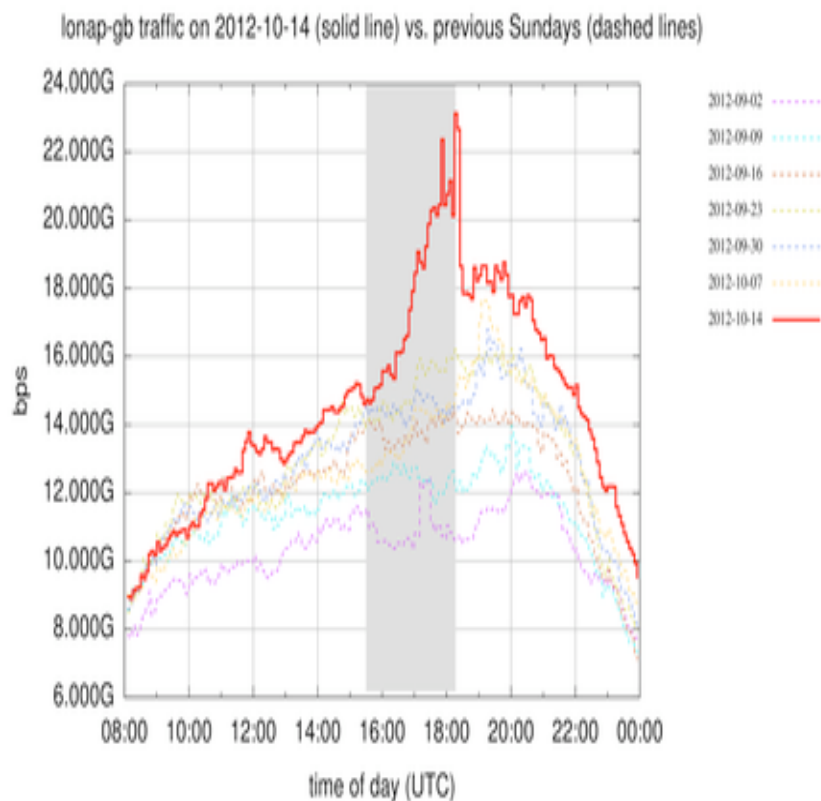


Figure 4: Traffic volume at LONAP (London, UK) during Stratos jump

14th October 2012, saw Austrian Skydiver Felix Baumgartner flew approx 39Km in a balloon before free falling and then parachuting to Earth, breaking the speed of sound as he did so. The event was live streamed over the internet and according to some records it broke the record for the most watched online video event. Timeline:

15:30 UTC: Balloon launch

18.08 UTC: Jump starts

18:17 UTC : Jump ends



Thank You!

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