Euro-IX Update
RIPE 68 – Warsaw
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Euro-IX, An Association of Internet Exchanges

Euro-IX is an association of Internet Exchanges Points, promoting an open interchange of ideas and experiences, gained to mutual advantage of the membership, by offering fora, meetings, mailing lists and on-line resources.

Euro-IX also gathers information on regulatory issues affecting member exchanges within the region and where appropriate from other jurisdictions that could potentially impact on the membership.
Euro-IX, An Association of Internet Exchanges

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
- Newsletter – Subscribe here: www.euro-ix.net/newsletters
- Working Groups and Task Forces
- Close relationship with IEEE Ethernet Study Group
- Signed MoU with ISOC to support IXPs
- Annual European IXP Report
- Twinning Program
- Benchmarking
Euro-IX, An Association of Internet Exchanges

- 77 affiliated IXPs:
  - 53 IXPs in the Euro-IX Region (32 Countries), operating over 100 Internet exchanges
  - 24 IXPs from the rest of the world
  - Newest Members:
    NetIX (Bulgaria)
    SOX (Serbia)
    Thinx IX (Poland)
    ARMIX (Armenia),
    KOSIX (Kosovo)
    TPIX (Poland)
Euro-IX,
An Association of Internet Exchanges

- **11 patrons**:
  - ADVA Optical Networking
  - Alcatel-Lucent
  - Brocade
  - Cisco
  - Extreme Networks
  - Huawei
  - Interxion
  - Juniper Networks
  - MRV
  - Telecity
  - Telehouse
The Euro-IX Region
IXPs in Euro-IX Region

- **183** Known IXPs
- **48** Countries have IXPs
- **133** Cities have IXPs

Check our Interactive Map
https://www.euro-ix.net/location-of-ixps
Growth of IXPs in the Euro-IX Region since 1993
Traffic Growth in Euro-IX Region

- Known Aggregated Traffic Growth (over public peering LAN)
- From 11,151 Gbps to 15,894 Gbps
- Number of IXPs monitored: from 71 to 85
IXPs in APIX Region

89 Known IXPs
18 Countries have IXPs
47 Cities have IXPs

Check our Interactive Map
https://www.euro-ix.net/location-of-ixps
Traffic Growth in APIX Region

- Known Aggregated Traffic Growth (over public peering LAN)
- From 1,023 Gbps to 1,291 Gbps
- Number of IXPs monitored: from 11 to 16
IXPs in AF-IX Region

- **28** Known IXPs
- **22** Countries have IXPs
- **26** Cities have IXPs

Check our Interactive Map
https://www.euro-ix.net/location-of-ixps
Traffic Growth in AF-IX Region

- Known Aggregated Traffic Growth (over public peering LAN)
- From 10 Gbps to 129 Gbps
- Number of IXPs monitored: from 5 to 11
IXPs in LAC-IX Region

- **50 Known IXPs**
- **11 Countries have IXPs**
- **43 Cities have IXPs**

Check our Interactive Map:
[https://www.euro-ix.net/location-of-ixps](https://www.euro-ix.net/location-of-ixps)
Traffic Growth in LAC-IX Region

- Known Aggregated Traffic Growth (over public peering LAN)
- From 197 Gbps to 506 Gbps
- Number of IXPs monitored: from 26 to 29
IXPs in North America

97 Known IXPs
2 Countries have IXPs
52 Cities have IXPs

Check our Interactive Map
https://www.euro-ix.net/location-of-ixps
Traffic Growth in North America

- Known Aggregated Traffic Growth (over public peering LAN)
- From 677 Gbps to 888 Gbps
- Number of IXPs monitored: from 6 to 18
Range of ASNs connected to Euro-IX Members

3 - 25 ASNs connected - TunIXP (Tunisia), FICIX (Finland)
26 - 50 ASNs connected - CIX (Croatia), DIX (Denmark)
51 - 100 ASNs connected – NaMeX (Italy), SFINX (France)
101 - 200 ASNs connected - UA-IX (Ukraine), TorIX (Canada)
201 - 400 ASNs connected – PLIX (Poland), MSK-IX (Russia)
401 - 650 ASNS connected – PTT.br (Brazil), AMS-IX (Netherlands)
Who connects to an IXP?

- Adult' hosting company: 27.6% (2013), 35.7% (2012)
- Content providers: 93.1% (2013), 85.7% (2012)
- Dedicated hosting providers: 96.6% (2013), 92.9% (2012)
- Dedicated VoIP providers: 62.1% (2013), 50.0% (2012)
- eCommerce companies (e.g. eBay, Amazon etc.): 48.3% (2013), 42.9% (2012)
- Enterprises (e.g. banks, airlines etc.): 69.0% (2013), 61.0% (2012)
- Gaming companies: 21.4% (2013), 37.9% (2012)
- Gambling companies: 7.1% (2013), 20.7% (2012)
- Government/local government organisations: 72.4% (2013), 71.4% (2012)
- Search engines: 65.5% (2013), 57.1% (2012)
- Other (please specify): 24.1% (2013), 28.6% (2012)
### Switch/Routers DB: Vendors used

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcatel-Lucent</td>
<td>2%</td>
</tr>
<tr>
<td>Brocade</td>
<td>34%</td>
</tr>
<tr>
<td>Cisco</td>
<td>26%</td>
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<td>Force 10</td>
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<td>10%</td>
</tr>
<tr>
<td>Juniper</td>
<td>7%</td>
</tr>
</tbody>
</table>

### Usage Breakdown

- **Brocade**: 34%
- **Cisco**: 26%
- **Extreme**: 13%
- **Force 10**: 8%
- **Glimmerglass**: 10%
- **Juniper**: 7%
- **Alcatel-Lucent**: 2%

**Vendors**:
- Alcatel-Lucent: DE-CIX
- Brocade: AMS-IX, VIX, JPIX
- CISCO: LONAP, NIX.CZ, MSK-IX
- Extreme: PLIX, MSK-IX, LINX
- DELL (Force 10): BCIX
- Juniper: LINX, VSIX

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Route Server DB: Daemon’s used

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

- **Bird 52%**
- **Quagga 19%**
- **Cisco 16%**
- **OpenBGPD 13%**
Route Server DB: Operating Systems used

- **FreeBSD** – TOP-IX, France-IX
- **CISCO** – MSK-IX, JPIX, OTTIX
- **OpenBGPD** – BCIX, SWISS-IX, NL-IX
- **Debian** – BIX, DE-CIX, Netnod
Other Internet Exchange Point Associations (IXPAs)
IX-F
Internet Exchange Point Federation

- MOU signed by APIX, Euro-IX and LAC-IX to form the IX-F in November 2012 – www.ix-f.net
- Idea to have a Global IXP DB
- Set standards and BCPs
- Automate Data Collection from IXPs
- Plans to collaborate with other external Databases
- Met twice in 2013, planned 2 meetings in 2014 (1 was during APRICOT in Petaling Jaya, Malaysia)
IX-F Board

APIX
Raphael Ho - Equinix (Hong Kong)
Katsuyasu Toyama - JPNAP (Japan)

Euro-IX
Arnold Nipper - DE-CIX (Germany)
John Souter - LINX (United Kingdom)

LAC-IX
Ariel Graizer - NAP CABASE (Argentina)
Milton Kashiwakura - PTT.br (Brazil)
We have loads of IX Databases

And more...
IX-F IXP database

- Development of current Euro-IX database
- Only source that IXPs own and maintain data in
- IXP data maintained by IXPs ensures greater accuracy
- Useful for the IXP members to see IX data in context
- Great for research
- A single canonical place for IXP data
Others will be able to mirror IX-F data
The plan…
IX-F DB

- Hackathon in Sheffield last week
- Plan to build a new DB for IXPs
- IXPs own their own data (update/add/delete)
- Already starting cleaning the IXP data
- Wanted something open and plugable
IX-F DB API server written using Python / Django, which can:

- get / create / update / delete IXP and Organisation objects
- all interaction is JSON
- all non-sensitive information will be publically available
- Members of IXPAs (and others as appropriate) will be able to create, update and delete IXP objects from the databases.
• We have a proof of concept client to interact with this database in Python including unit test code at: https://github.com/euro-ix/ixf-client-py

• The PHP version of this with unit tests also available at: https://github.com/euro-ix/ixf-client-php
It is work in progress… therefore:

- We have migration scripts to migrate / keep IX-F in sync from euro-ix for the next few months while the euro-ix database remains as the primary database. These are at: https://github.com/euro-ix/euroix-ixf-sync

- All code is available on the Euro-IX GitHub repository https://github.com/Euro-IX
Euro-IX GitHub: https://github.com/Euro-IX
The Internet revealed, a movie about IXPs

Available in:
- English
- French
- German
- Portuguese
- Turkish
- Spanish
- Romanian
- Arabic
- Russian
- Czech
- Italian

• Check out the Euro-IX Youtube channel: https://www.youtube.com/channel/UCFyucVRAAMzxyJlsxnGwsjw

• More languages to come

• If you're interested in translating the video contact us
Questions?
Thank you!