



# **European Internet Exchange Association**

## **2011 Report on European IXPs**

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*<http://www.euro-ix.net>*

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## Section 1. Introduction

### 1.1 Foreword

This report has been compiled by the European Internet Exchange Association (Euro-IX) to give an overview of the European Internet Exchange Point situation at the end of 2011:

- The number of Internet Exchange Points (IXPs) operating in Europe
- Related statistics and trends that are now appearing in the European IXP market
- The evolution over the last couple of years

The Euro-IX Board has decided to carry out a thorough review of the report, in view of its content and to adapt it optimally to its readership. In particular, a task force has been set up to collect data as automatically as possible. The work of the task force is continuing and the results are expected to become available by the end of 2012. Consequently, the report for 2011 is different from previous years. The 2012 report will take into account the input from the task force and Euro-IX expects to publish it in Spring 2013

### 1.2 Notes on this report

- Not all European IXPs make traffic statistics publicly available and no attempts at estimates were made where true figures were not presented.*
- All information has been gathered on a best effort basis and relies on the information that is published by individual IXPs. Therefore all information contained in this report is only as accurate as the information that has been published by these IXPs. If you are planning to base your decision on the information contained in this report we strongly advise to check the information against up-to-date data.*
- It should be noted that not all European IXPs measure their peak traffic using the same periodic average. While the majority of IXPs choose to take samples every five minutes some have chosen to take these samples more or less frequently.*
- A best effort was made to list all known IXPs in Europe. Euro-IX may be unaware of the existence of one or more IXP and thus they do not appear in the list. Euro-IX welcomes any information about IXPs not shown in this report.*
- Some IXPs that were listed in the 2010 report have not been included in the 2011 report due to the fact that either no contact can be made with them to verify if they are still operational, they have no working website or we have received information that they are no longer operational*
- In 2011 we have made further efforts, to get in contact with a larger percentage of the European IXP community, so that we were able to provide even more accurate information in this report. Euro-IX was in contact with 120 of the 144 listed IXPs. This increase in contact has allowed us to provide more accurate trends on traffic statistics as well as better details of IXP establishment dates, participants and the switches that are being used at IXPs across Europe.*

### 1.3 Internet Exchange Point (IXP)

Euro-IX has accepted the industry definition of an IXP as being:

*“A physical network infrastructure operated by a single entity with the purpose to facilitate the exchange of Internet traffic between Autonomous Systems. The number of Autonomous Systems connected should at least be three and there must be a clear and open policy for others to join.”*

### 1.4 About Euro-IX

The European Internet Exchange Association (Euro-IX) was formed in May 2001 with the intention to further develop, strengthen and improve the Internet Exchange Point (IXP) community.

A number of Internet Exchange Points recognised a need to combine their resources so as to co-ordinate technical standards across the continent, develop common procedures, as well as share and publish statistics and other information. This publishing of information would in turn give all interested parties a better insight into the world of IXPs.

Euro-IX was originally set-up as a discussion forum for European based IXPs. However as interest started to grow from other regions it seemed a natural progression for Euro-IX to expand beyond its original boundaries. Thus in January of 2005 the association decided to open its doors to IXPs from outside of Europe and this saw the introduction of allowing non-European based IXPs to join Euro-IX as **Associate Members**.

In 2009 the association introduced the "**Remote Associate Member**" category, intended for IXPs from outside Europe that would like to affiliate themselves with Euro-IX, but do not envisage attending Euro-IX forums on a regular basis.

As of 2011, the "Remote Associate Member" category is also open to European IXPs.

By the end of 2011, Euro-IX counted 59 members from the IXP community and 11 Patrons from the IXP-related equipment-vendor and colocation sectors of the community.

The 59 member IXPs are from 35 countries and the affiliations are as follows:

Members: 39 (from 23 European countries)

Associate Members: 11 (from Brazil, Curacao, Egypt, Japan, India and the United States)

Remote Members: 9 (4 from European countries: Finland, Italy, Luxembourg and Ukraine and 5 from non-European countries: Iceland, Kenya, Nepal, Nigeria and Tanzania)

**1.5 List of Euro-IX affiliates****1.5.1 Euro-IX Member IXPs (Europe)**

| Member         | City          | Country                  |
|----------------|---------------|--------------------------|
| AMS-IX         | Amsterdam     | The Netherlands          |
| BCIX           | Berlin        | Germany                  |
| BIX            | Budapest      | Hungary                  |
| BIX.BG         | Sofia         | Bulgaria                 |
| BNIX           | Brussels      | Belgium                  |
| CATNIX         | Barcelona     | Spain                    |
| CIX            | Zagreb        | Croatia                  |
| CIXP           | Geneva        | Switzerland              |
| DE-CIX         | 4 Cities      | Germany                  |
| DIX            | Lyngby        | Danmark                  |
| ECIX           | 3 Cities      | Germany                  |
| Equinix        | Paris, Zurich | France, Switzerland      |
| FICIX          | 3 Cities      | Finland                  |
| France-IX      | Paris         | France                   |
| GigaPIX        | Lisbon        | Portugal                 |
| GN-IX          | Groningen     | Netherlands              |
| GR-IX          | Athens        | Greece                   |
| INEX           | Dublin        | Ireland                  |
| InterLAN       | Bucharest     | Romania                  |
| LINX           | London        | United Kingdom           |
| LONAP          | London        | United Kingdom           |
| Lyonix         | Lyon          | France                   |
| MIX            | Milan         | Italy                    |
| MSK-IX         | Moscow        | Russia                   |
| NaMeX          | Rome          | Italy                    |
| Netnod         | 5 cities      | Sweden                   |
| NIX            | 5 Cities      | Norway                   |
| NIX.CZ         | Prague        | Czech Republic           |
| NL-ix          | 19 Cities     | The Netherlands          |
| PacketExchange | 26 Cities     | Europe and United States |
| PLIX           | Warsaw        | Poland                   |
| RoNIX          | Bucharest     | Romania                  |
| SFINX          | Paris         | France                   |
| SIX            | Ljubljana     | Slovenia                 |
| SwissIX        | 5 cities      | Switzerland              |
| TIX-Tuscany    | Florence      | Italy                    |
| TOP-IX         | Torino        | Italy                    |
| VIX            | Vienna        | Austria                  |
| VSIX           | Padova        | Italy                    |

### 1.5.2 Euro-IX Associate Member IXPs

| Associate Member        | City       | Country       |
|-------------------------|------------|---------------|
| BBIX                    | 6 Cities   | Japan         |
| CAR-IX                  | Willemstad | Curaçao       |
| Coresite                | 11 Cities  | United States |
| Equinix Switch and Data | 34 Sites   | United States |
| JPIX                    | 4 Cities   | Japan         |
| JPNAP                   | 3 Cities   | Japan         |
| MEIX                    | Cairo      | Egypt         |
| NIXI                    | 10 Cities  | India         |
| NOTA/Terremark          | Miami      | United States |
| PTT.br                  | 16 Cities  | Brazil        |
| Telx                    | 4 Cities   | United States |

### 1.5.3 Euro-IX Remote Associate Member IXPs, Europe

| Remote Member | City        | Country    |
|---------------|-------------|------------|
| FVG-IX        | Udine       | Italy      |
| LU-CIX        | Bettembourg | Luxembourg |
| TREX          | Tampere     | Finland    |
| UA-IX         | Kiev        | Ukraine    |

### 1.5.4 Euro-IX Remote Associate Member IXPs, outside Europe

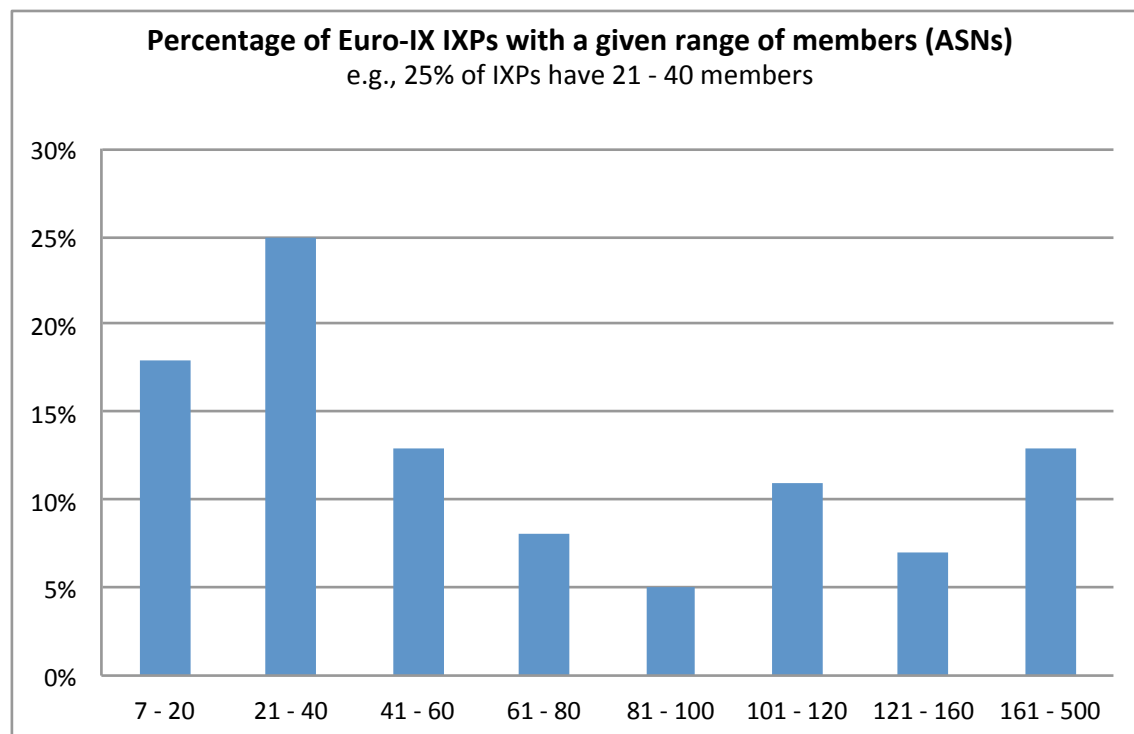
| Remote Member  | City          | Country  |
|----------------|---------------|----------|
| IXPN           | Lagos         | Nigeria  |
| KIXP           | Nairobi       | Kenya    |
| NPIX-Kathmandu | Kathmandu     | Nepal    |
| RIX            | Reykjavik     | Iceland  |
| TIX-Tanzania   | Dar es Salaam | Tanzania |

### 1.5.5 Euro-IX Patrons

| Patron           | City        | Country         |
|------------------|-------------|-----------------|
| Arista Networks  | Santa Clara | United States   |
| Brocade          | Amsterdam   | The Netherlands |
| Cisco Systems    | San Jose    | United States   |
| Extreme Networks | Amsterdam   | The Netherlands |
| Force10 Networks | London      | United Kingdom  |
| Glimmerglass     | Hayward     | United States   |
| Interxion        | Amsterdam   | The Netherlands |
| Juniper Networks | San Jose    | United States   |
| MRV              | Amsterdam   | The Netherlands |
| TelecityGroup    | London      | United Kingdom  |
| Transmode        | Stockholm   | Sweden          |

### 1.6 Participants distribution at Euro-IX member IXPs

The chart below shows the distribution of participants (customers, members) at Euro-IX IXPs. The number of participants at IXPs varies between 7 and nearly 500. The largest share of IXPs, namely 25%, have between 21 and 40 members. The terms participants, customers and members are in use at IXPs, but they all mean Autonomous System Numbers (ASNs).



**1.7 Evolution since 2007**

The table below shows the evolution of the number of countries in Europe with IXPs, the known number of IXPs present in these countries, and aggregated peak traffic figures.

The aggregated peak traffic volume is determined by collecting publicly available traffic statistics from Euro-IX Member IXPs. Data was captured during a 12-month period (September through to August).

| Evolution since 2007                                             | Data Source                                                          | 2007 | 2008  | 2009  | 2010  | 2011  |
|------------------------------------------------------------------|----------------------------------------------------------------------|------|-------|-------|-------|-------|
| Number of countries in Europe with IXPs                          | <i>Euro-IX and Wikipedia</i>                                         | 31   | 31    | 33    | 35    | 35    |
| Known operating IXPs in these Cities in Europe                   | <i>Euro-IX and Wikipedia</i>                                         | 116  | 116   | 121   | 127   | 144   |
| Aggregated peak IXP traffic within the Euro-IX membership [Gbps] | <i>Gathered monthly from known IXPs published traffic statistics</i> | 971  | 1,521 | 2,454 | 4,100 | 5,965 |

## Section 2. European IXP growth since 1992

### 2.1 IXP Trends in Europe since 1992

The table below shows the establishment of known IXPs in Europe since 1993. In some cases an IXP may have been ‘unofficially’ established (i.e. actually operating before becoming a legal entity) earlier than shown in this section.

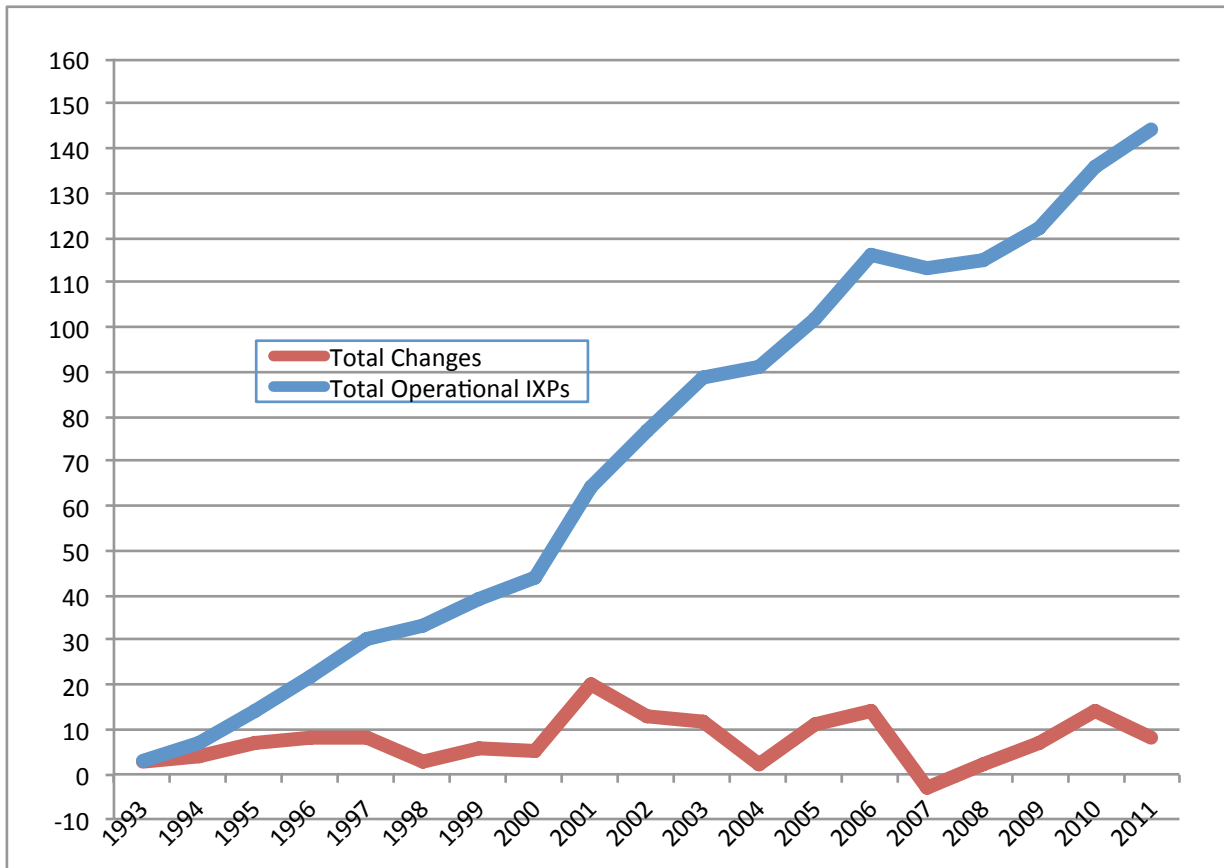
The three-year period between 2001 and 2003 saw the growth of some 45 IXPs in Europe. The table shows that the sector continues to grow, but at a lower rate.

| Year | IXPs    |        |        |             |
|------|---------|--------|--------|-------------|
|      | Started | Closed | Growth | Operational |
| 1993 | 3       | 0      | 3      | 3           |
| 1994 | 4       | 0      | 4      | 7           |
| 1995 | 7       | 0      | 7      | 14          |
| 1996 | 8       | 0      | 8      | 22          |
| 1997 | 8       | 0      | 8      | 30          |
| 1998 | 3       | 0      | 3      | 33          |
| 1999 | 6       | 0      | 6      | 39          |
| 2000 | 5       | 0      | 5      | 44          |
| 2001 | 20      | 0      | 20     | 64          |
| 2002 | 13      | 0      | 13     | 77          |
| 2003 | 12      | 0      | 12     | 89          |
| 2004 | 2       | 0      | 2      | 91          |
| 2005 | 11      | 0      | 11     | 102         |
| 2006 | 14      | 0      | 14     | 116         |
| 2007 | 3       | 6      | -3     | 113         |
| 2008 | 14      | 12     | 2      | 115         |
| 2009 | 12      | 5      | 7      | 122         |
| 2010 | 18      | 4      | 14     | 136         |
| 2011 | 8       | 0      | 8      | 144         |

Source: Euro-IX, peeringdb and Wikipedia

## 2.2 Changes and total IXP growth per year

This graph illustrates the growth of the known operational IXPs and the changes that occurred in a particular year

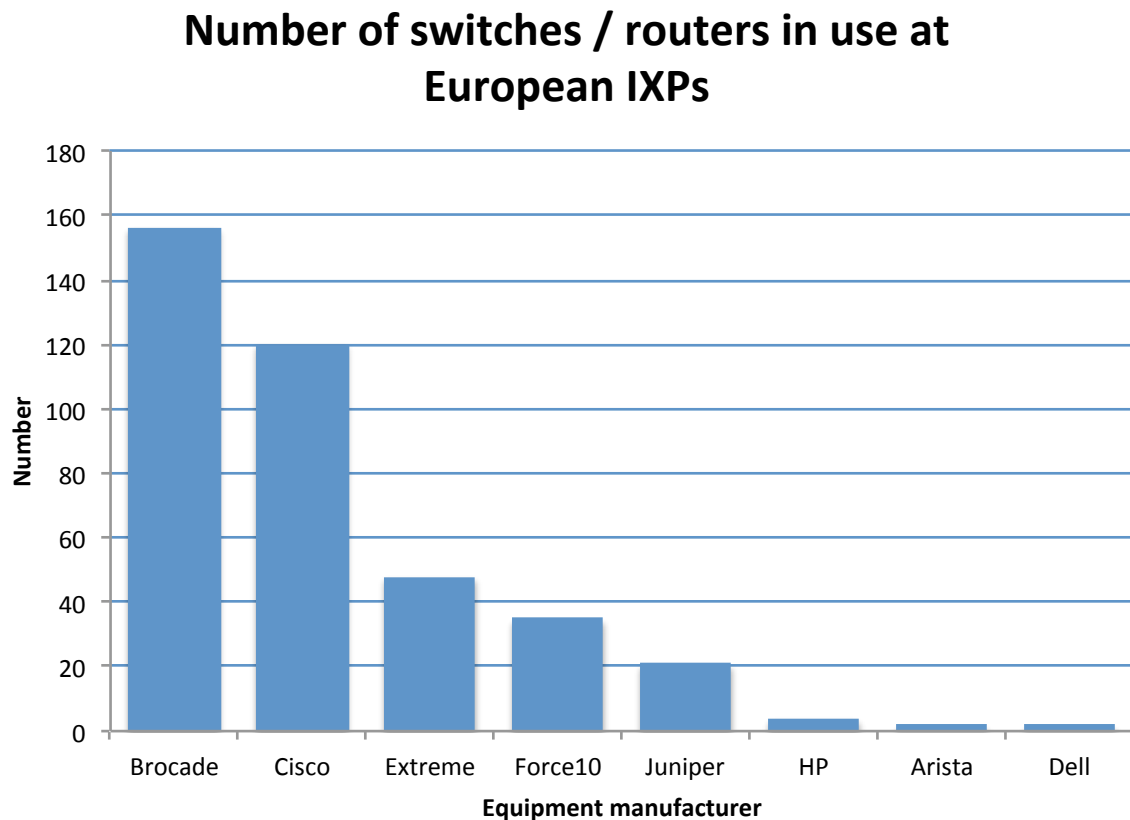


## Section 3. IXP Switching Platform Technology

### 3.1 Switches in use at European IXPs

This graph displays the number of switches and/or routers being used by IXPs across Europe. The IXPs enter the data for their exchange point(s), Euro-IX collects the data supplied and the totals are shown below.

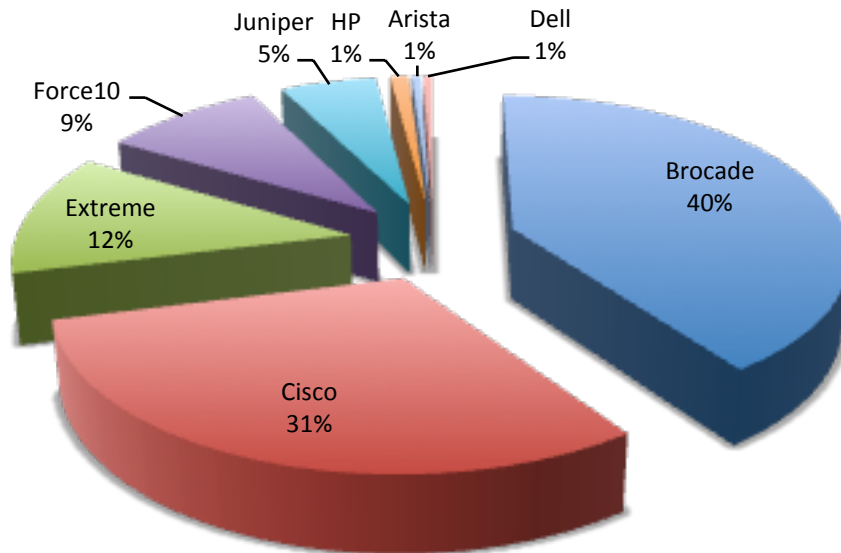
There is no direct relationship between the number of devices/vendors in use at IXPs and such factors, as the traffic at IXPs, port density, deployment type of switches and routers (e.g., core, distribution/aggregation, edge), and number of participants (ASNs).



### 3.2 Market Share of switch/router vendors among European IXPs

This chart shows the percentage of switch/router vendors deployed at European IXP

#### Market share of switch/router vendors among European IXPs



### 3.3 Route Server daemons in use at Euro-IX member IXPs

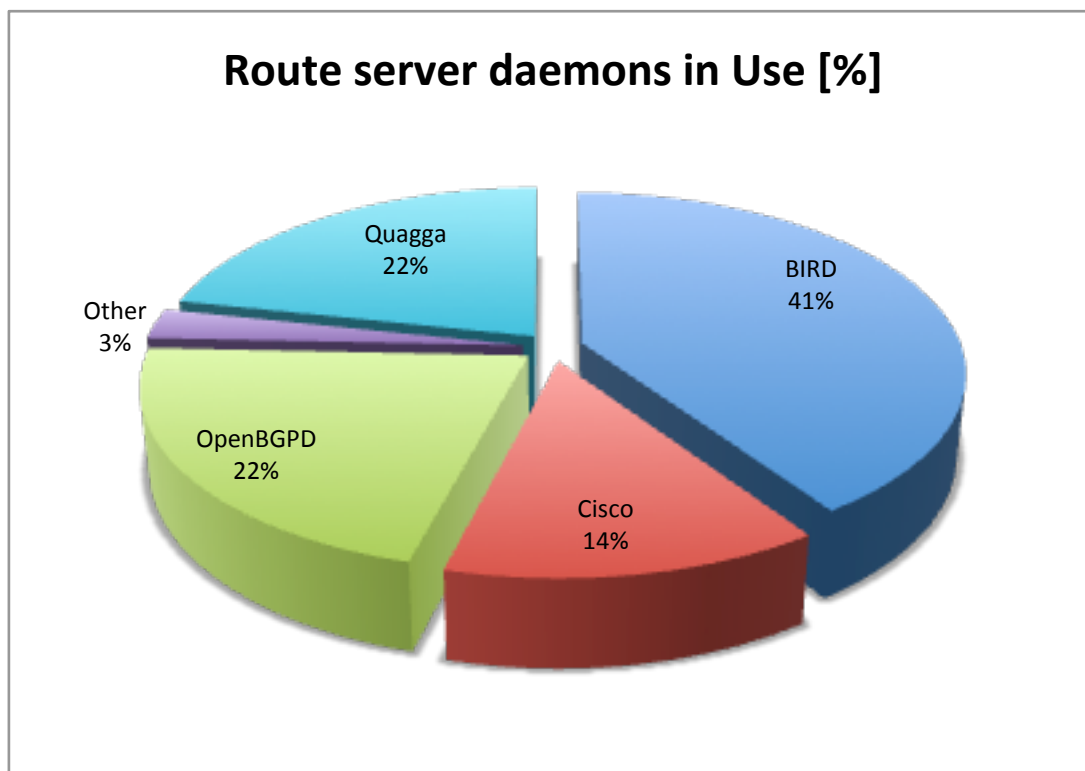
Since 2009 Euro-IX has implemented a route server database for its membership. This database allows the participating IXP to provide information about the route servers that they have in use at their IXPs, in particular about the:

- Hardware
- Daemons
- Operating systems
- Filters.

Thirty-Seven European Euro-IX IXPs have entered information in this database. There are 66 route servers in use at these IXPs. Data entered into the database may be only partially complete.

The table and the chart below show the use of route-server daemons.

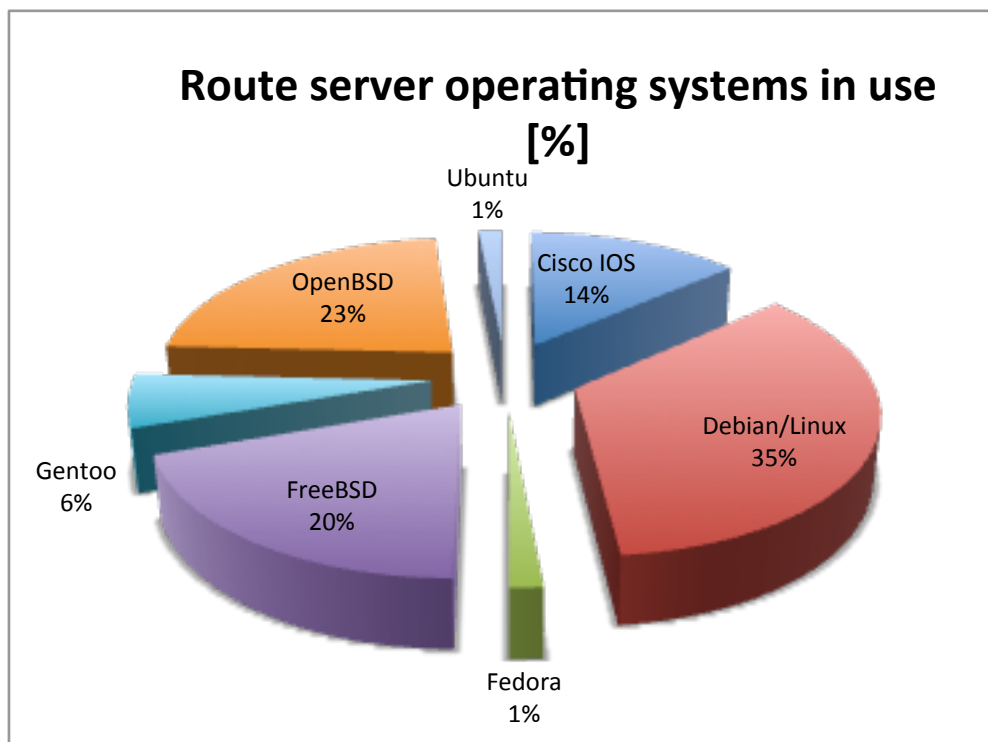
| Daemon   | Number | Percentage |
|----------|--------|------------|
| BIRD     | 15     | 41%        |
| Cisco    | 5      | 14%        |
| OpenBGPD | 8      | 22%        |
| Other    | 1      | 3%         |
| Quagga   | 8      | 22%        |



### 3.4 Route Server operating systems in use at Euro-IX member IXPs

The table and the chart on this page show the use of route-server operating systems

| OS           | Number | Percentage |
|--------------|--------|------------|
| Cisco IOS    | 9      | 14%        |
| Debian/Linux | 23     | 35%        |
| Fedora       | 1      | 2%         |
| FreeBSD      | 13     | 20%        |
| Gentoo       | 4      | 6%         |
| OpenBSD      | 15     | 23%        |
| Ubuntu       | 1      | 2%         |



## Section 4. Further information

### 4.1 Resources

In an effort to seek further information regarding IXPs that we were not able to get in direct contact with we made use of the **Peering Db** <https://www.peeringdb.com/> and we would like to express our appreciation to those responsible for managing this database.

Of course we would like to additionally thank all of the European IXPs, especially those that provide publicly available information of traffic statistics.

The biggest ***thank you*** goes to the 59 affiliated Euro-IX Member IXPs that commit themselves to openly exchanging information with the rest of the IXP community via the Euro-IX website and the biannual Euro-IX Forums. Thank you to all Euro-IX Members!

### 4.2 About the author

Bijal Sanghani is Head of the Euro-IX Secretariat, she started in October 2011 and has since been closely involved in working with European Internet Exchange Points. She is in personal and regular contact with more than 100 IXPs and does her best to keep an eye on the rest of the community in Europe and other regions around the world.

Bijal graduated from Middlesex University with a BSc Hons in Mathematics and Applied Computing. Before joining Euro-IX she worked at Reliance Globalcom (formerly FLAG Telecom), where she and the original team started the build of the AS15412 network. She has been involved with the Peering Community since 2003 and has been a RIPE NCC Services Working Group Co-chair since 2005 and been on the UKNOF Program Committee since 2006.

### 4.3 Contact

We very much welcome all forms of feedback and suggestions concerning this report and will do our best to answer any further requests for information.

**Bijal Sanghani**

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*<http://www.euro-ix.net>*

## APPENDIX

| Country               | Number of IXPs in country | IXP based in city | Name of IXP                                     | IXP acronym       |
|-----------------------|---------------------------|-------------------|-------------------------------------------------|-------------------|
| <b>Austria</b>        | <b>2</b>                  |                   |                                                 |                   |
|                       |                           | Klagenfurt        | Alpes Adria Internet Exchange                   | <b>AAIX</b>       |
|                       |                           | Vienna            | Vienna Internet eXchange                        | <b>VIX*</b>       |
| <b>Belarus</b>        | <b>1</b>                  |                   |                                                 |                   |
|                       |                           | Minsk             | Belarus National Internet Exchange Point        | <b>BYIX</b>       |
| <b>Belgium</b>        | <b>2</b>                  |                   |                                                 |                   |
|                       |                           | Brussels          | Belgian National Internet Exchange              | <b>BNIX*</b>      |
|                       |                           |                   | FreeBIX                                         | <b>FreeBIX</b>    |
| <b>Bulgaria</b>       | <b>2</b>                  |                   |                                                 |                   |
|                       |                           | Sofia             | Bulgarian Internet Exchange                     | <b>BIX.BG*</b>    |
|                       |                           |                   | Balkan Internet Exchange                        | <b>B-IX</b>       |
| <b>Croatia</b>        | <b>1</b>                  |                   |                                                 |                   |
|                       |                           | Zagreb            | Croatian Internet eXchange                      | <b>CIX</b>        |
| <b>Cyprus</b>         | <b>1</b>                  |                   |                                                 |                   |
|                       |                           | Nicosia           | Cyprus Internet Exchange                        | <b>CyIX</b>       |
| <b>Czech Republic</b> | <b>2</b>                  |                   |                                                 |                   |
|                       |                           | Brno              | Commercial Brno Internet Exchange               | <b>CBIX</b>       |
|                       |                           | Prague            | Neutral Internet eXchange of the Czech Republic | <b>NIX.CZ*</b>    |
| <b>Denmark</b>        | <b>1</b>                  |                   |                                                 |                   |
|                       |                           | Lyngby            | Danish Internet eXchange point                  | <b>DIX*</b>       |
| <b>Estonia</b>        | <b>2</b>                  |                   |                                                 |                   |
|                       |                           | Tallin            | Tallinn Internet eXchange                       | <b>TIX</b>        |
|                       |                           |                   | Tallinn Internet Exchange                       | <b>TLLIX</b>      |
| <b>Finland</b>        | <b>4</b>                  |                   |                                                 |                   |
|                       |                           | Espoo             | Finnish Communication and Internet Exchange     | <b>FICIX 1*</b>   |
|                       |                           | Helsinki          | Finnish Communication and Internet Exchange     | <b>FICIX 2*</b>   |
|                       |                           | Oulu              | Finnish Communication and Internet Exchange     | <b>FICIX 3*</b>   |
|                       |                           | Tampere           | Tampere Region Exchange                         | <b>TREX*</b>      |
| <b>France</b>         | <b>10</b>                 |                   |                                                 |                   |
|                       |                           | Lyon              | Lyonix                                          | <b>Lyonix*</b>    |
|                       |                           | Paris             | Equinix-France                                  | <b>Equinix*</b>   |
|                       |                           |                   | French National Internet Exchange IPv6          | <b>FNIX6</b>      |
|                       |                           |                   | France-IX                                       | <b>France-IX*</b> |
|                       |                           |                   | Paris Network Access Point                      | <b>PaNAP</b>      |
|                       |                           |                   | Paris Internet Exchange                         | <b>PARIX</b>      |
|                       |                           |                   | POUIX                                           | <b>POUIX</b>      |
|                       |                           |                   | Service for French Internet Exchange            | <b>SFINX*</b>     |
|                       |                           | Saint-Etienne     | SainteTiX                                       | <b>SainteTiX</b>  |
|                       |                           | Toulouse          | Le GIX de la grande region Toulousaine          | <b>TOUIX</b>      |
| <b>Germany</b>        | <b>15</b>                 |                   |                                                 |                   |
|                       |                           | Berlin            | Berlin Commercial Internet Exchange             | <b>BCIX</b>       |
|                       |                           |                   | Europen Commercial Internet Exchange            | <b>ECIX*</b>      |
|                       |                           |                   | Deutscher Commercial Internet Exchange          | <b>DE-CIX*</b>    |
|                       |                           | Düsseldorf        | Deutscher Commercial Internet Exchange          | <b>DE-CIX*</b>    |
|                       |                           |                   | Europen Commercial Internet Exchange            | <b>ECIX*</b>      |
|                       |                           |                   | Nederlands-Duitse Internet Exchange             | <b>NDIX</b>       |
|                       |                           |                   | OpenCarrier e.G. Member IX Duesseldorf          | <b>OCIX</b>       |
|                       |                           | Frankfurt         | Deutscher Commercial Internet Exchange          | <b>DE-CIX*</b>    |
|                       |                           |                   | Kleyer Rebstocker EXchange                      | <b>KleyRex</b>    |
|                       |                           | Hamberg           | Deutscher Commercial Internet Exchange          | <b>DE-CIX*</b>    |
|                       |                           |                   | European Commercial Internet Exchange           | <b>ECIX*</b>      |
|                       |                           | Munich            | Deutscher Commercial Internet Exchange          | <b>DE-CIX*</b>    |
|                       |                           |                   | Internet Exchange Point in Munich               | <b>INXS</b>       |
|                       |                           | Munster           | Nederlands-Duitse Internet Exchange             | <b>NDIX</b>       |
|                       |                           | Stuttgart         | Stuttgarter internet eXchange                   | <b>S-IX</b>       |

# Euro-IX IXP Report 2011

| Country              | Number of IXPs in country | IXP based in city | Name of IXP                             | IXP acronym         |
|----------------------|---------------------------|-------------------|-----------------------------------------|---------------------|
| <b>Greece</b>        | <b>2</b>                  |                   |                                         |                     |
|                      |                           | Athens            | Athens Internet Exchange                | <b>AIX</b>          |
|                      |                           |                   | Greek Internet Exchange                 | <b>GR-IX*</b>       |
| <b>Hungary</b>       | <b>1</b>                  |                   |                                         |                     |
|                      |                           | Budapest          | Budapest Internet eXchange              | <b>BIX*</b>         |
| <b>Iceland</b>       | <b>1</b>                  |                   |                                         |                     |
|                      |                           | Reykjavik         | Reykjavik Internet Exchange             | <b>RIX*</b>         |
| <b>Ireland</b>       | <b>3</b>                  |                   |                                         |                     |
|                      |                           | Cork              | Cork Neutral Internet Exchange          | <b>CNIX</b>         |
|                      |                           | Galway            | eXchange West                           | <b>ExWest</b>       |
|                      |                           | Dublin            | Internet Neutral EXchange               | <b>INEX*</b>        |
| <b>Italy</b>         | <b>7</b>                  |                   |                                         |                     |
|                      |                           | Udine             | Friuli Venezia Giulia Internet eXchange | <b>FVG-IX*</b>      |
|                      |                           | Milan             | Milan Neutral Access Point              | <b>MINAP</b>        |
|                      |                           |                   | Milan Internet eXchange                 | <b>MIX*</b>         |
|                      |                           | Rome              | Nautilus Mediterranean Exchange Point   | <b>NaMeX*</b>       |
|                      |                           | Florence          | Tuscany Internet eXchange               | <b>TIX Tuscany*</b> |
|                      |                           | Torino            | Torino Piemonte Exchange Point          | <b>TOP-IX*</b>      |
|                      |                           | Padova            | VSIX Nap del Nord Est                   | <b>VSIX*</b>        |
| <b>Kazakhstan</b>    | <b>1</b>                  |                   |                                         |                     |
|                      |                           | Almaty            | Kazakhstan Traffic Exchange             | <b>KAZ-IX</b>       |
| <b>Latvia</b>        | <b>2</b>                  |                   |                                         |                     |
|                      |                           | Riga              | Latvian Internet eXchange               | <b>LIX</b>          |
|                      |                           |                   | Santa Monica Internet Local Exchange    | <b>SMILE</b>        |
| <b>Liechtenstein</b> | <b>1</b>                  |                   |                                         |                     |
|                      |                           | Eschen            | Rheintal IX Internet Exchange           | <b>Rheintal IX</b>  |
| <b>Luxembourg</b>    | <b>2</b>                  |                   |                                         |                     |
|                      |                           | Luxembourg        | Luxembourg Internet eXchange            | <b>LIX</b>          |
|                      |                           | Bettembourg       | Luxembourg Commercial Internet Exchange | <b>LU-CIX*</b>      |
| <b>Malta</b>         | <b>1</b>                  |                   |                                         |                     |
|                      |                           | Msida             | Malta Internet Exchange                 | <b>MD-IX</b>        |
| <b>Netherlands</b>   | <b>7</b>                  |                   |                                         |                     |
|                      |                           | Amsterdam         | Amsterdam Internet Exchange             | <b>AMS-IX*</b>      |
|                      |                           | The Hague         | Netherlands Internet Exchange           | <b>NL-ix*</b>       |
|                      |                           | Leeuwarden        | Friese Internet Exchange                | <b>FR-IX</b>        |
|                      |                           | Groningen         | Groningen Internet Exchange             | <b>GN-IX*</b>       |
|                      |                           | Enschede          | Nederlands-Duitse Internet Exchange     | <b>NDIX</b>         |
|                      |                           | Rotterdam         | Rotterdam Internet Exchange             | <b>R-ix</b>         |
|                      |                           | Emmen             | Zuid Oost Drentse Internet eXchange     | <b>ZOD-IX</b>       |
| <b>Norway</b>        | <b>7</b>                  |                   |                                         |                     |
|                      |                           | Bergen            | Bergen Internet Exchange                | <b>BIX</b>          |
|                      |                           | Oslo              | Free Internet eXchange Oslo             | <b>FIXO</b>         |
|                      |                           |                   | Norwegian Internet eXchange             | <b>NIX1*</b>        |
|                      |                           |                   | Norwegian Internet eXchange             | <b>NIX2*</b>        |
|                      |                           | Stavanger         | Stavanger Internet Exchange             | <b>SIX</b>          |
|                      |                           | Tromsø            | Tromsø Internet Exchange                | <b>TIIX</b>         |
|                      |                           | Trondheim         | Trondheim Internet Exchange             | <b>TRDIX</b>        |
| <b>Poland</b>        | <b>8</b>                  |                   |                                         |                     |
|                      |                           | Lodz              | Lodz Internet Exchange                  | <b>LIX</b>          |
|                      |                           | Poznan            | Poznan Internet Exchange                | <b>PIX</b>          |
|                      |                           | Warsaw            | Polish Internet Exchange                | <b>PLIX*</b>        |
|                      |                           |                   | Warsaw Internet eXchange                | <b>WIX</b>          |
|                      |                           |                   | K-IX.PL Project                         | <b>K-IX</b>         |
|                      |                           | Lodz              | K-IX.PL Project                         | <b>K-IX</b>         |
|                      |                           | Katowice          | K-IX.PL Project                         | <b>K-IX</b>         |
|                      |                           | Gdansk            | K-IX.PL Project                         | <b>K-IX</b>         |
| <b>Portugal</b>      | <b>1</b>                  |                   |                                         |                     |
|                      |                           | Lisbon            | GIGAbit Portuguese Internet eXchange    | <b>GIGAPIX*</b>     |
| <b>Romania</b>       | <b>6</b>                  |                   |                                         |                     |
|                      |                           | Bucharest         | InterLAN IX                             | <b>InterLAN*</b>    |
|                      |                           |                   | Romanian Network for Internet eXchange  | <b>RoNIX*</b>       |
|                      |                           | Galati            | Balcans Internet Exchnage               | <b>Balcon-IX</b>    |
|                      |                           | Bacau             | Balcans Internet Exchnage               | <b>Balcon-IX</b>    |
|                      |                           | Iasi              | Balcans Internet Exchnage               | <b>Balcon-IX</b>    |
|                      |                           | Timisoara         | Balcans Internet Exchnage               | <b>Balcon-IX</b>    |

# Euro-IX IXP Report 2011

| Country               | Number of IXPs in country | IXP based in city | Name of IXP                                        | IXP acronym      |
|-----------------------|---------------------------|-------------------|----------------------------------------------------|------------------|
| <b>Russia</b>         | <b>14</b>                 |                   |                                                    |                  |
|                       |                           | Chelyabinsk       | Chelyabinsk Peering Point                          | <b>CHEL-PP</b>   |
|                       |                           | Ekaterinburg      | Ekaterinburg Internet Exchange                     | <b>EKT-IX</b>    |
|                       |                           | Nizhny Novgorod   | IX of Nizhny Novgorod                              | <b>IX-NN</b>     |
|                       |                           | Krasnoyarsk       | Krasnoyarsk Internet Exchange                      | <b>KRS-IX</b>    |
|                       |                           | Kazan             | Kazan Internet Exchange                            | <b>KZN-IX</b>    |
|                       |                           | Moscow            | Moscow Internet Exchange                           | <b>MSK-IX*</b>   |
|                       |                           | Novosibirsk       | Novosibirsk Internet eXchange                      | <b>NSK-IX</b>    |
|                       |                           | Perm              | Perm Internet Exchange                             | <b>PERM-IX</b>   |
|                       |                           | Rostov on Don     | Rostov on Don Internet Exchange                    | <b>RND-IX</b>    |
|                       |                           | Samara            | SAMARA-IX                                          | <b>SMR-IX</b>    |
|                       |                           | St.-Petersburg    | St.-Petersburg Internet eXchange                   | <b>SPB-IX</b>    |
|                       |                           | Ulyanovsk         | Ulyanovsk Internet Exchange                        | <b>ULN-IX</b>    |
|                       |                           | Ekaterinburg      | Ural-IX                                            | <b>Ural-IX</b>   |
|                       |                           | Vladivostok       | Vladivostok Internet Exchange                      | <b>VLV-IX</b>    |
| <b>Slovakia</b>       | <b>3</b>                  |                   |                                                    |                  |
|                       |                           | Bratislava        | Slovak Internet eXchange- Bratislava               | <b>SIX</b>       |
|                       |                           |                   | Sitel Internet eXchange                            | <b>Sitelix</b>   |
|                       |                           | Kosice            | Slovak Internet eXchange- Kosice                   | <b>SIX</b>       |
| <b>Slovenia</b>       | <b>1</b>                  |                   |                                                    |                  |
|                       |                           | Ljubljana         | Slovenian Internet Exchange                        | <b>SIX*</b>      |
| <b>Spain</b>          | <b>3</b>                  |                   |                                                    |                  |
|                       |                           | Barcelona         | Catalunya Neutral Internet Exchange                | <b>CATNIX*</b>   |
|                       |                           | Madrid            | Espana Internet Exchange                           | <b>ESPANIX</b>   |
|                       |                           | Bilboa            | Punto neutro Vasco de Internet                     | <b>EuskoNIX</b>  |
| <b>Sweden</b>         | <b>12</b>                 |                   |                                                    |                  |
|                       |                           | Gothenburg        | Gothenburg Internet Exchange                       | <b>GIX</b>       |
|                       |                           |                   | Internet Exchange i Sverige                        | <b>Netnod*</b>   |
|                       |                           | Malmoe            | Internet eXchange point of the Oresund Region      | <b>IXOR</b>      |
|                       |                           |                   | Malmoe Internet Exchange                           | <b>MALMIX</b>    |
|                       |                           |                   | Internet Exchange i Sverige                        | <b>Netnod*</b>   |
|                       |                           | Lulea             | Internet Exchange i Sverige                        | <b>Netnod*</b>   |
|                       |                           | Umea              | NorrNod                                            | <b>NorrNod</b>   |
|                       |                           | Gavle             | Regional Internet Exchange Gästrikland-Hälsingland | <b>RIX-GH</b>    |
|                       |                           | Stockholm         | Stockholm Internet Exchange                        | <b>STHIX</b>     |
|                       |                           |                   | SOLIX                                              | <b>SOLIX</b>     |
|                       |                           |                   | Internet Exchange i Sverige                        | <b>Netnod*</b>   |
|                       |                           | Sundsvall         | Internet Exchange i Sverige                        | <b>Netnod*</b>   |
| <b>Switzerland</b>    | <b>7</b>                  |                   |                                                    |                  |
|                       |                           | Geneva            | CERN Internet eXchange Point                       | <b>CIXP*</b>     |
|                       |                           | Zurich            | Equinix-Switzerland                                | <b>Equinix*</b>  |
|                       |                           |                   | Swiss Internet Exchange                            | <b>SwissIX*</b>  |
|                       |                           | Bern              | Swiss Internet Exchange                            | <b>SwissIX*</b>  |
|                       |                           | Pratteln          | Swiss Internet Exchange                            | <b>SwissIX*</b>  |
|                       |                           | Glattbrugg        | Swiss Internet Exchange                            | <b>SwissIX*</b>  |
|                       |                           | Basel             | Swiss Internet Exchange                            | <b>SwissIX*</b>  |
| <b>Ukraine</b>        | <b>5</b>                  |                   |                                                    |                  |
|                       |                           | Simferopol        | Crimea-IX                                          | <b>Crimea-IX</b> |
|                       |                           | Kiev              | Digital Telecom Internet Exchange                  | <b>DTel-IX</b>   |
|                       |                           | Odessa            | Odessa Internet Exchange                           | <b>Od-IX</b>     |
|                       |                           | Kharkov           | Kharkov Internet Exchange                          | <b>KH-IX</b>     |
|                       |                           | Kiev              | Ukrainian Internet Exchange                        | <b>UA-IX*</b>    |
| <b>United Kingdom</b> | <b>4</b>                  |                   |                                                    |                  |
|                       |                           | Leeds             | IX Leeds                                           | <b>IXLeeds*</b>  |
|                       |                           | London            | London Internet Exchange                           | <b>LINX*</b>     |
|                       |                           |                   | London Network Access Point                        | <b>LONAP*</b>    |
|                       |                           | Manchester        | NWIX Edge                                          | <b>Edge-IX</b>   |

Note: \* indicates Euro-IX Member