



Euro-IX update
Kurtis Lindqvist
Euro-IX member

MENOG 4
Manama Bharain

April 09th 2009



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Manama, Bharain
9th of April 2009



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Introduction

- Kurtis Lindqvist of Netnod and.....
- The statistics contained in this presentation were put together by Serge Radovicic, Secretary General of Euro-IX, using the information contained on the Euro-IX website
- Serge apologizes for not being able to attend on this occasion



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What is Euro-IX?

- European Internet Exchange Association
- Formed in May 2001
- The association's aim is to further develop, strengthen and improve the Internet Exchange Point (IXP) community.
- Since January 2005 Euro-IX has invited IXPs outside of Europe to join the association



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What Euro-IX offers (1)

- Biannual two day meetings known as the *Euro-IX Forums* where almost 40 IXPs, switch vendors and colocation operators come together to discuss a wide range of IXP specific topics.
- Online conferencing facilities
- Representation at meetings around the world
- Public affair updates
- Website listing
- Mailing lists



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What Euro-IX offers (2)

- **Benchmarking club**
 - allowing members to compare certain performance aspects of their IXPs
- **A number of information repositories:**
 - Euro-IX Switch DB
 - Euro-IX Staff eXchange DB
 - Member developed network monitoring tools
- **A ‘closer’ IXP community**
 - Contact with over 40 IXPs from around the world



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Euro-IX affiliates

- 44 affiliated IXPs:
 - Europe: 35 (25 different countries)
 - Asia: 5 (India, Japan and Nepal)
 - USA: 3
 - Africa: 1 (Egypt)
- 8 affiliated patrons:
 - Cisco Systems
 - Foundry Networks
 - Extreme Networks
 - TelecityGroup
 - Force10 Networks
 - Glimmerglass
 - Interxion
 - Juniper Networks



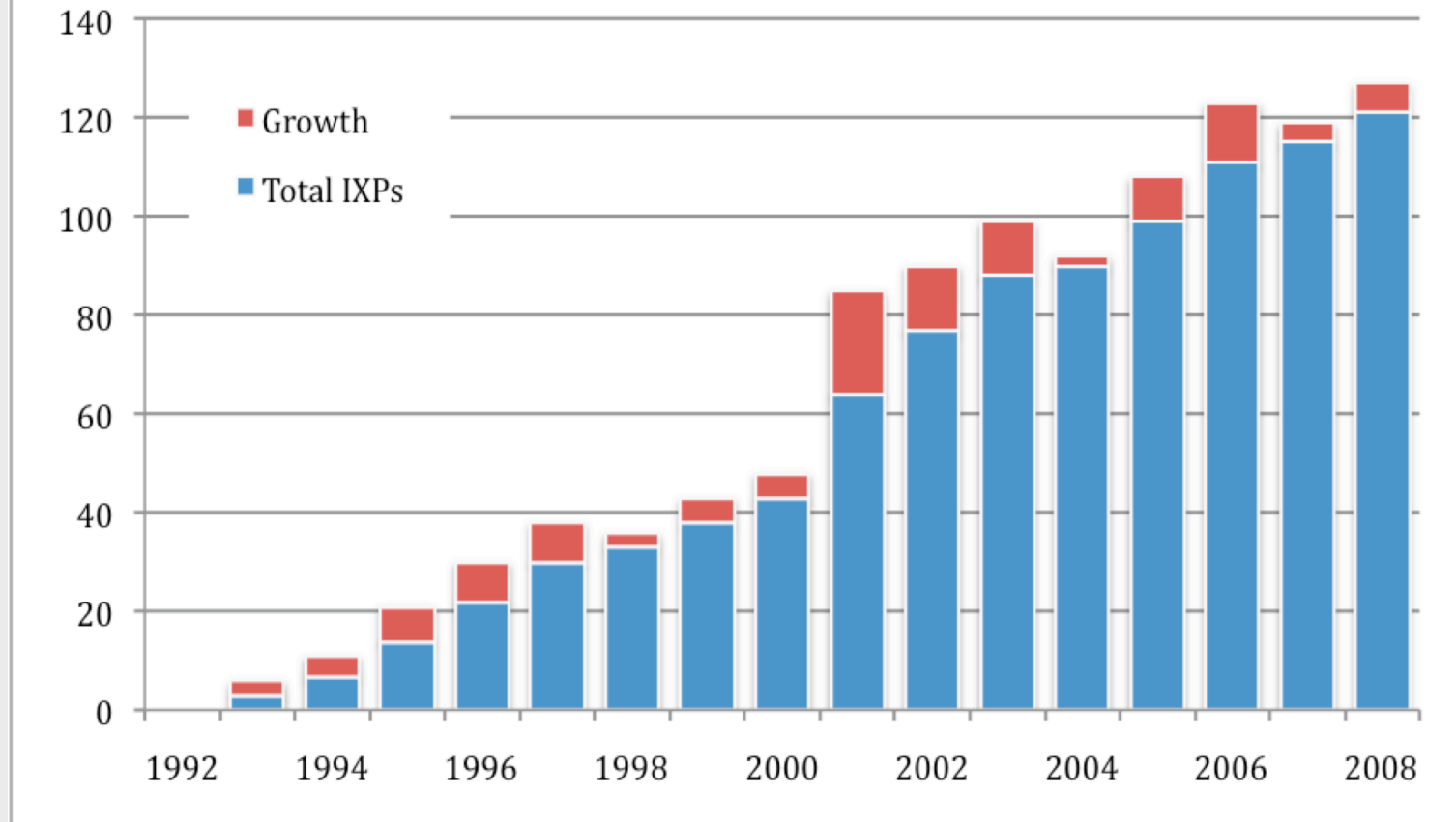
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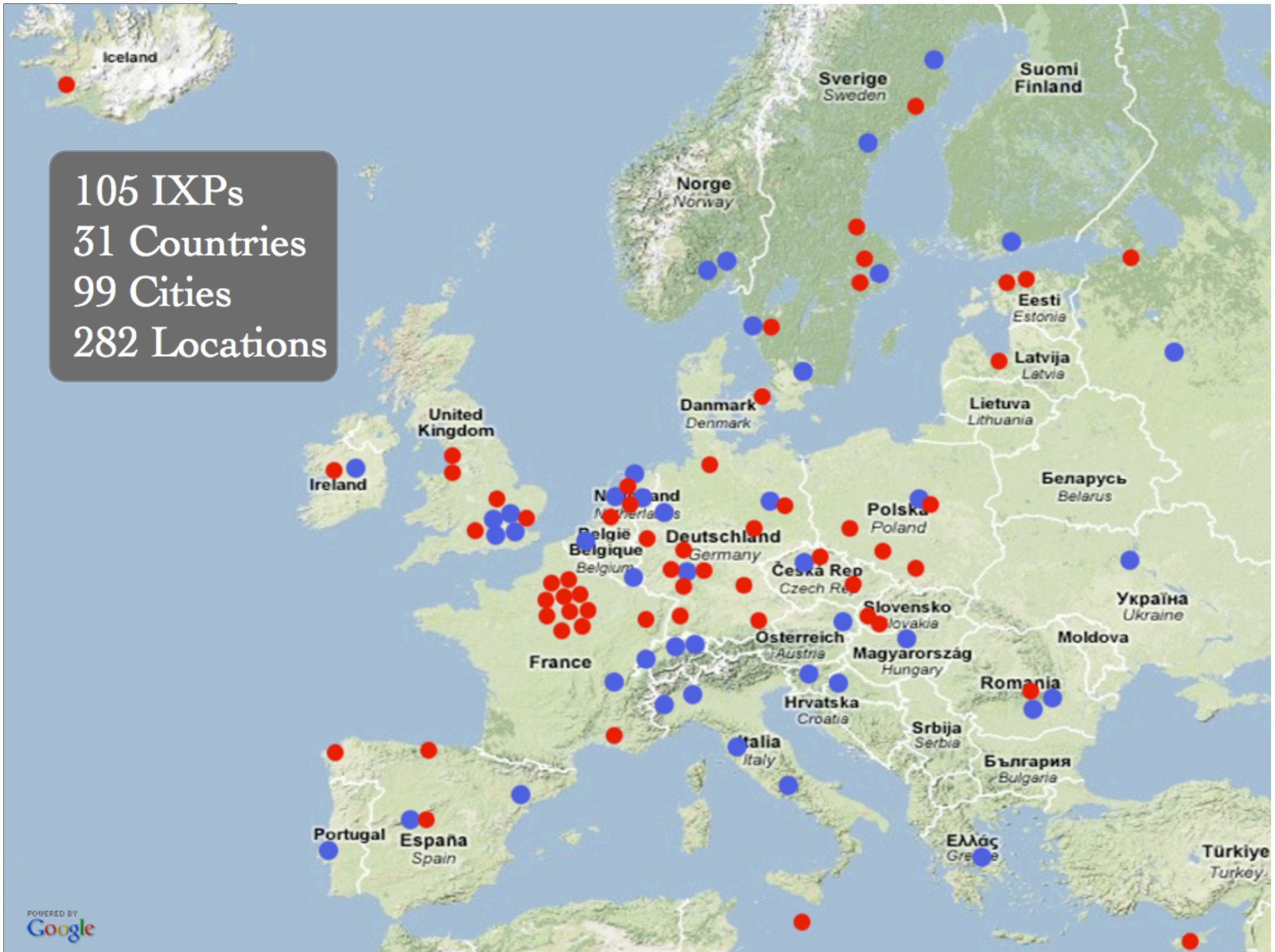
European IXP growth



2001 +23 IXPs
2002 +13 IXPs
2003 +11 IXPs

These 3 years saw the establishment of 45% of today's IXPs!!

105 IXPs
31 Countries
99 Cities
282 Locations





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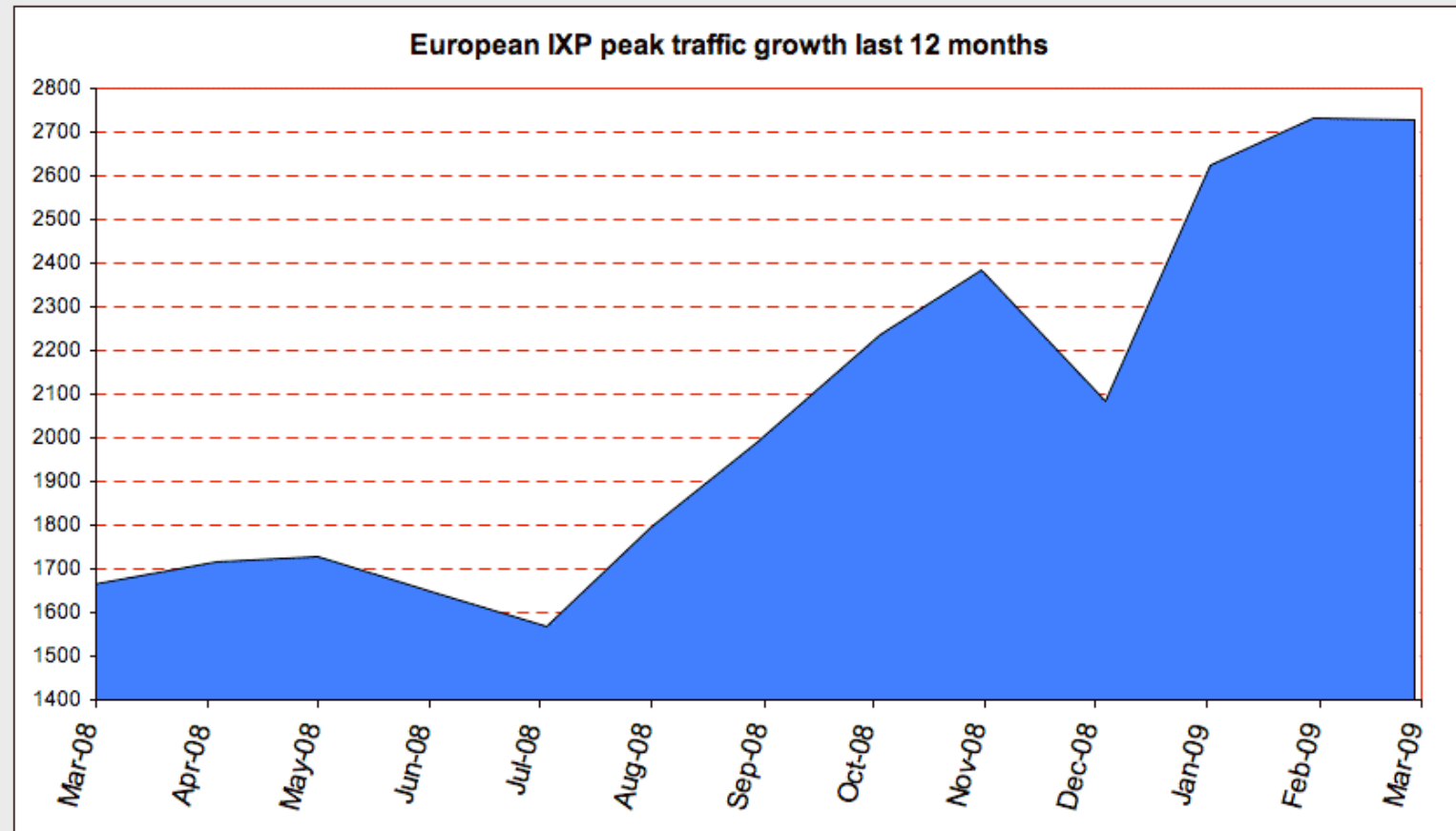
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European IXP traffic growth

- Combined European IXP peak traffic has risen from:
 - 1.665 Tbps end March '08 to 2.726 Tbps end March '09
 - 1.061 Tbps or 64% increase in the past 12 months





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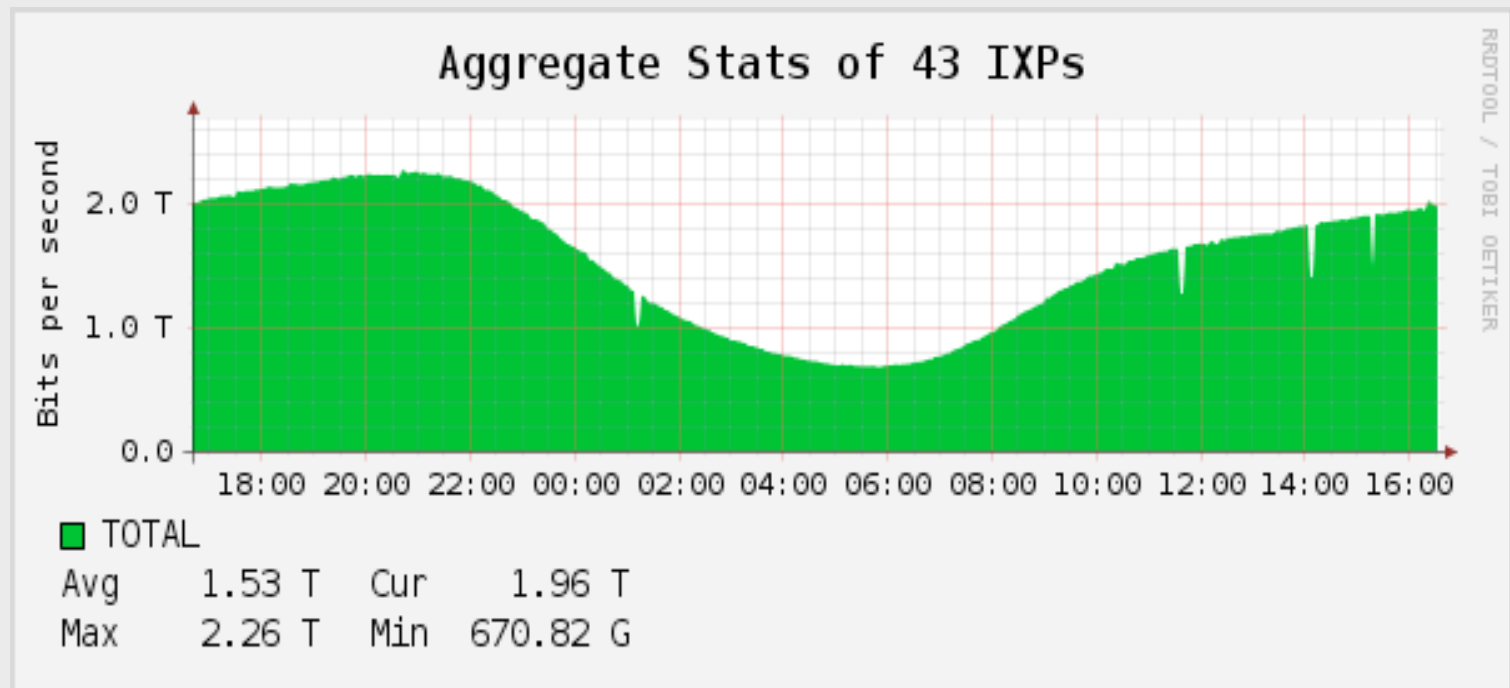
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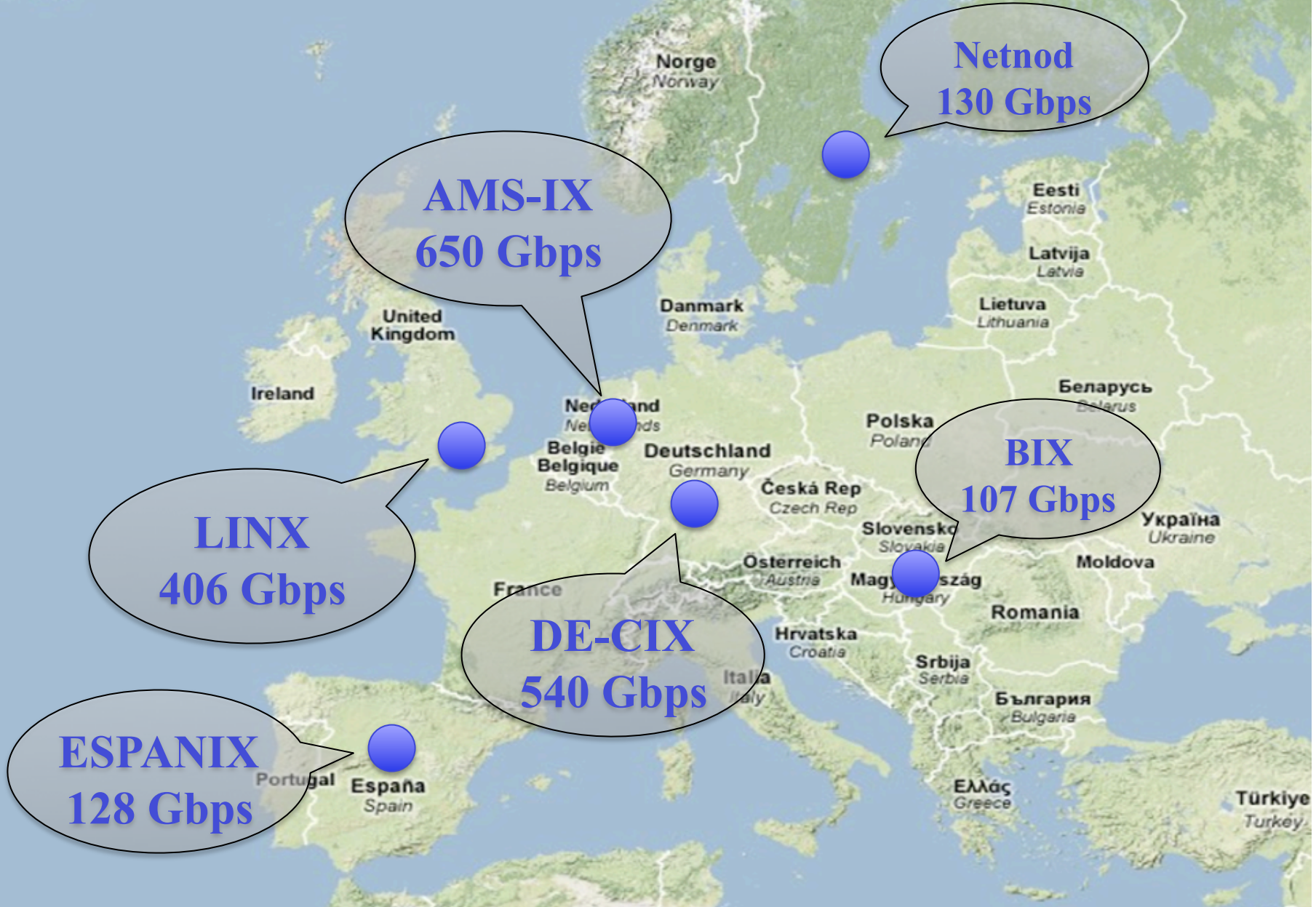


Euro-IX member IXP traffic

- Real time European member statistics (43 IXPs)
- Weekday: Peak at 21:00 CET; Low at 05:45 CET



European IXP traffic 'hotspots'



Netnod
130 Gbps

AMS-IX
650 Gbps

LINX
406 Gbps

BIX
107 Gbps

DE-CIX
540 Gbps

ESPANIX
128 Gbps



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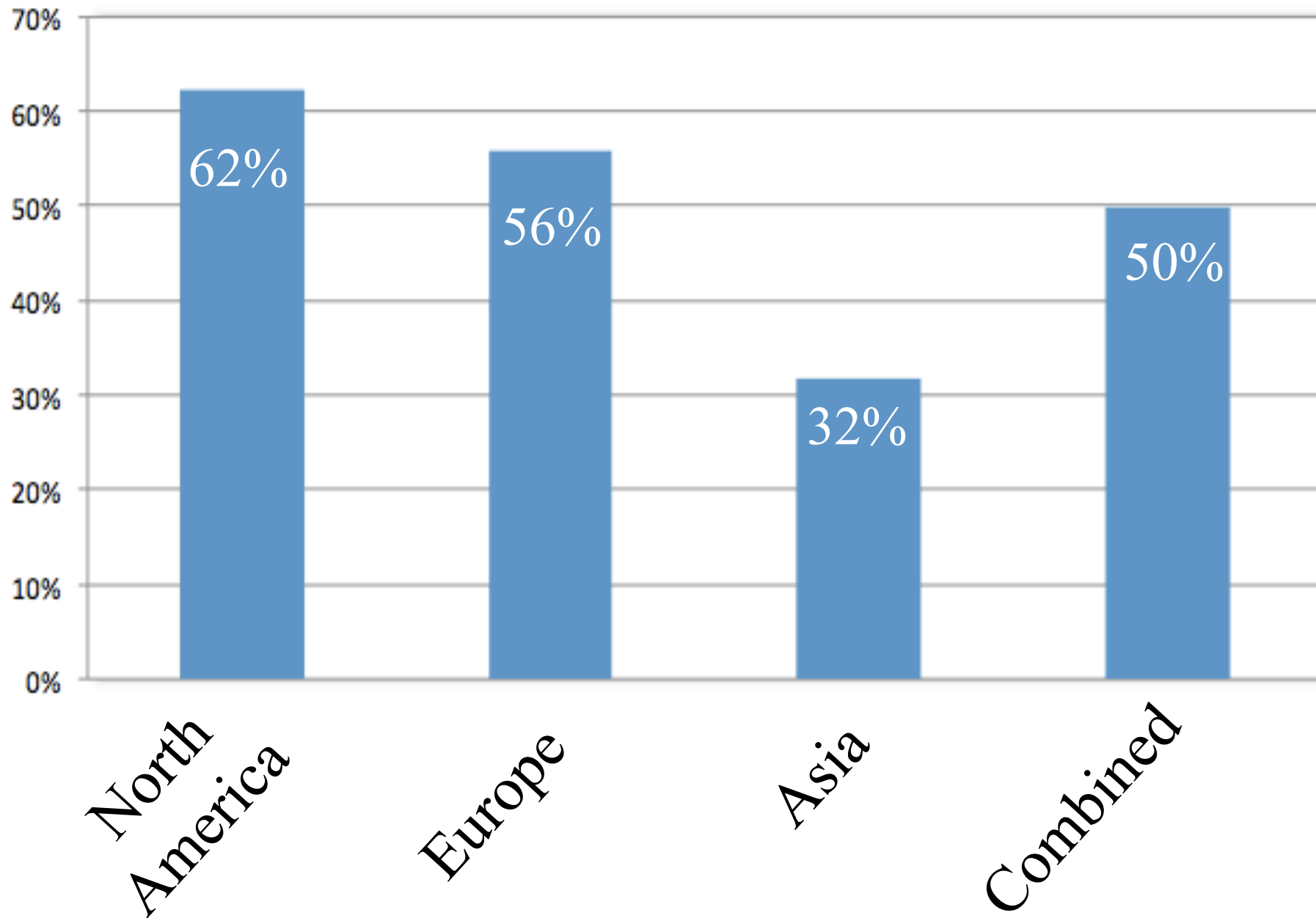


Traffic ranking of IXPs

| Ranking | IXP | City | Gbps |
|--------------------------------------------------------|---------|------------|--------------|
| 1 | AMS-IX | Amsterdam | 650 |
| 2 | DE-CIX | Frankfurt | 540 |
| 3 | LINX | London | 406 |
| 4 | Netnod | Stockholm | 130 |
| 5 | ESPANIX | Madrid | 128 |
| 6 | BIX | Budapest | 107 |
| 7 | NIX.CZ | Prague | 84 |
| 8 | MSK-IX | Moscow | 72 |
| 9 | PANAP | Paris | 62 |
| 10 | PL-IX | Warsaw | 62 |
| 11 | UA-IX | Ukraine | 41 |
| 12 | NL-IX | Amsterdam | 40 |
| 13 | MIX | Milan | 31 |
| 14 | FICIX | Helsinki | 23 |
| 15 | VIX | Vienna | 23 |
| 16 | NIX | Oslo | 21 |
| 17 | SFINX | Paris | 17 |
| 18 | SIX | Bratislava | 16 |
| 19 | SIX | Ljubljana | 15 |
| 20 | BNIX | Brussels | 14 |
| TOTAL of top 20 IXPs | | | 2.482 |
| Which makes up 90% of all European IXP traffic! | | | |

• Statistics gathered on the 26th of March 2009

Global annual IXP peak traffic growth rates 2008





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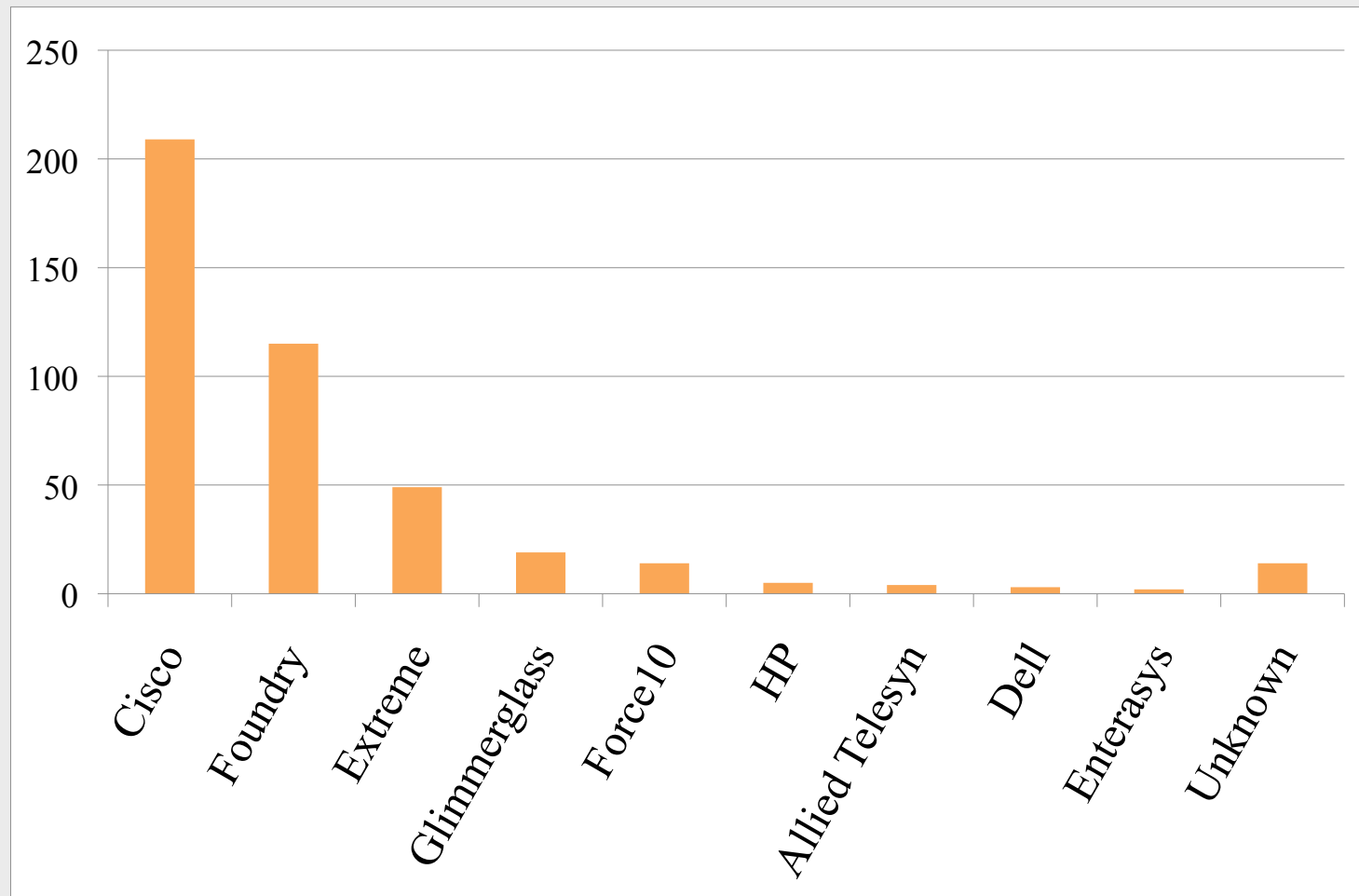
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Switches in use at IXPs

- Approximately 435 switches in use at IXPs





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European IXP participants

- 4.400 participants at the 105 European IXPs
- 2.600 of these have unique ASNs

- 670 ASNs present at more than 1 IXP
- 18 ASNs present at 10 or more IXPs
- 1 ASN is present at no less than 22 IXPs

- Average of 42 participants per IXP
- Average of 600 Mbps per participant



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Accessing this information!

- Visit the Euro-IX website

www.euro-ix.net/resources/

- Listing of all 105 European IXPs
- Annual report on IXPs
- The Euro-IX ASN database



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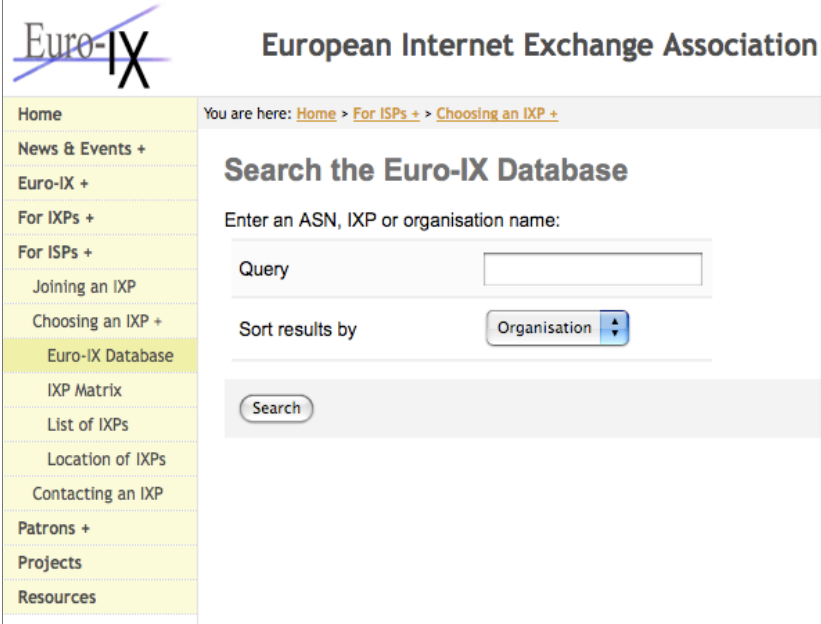
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Euro-IX ASN database

- More than 5.500 entries
- Search on ASN, IXP or organisation name



Euro-IX European Internet Exchange Association

Home You are here: [Home](#) > [For ISPs +](#) > [Choosing an IXP +](#)

Search the Euro-IX Database

Enter an ASN, IXP or organisation name:

Query

Sort results by

Home

News & Events +

Euro-IX +

For IXPs +

For ISPs +

Joining an IXP

Choosing an IXP +

Euro-IX Database

IXP Matrix

List of IXPs

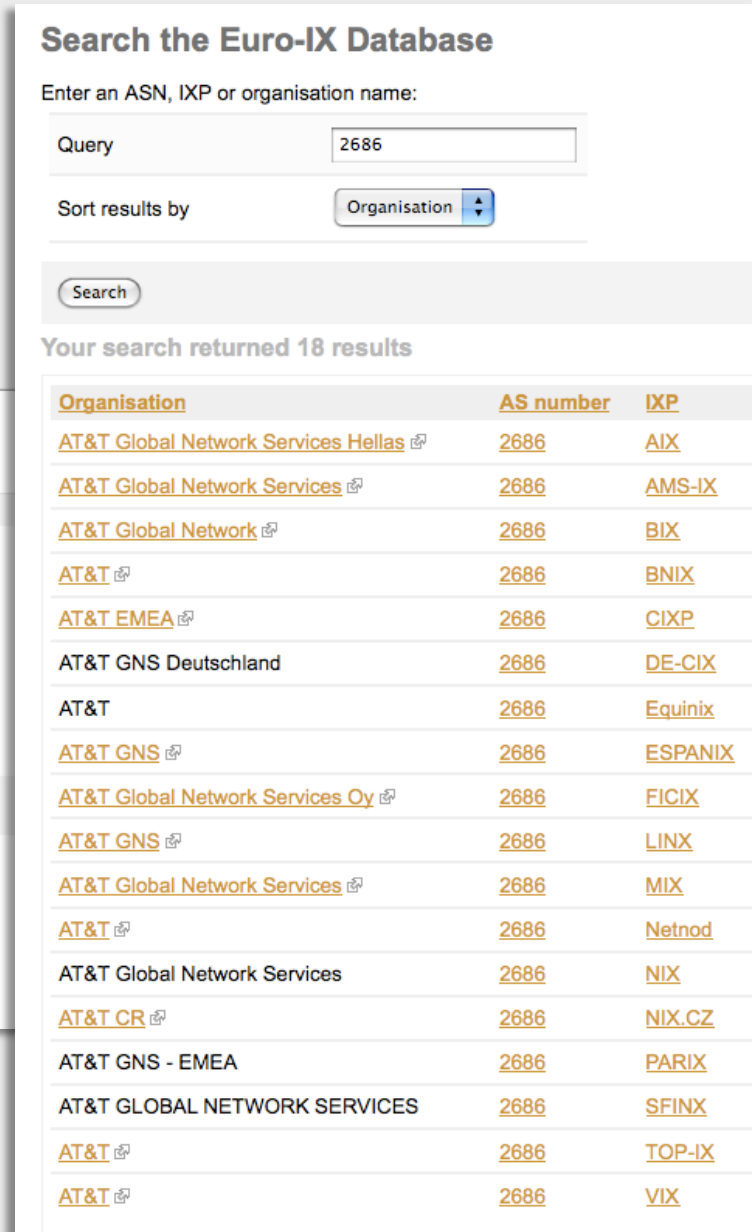
Location of IXPs

Contacting an IXP

Patrons +

Projects

Resources



Search the Euro-IX Database

Enter an ASN, IXP or organisation name:

Query

Sort results by

Your search returned 18 results

| Organisation | AS number | IXP |
|---------------------------------------------------------|----------------------|-------------------------|
| AT&T Global Network Services Hellas | 2686 | AIX |
| AT&T Global Network Services | 2686 | AMS-IX |
| AT&T Global Network | 2686 | BIX |
| AT&T | 2686 | BNIX |
| AT&T EMEA | 2686 | CIXP |
| AT&T GNS Deutschland | 2686 | DE-CIX |
| AT&T | 2686 | Equinix |
| AT&T GNS | 2686 | ESPANIX |
| AT&T Global Network Services Oy | 2686 | FICIX |
| AT&T GNS | 2686 | LINX |
| AT&T Global Network Services | 2686 | MIX |
| AT&T | 2686 | Netnod |
| AT&T Global Network Services | 2686 | NIX |
| AT&T CR | 2686 | NIX.CZ |
| AT&T GNS - EMEA | 2686 | PARIX |
| AT&T GLOBAL NETWORK SERVICES | 2686 | SFINX |
| AT&T | 2686 | TOP-IX |
| AT&T | 2686 | VIX |



Euro-IX peering matrix

- Cross reference of the number of unique/non-unique ASNs connected at each Euro-IX affiliated IXP

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Euro-IX Peering Matrix

| IXP | Total listed ASNs at IXP | ASNs that don't peer at other IXPs | % of ASNs that don't peer at other IXPs | ASNs that peer at other IXPs | % of ASNs that peer at other IXP | AIX | AMS-IX | Any2 Exchange | BCIX | BICIX | BIX | BNIX | CATNIX | CIX | CIXP | DE-CIX | Equinix | ESPANIX | FICIX | GigaPix | GN-IX | INEX | InterLAN | JPIX | JPNAP | LINX | LIX | LONAP | Lyonix | MEIX |
|---------------|--------------------------|------------------------------------|-----------------------------------------|------------------------------|----------------------------------|-----|--------|---------------|------|-------|-----|------|--------|-----|------|--------|---------|---------|-------|---------|-------|------|----------|------|-------|------|-----|-------|--------|------|
| AIX | 15 | 12 | 80% | 3 | 20% | 15 | 2 | - | - | - | 2 | 1 | - | - | 2 | 2 | 2 | 2 | 2 | 1 | - | 1 | - | - | - | 3 | - | - | - | |
| AMS-IX | 299 | 52 | 17% | 247 | 83% | 2 | 299 | 11 | - | 10 | 7 | 24 | 6 | - | 15 | 134 | 24 | 18 | 8 | 5 | 11 | 10 | - | 6 | 3 | 141 | 1 | 24 | 3 | |
| Any2 Exchange | 88 | 58 | 66% | 30 | 34% | - | 11 | 88 | - | - | - | - | - | - | 1 | 8 | 2 | 5 | - | - | - | 1 | - | 4 | 4 | 16 | - | 5 | - | |
| BCIX | 38 | 17 | 45% | 21 | 55% | - | 10 | - | - | 38 | 1 | 2 | - | - | - | 15 | 2 | 1 | 1 | - | - | 1 | - | - | - | 8 | - | - | 1 | |
| BIX | 47 | 37 | 79% | 10 | 21% | 2 | 7 | - | - | 1 | 47 | 4 | 1 | - | 3 | 7 | 4 | 3 | 3 | 1 | - | 2 | - | - | - | 7 | - | - | 1 | |
| BNIX | 48 | 14 | 29% | 34 | 71% | 1 | 24 | - | - | 2 | 4 | 48 | 3 | - | 6 | 16 | 7 | 6 | 2 | 2 | 3 | 2 | - | 1 | - | 17 | 1 | 1 | 2 | |
| CATNIX | 20 | 6 | 30% | 14 | 70% | - | 6 | - | - | - | 1 | 3 | 20 | - | - | 4 | 2 | 11 | 1 | 2 | - | 1 | - | - | - | 6 | - | - | - | |
| CIX | 16 | 13 | 81% | 3 | 19% | - | - | - | - | - | - | - | - | - | 16 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | |
| CIXP | 35 | 5 | 14% | 30 | 86% | 2 | 15 | 1 | - | - | 3 | 6 | - | - | 35 | 13 | 20 | 4 | 2 | 2 | 1 | 2 | - | 1 | 1 | 11 | - | 1 | 2 | |
| DE-CIX | 289 | 62 | 21% | 227 | 79% | 2 | 134 | 8 | - | 15 | 7 | 16 | 4 | 1 | 13 | 289 | 21 | 18 | 8 | 4 | 3 | 8 | 2 | 6 | 4 | 126 | 1 | 17 | 3 | |
| Equinix | 55 | 5 | 9% | 50 | 91% | 2 | 24 | 2 | - | 2 | 4 | 7 | 2 | - | 20 | 21 | 55 | 9 | 2 | 4 | 2 | 5 | - | 2 | - | 21 | - | 1 | 3 | |
| ESPANIX | 49 | 16 | 33% | 33 | 67% | 2 | 18 | 5 | - | 1 | 3 | 6 | 11 | - | 4 | 18 | 9 | 49 | 2 | 3 | - | 3 | - | 2 | 3 | 19 | - | 2 | 2 | |
| FICIX | 27 | 14 | 52% | 13 | 48% | 2 | 8 | - | - | 1 | 3 | 2 | 1 | - | 2 | 8 | 2 | 2 | 27 | 1 | - | 1 | - | - | - | 8 | - | - | - | |
| GigaPix | 21 | 16 | 76% | 5 | 24% | 1 | 5 | - | - | - | 1 | 2 | 2 | - | 2 | 4 | 4 | 3 | 1 | 21 | - | 2 | - | - | - | 5 | - | - | 1 | |
| GN-IX | 27 | 9 | 33% | 18 | 67% | - | 11 | - | - | - | - | 3 | - | - | 1 | 3 | 2 | - | - | - | - | 27 | 1 | - | - | 3 | - | - | - | |
| INEX | 38 | 18 | 47% | 20 | 53% | 1 | 10 | 1 | - | 1 | 2 | 2 | 1 | - | 2 | 8 | 5 | 3 | 1 | 2 | 1 | 38 | - | 1 | - | 14 | - | 2 | - | |
| InterLAN | 42 | 35 | 83% | 7 | 17% | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | 42 | - | - | - | - | - | - | |
| JPIX | 116 | 67 | 58% | 49 | 42% | - | 6 | 4 | - | - | - | 1 | - | - | 1 | 6 | 2 | 2 | - | - | - | 1 | - | 116 | 38 | 7 | - | 2 | - | |
| JPNAP | 71 | 27 | 38% | 44 | 62% | - | 3 | 4 | - | - | - | - | - | - | 1 | 4 | - | 3 | - | - | - | - | - | 38 | 71 | 3 | - | 1 | - | |
| LINX | 317 | 71 | 22% | 246 | 78% | 3 | 141 | 16 | - | 8 | 7 | 17 | 6 | - | 11 | 126 | 21 | 19 | 8 | 5 | 3 | 14 | - | 7 | 3 | 317 | 1 | 58 | 3 | |
| LIX | 10 | 6 | 60% | 4 | 40% | - | 1 | - | - | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | 10 | - | - | |
| LONAP | 89 | 25 | 28% | 64 | 72% | - | 24 | 5 | - | - | - | 1 | - | - | 1 | 17 | 1 | 2 | - | - | - | 2 | - | 2 | 1 | 58 | - | 89 | - | |
| Lyonix | 18 | 7 | 39% | 11 | 61% | - | 3 | - | - | 1 | 1 | 2 | - | - | 2 | 3 | 3 | 2 | - | 1 | - | - | - | - | - | 3 | - | - | 18 | |
| MEIX | 6 | 4 | 67% | 2 | 33% | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - | |



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Thank you

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