



Euro-IX and IX-F Update

March 2015

bijal at euro-ix dot net

Twitter: @euroix

➤ What do we do?

- 2 Forums per year
- Maintaining IXP Database and tools
- Newsletter – Subscribe here: www.euro-ix.net/newsletters
- Working Groups
- IXP Reports
- Twinning Program

Why do we do it? For the good of the community!

Association of IXPs

77 affiliated IXPs:

- 53 IXPs in the Euro-IX Region
=> in 32 Countries, operating over 100 IXPs
- 24 IXPs from the rest of the world
- Newest Members:
Angonix (Angola), SOX (Serbia),
ARMIX (Armenia), KOSIX (Kosovo), TPIX (Poland)

11 Patrons

- ADVA Optical Networking
- Alcatel-Lucent
- Brocade
- BTI Systems
- Extreme Networks
- Huawei
- Interxion
- Juniper Networks
- MRV
- Telecity
- Telehouse



Internet Exchange Federation

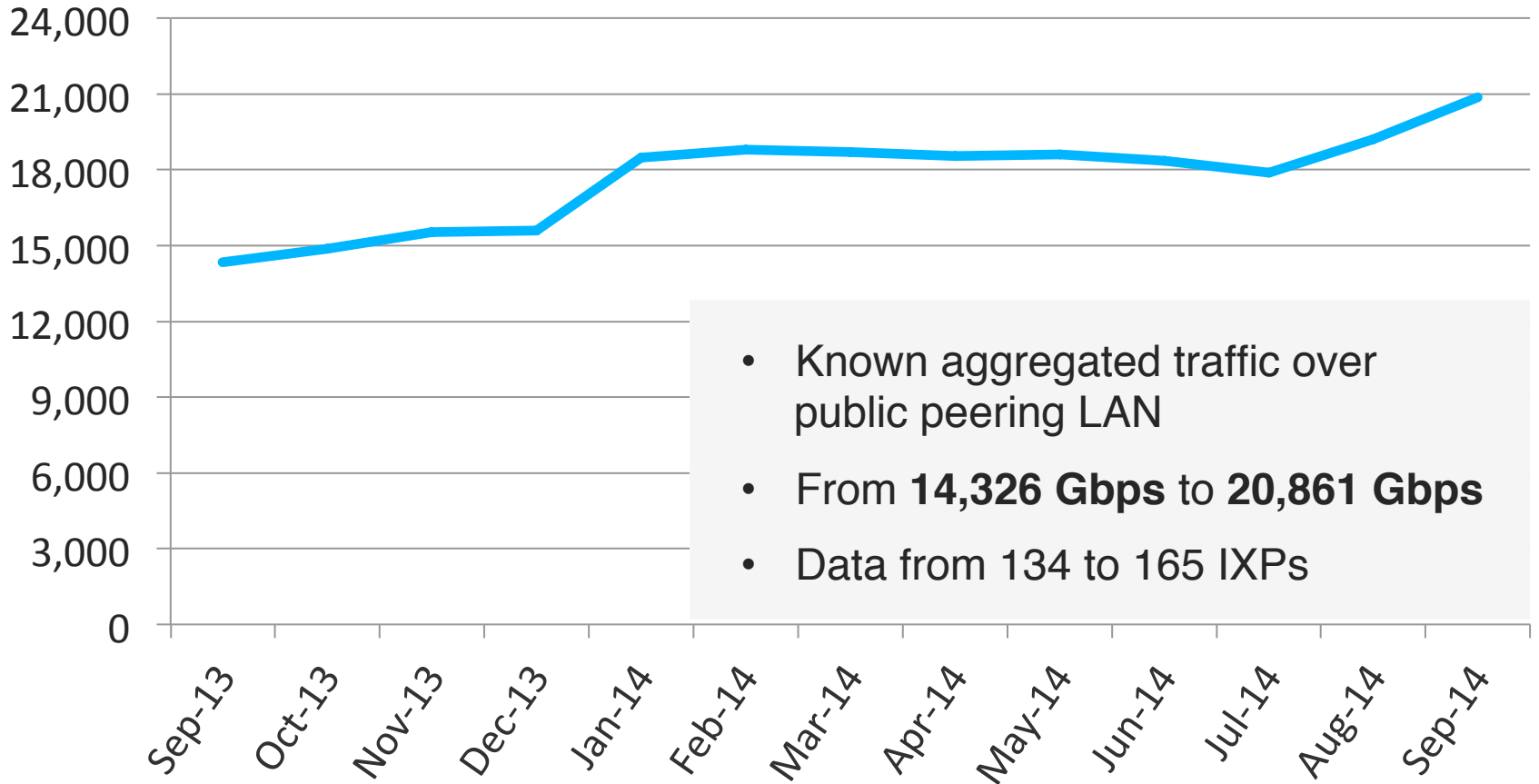
➤ Internet Exchange Federation (IX-F)

- MOU signed by APIX, Euro-IX and LAC-IX to form the IX-F in November 2012 – www.ix-f.net
- Af-IX signed the MoU to join the IX-F in 2014
- Idea to have a Global IXP DB
- Global BCPs for IXPs - <https://www.euro-ix.net/euro-ix-bcp>
- Automate Data Collection from IXPs
- Plans to collaborate with other external Databases

IX-F Board

- **Af-IX**
Nishal Goburdhan – JINX (South Africa)
Kyle Spencer – UIXP (Uganda)
- **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)

Global Traffic Growth – 12 months





IXP Database

IXP Database Project

- There are many IXP Databases...

Navigation Search Public Exchange Points

Exchange Name City

IP Block Country

Media Type Select Value Continental Region Select Value

Search

Search Records

List of Public Exchange Points

Exchange Name	Long Name	City/Region	Country	Continental Region	Media Type	Participants
ASIX	Alpes Adria Internet eXchange	Klagenfurt	AT	Europe	Ethernet	4
ACTIX	ACT Internet Exchange	Canberra, ACT	AU	Australia	Ethernet	11
ADN-IX		Valence	FR	Europe	Ethernet	0
AlbertaIX	AlbertaIX	Calgary	CA	North America	Ethernet	4
AMPATH	AMPATH - Florida International University/CISAA	Miami	US	North America	Multiple	0
AMS-IX	Amsterdam Internet Exchange	Amsterdam	NL	Europe	Ethernet	1229
AMS-IX Caribbean	Amsterdam Internet Exchange Caribbean	Curacao	CW	South America	Ethernet	11
AMS-IX Hong Kong	Amsterdam Internet Exchange Hong Kong	Hong Kong	HK	Asia Pacific	Ethernet	27
AMS-IX NY	AMS-IX New York	New York	US	North America	Ethernet	14
Angola-IXP / ANG-IXP	Angola Internet Exchange point	Luanda	AO	Africa	Ethernet	3
ASX	Auckland Peering Exchange	Auckland	NZ	Asia Pacific	Ethernet	56
ArmitX	Armenian Internet Exchange	Yerevan	AM	Europe	Ethernet	0
ASIX6	Academia Sinica Internet Exchange 6	Taipei	TW	Asia Pacific	Multiple	1
ASSOCIO	mpls ASSOCIO	Tokyo, Nation wide	jp	Asia Pacific	Multiple	0
AZIX	Arizona Internet Exchange	Phoenix, Arizona	US	North America	Ethernet	10
B-IX	Balkan Internet Exchange	Sofia	BG	Europe	Ethernet	13

www.datacentermap.com/ixps.html

Map Database Search Request quote Research About Login / Signup

Internet Exchange Points
= IXPs

On the map below you can see an overview of internet exchange points (IXPs) around the world. Zoom in and click on a city marker to see the internet exchange points available in the city.

Map Satellite

TRUSTED SERVER HOSTING SINCE 1994

Managed Hosting Hybrid Hosting

How to Safely Avoid Overcooling Your Data Center and Save Money Today

Peering Research Related Reports & White Papers

- Multi-Tenant Datacenter: North American Providers - 2013
- To Build or Not To Build - Part I: Should Service Providers Build Or Lease Their Datacenters?

Related News

- Alcatel first connected customer at DE-CX New York
- DE-CX New York signs on Akamai as its first customer
- Microsoft Adds Private Azure Links at 37 European Data Centers
- Akamai becomes First DE-CX New York Customer
- TeletyGroup adds Microsoft Azure to Cloud-IX ecosystem

Latest Facilities

- Caronet XB, Charlotte

www.telegeography.com/research-services/internet-exchange-points-directory/

TeleGeography AUTHORITY IN TELECOM DATA

RESEARCH SERVICES CUSTOM RESEARCH TELECOM MAPS TELECOM RESOURCES

HOME > RESEARCH SERVICES > Internet Exchange Points Directory

Internet Exchange Points Directory

The data provided in our Internet Exchange Points Directory is now accessible via our free interactive Internet Exchange Map. The map provides information for active Internet exchanges and buildings. Select an Internet exchange from the list provided to view the buildings in which that exchange is present. Or, select a building from the map projection to access data about the building, including its street address and a list of Internet exchanges present there.

The Internet Exchange Map is based on data compiled by TeleGeography, and is updated regularly to ensure that it is as accurate and as up-to-date as possible. Click here for more information about the map, or try it out at www.internetexchangemap.com.

Related Services

Interactive Internet Exch
An interactive, regularly updated directory of internet exchanges worldwide.

Colocation Database
Commonsense online

https://prefix.pch.net/applications/ixpdir/

PCH Packet Clearing House

Log In search pch.net

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EDUCATION RESEARCH POLICY

Help

- Show inactive IXPs
- Hide inactive IXPs
- Show summary views
- Submit a change
- Featurebug report

Region	Country	City	Internet Exchange Name	Participants	Traffic	Prefixes	Established	URL
Asia/Pacific	Alphabetized	Katou	National Internet Exchange of Japan/Netnic				May 2011	
Africa	Algeria	Algiers	Algeria Internet Exchange				2013	
	Angola	Luanda	Angola Internet Exchange		10	13M	2008	
		Luanda	Foro de Interconexão Internet Angola					
Latin America	Argentina (10)	Buenos Aires	NAP CABASE Buenos Aires	12	100M		2010	
		Buenos Aires	NAP CABASE Buenos Aires	78	7,04K	100	Aug 2006	
		Cordoba	NAP CABASE Cordoba	9	100M		Aug 2012	

IXP Database

- A single canonical place for IXP data
- Development of IXP Database has started
- IXP data maintained by IXPs this ensures greater accuracy
- Useful for the IXP members to see IX data in context
- We want it to be open and pluggable

The plan

- Others will be able to mirror IXP Data

https://www.euro-ix.net/resources-list-of-ixps

List of 399 known IXPs around the globe

Region	# of IXPs
Europe	159
North America	89
Asia / Pacific	81
Latin America	35
Africa	27
Middle East	8
TOTAL	399

IXP	City	Country	Traffic stats
NAP-INCA	San Juan de lima	Peru	
ENSIX	Seoul	Korea, Republic of	
AIX	Klagenfurt	Austria	
ACT-IX - Canberra	Canberra	Australia	
AXP	Arusha	Tanzania, United Republic of	
ALB-IX	Tirana	Albania	
AMS-IX	Amsterdam	Netherlands	
AMS-IX Caribbean	Willemstad, Curacao	Netherlands Antilles	
	Hong Kong	China	

Transferring data from monitor.gdix.asn.asu...



https://www.peeringdb.com/private/exchange_list.php

Search Public Exchange Points

Exchange Name: City:

IP Block: Country:

Media Type: Continental Region:

Search

Exchange Name	Long Name	City/Region	Country	Continental Region	Media Type	Participants
AAIX	Alpes Adria Internet Exchange	Klagenfurt	AT	Europe	Ethernet	4
ACTIX	ACT Internet Exchange	Canberra, ACT	AU	Australia	Ethernet	11
ADIX		Valencia	FR	Europe	Ethernet	0
AlbertIX	AlbertaIX	Calgary	CA	North America	Ethernet	4
AMPATH	AMPATH - Florida International University/CLARA	Miami	US	North America	Multiple	0
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www.datacentermap.com/ixps.html

Internet Exchange Points

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How to Safely Avoid Overcooling Your Data Center and Save Money Today

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PCH
Packet Clearing House

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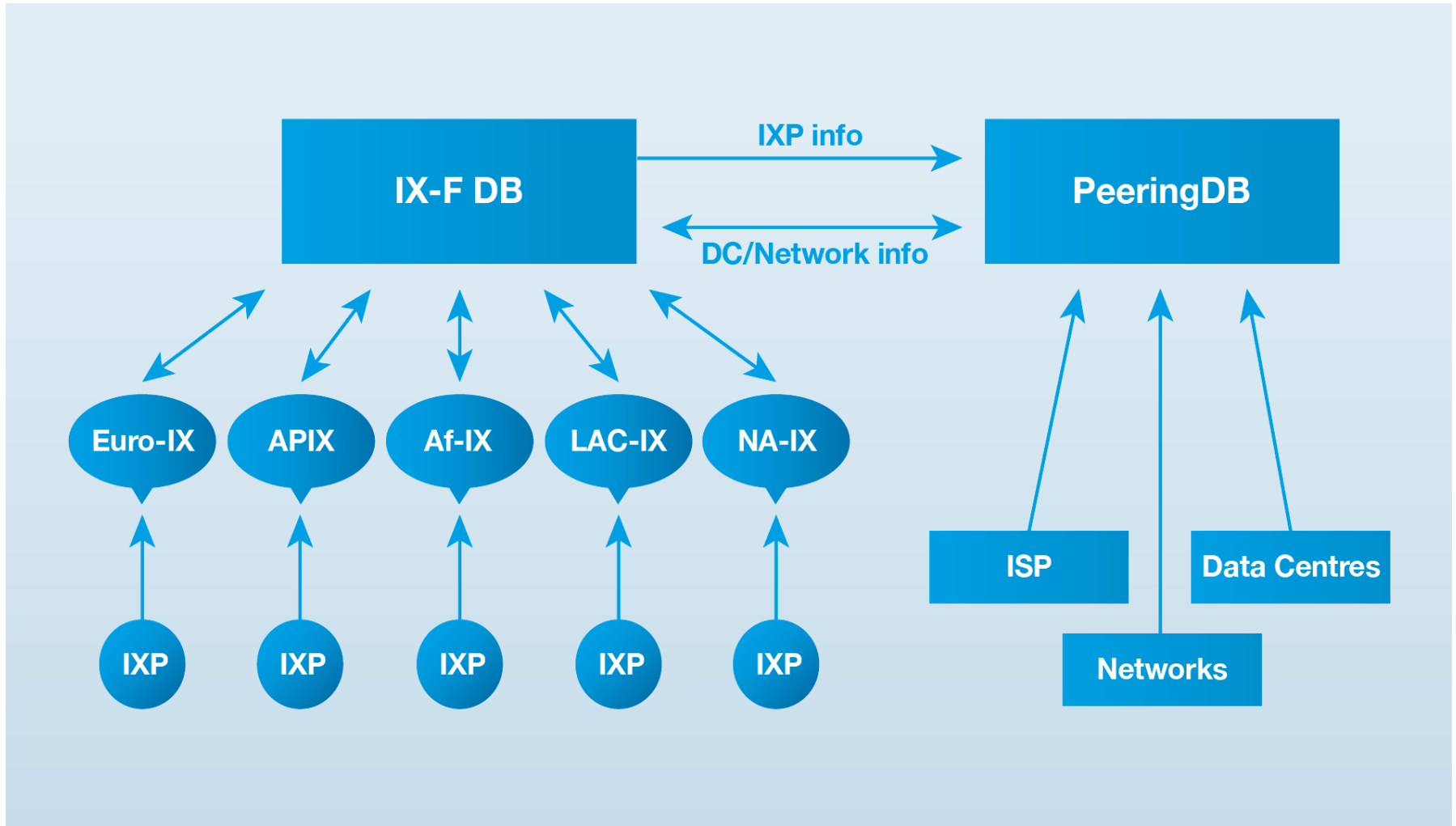
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Region	Country	City	Internet Exchange Name	Participants	Traffic	Prefix	Established	URL
Asia	Japan	Osaka	Japanese Internet Exchange (JPIX)				2013	
Asia	Algeria	Algeria	Algeria Internet Exchange	0	0	0	2013	
Angola	Luanda	Angola Internet Exchange	10	13M	0	0	2008	
Angola	Luanda	Ponto de Interconexão Internet Angola	0	0	0	0	0	
Latin America	Argentina (10)	Buenos Aires	NAP CABAISE Buenos Aires	12	100M	0	2013	
Latin America	Buenos Aires	NAP CABAISE Buenos Aires	79	7,045	100	0	Aug 2008	
Latin America	Dortoba	NAP CABAISE Dortoba	9	100M	0	0	Aug 2012	

➤ Work in progress..



IXP Database

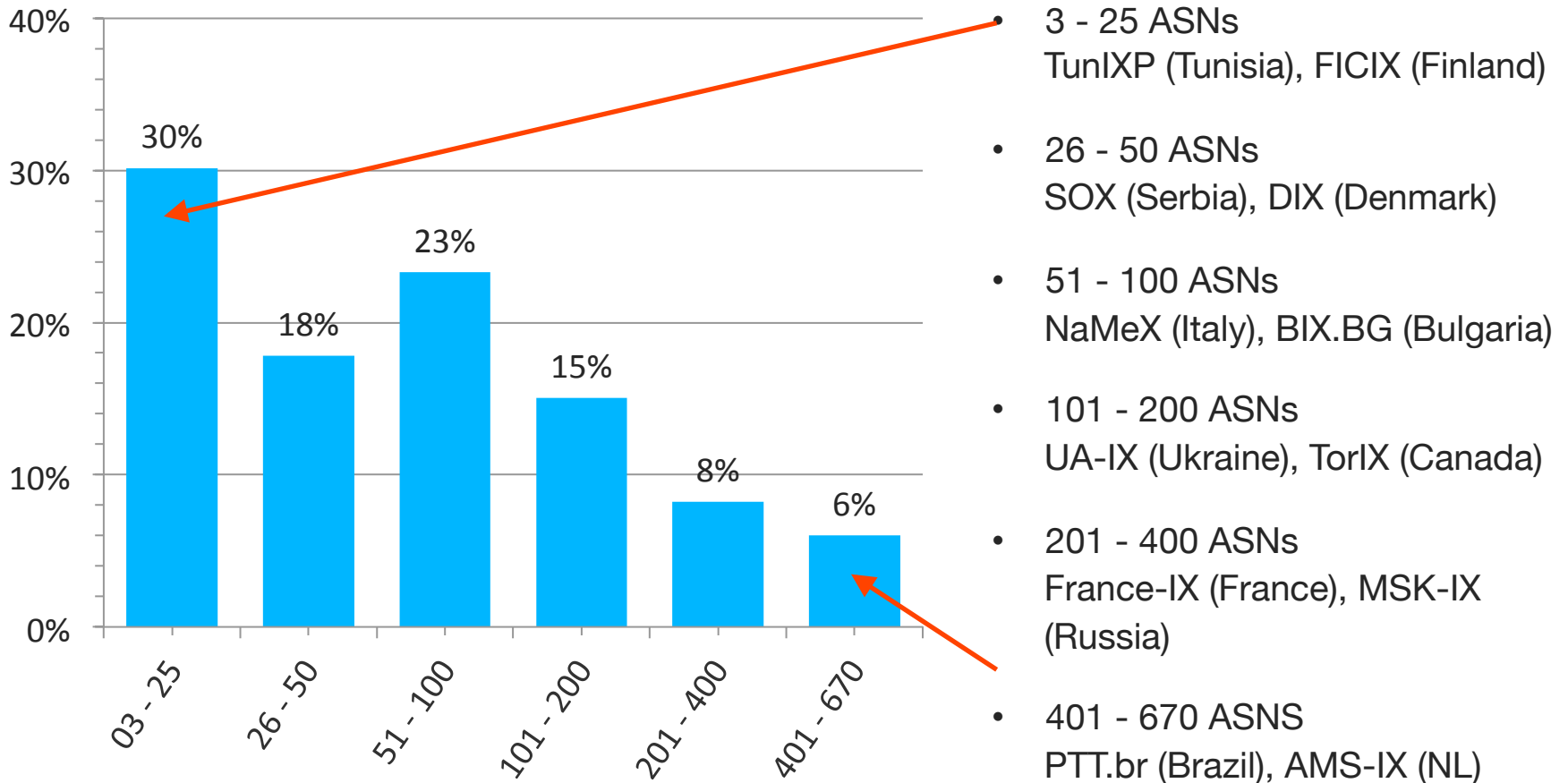
IXP DB API server written using Python / Django, which can:

- Get / create / update / delete IXP and Organisation objects
- All interaction is JSON
- IXPA's will be able to create, update and delete IXPs from the databases.
- All code is available on the Euro-IX GitHub repository <https://github.com/Euro-IX>

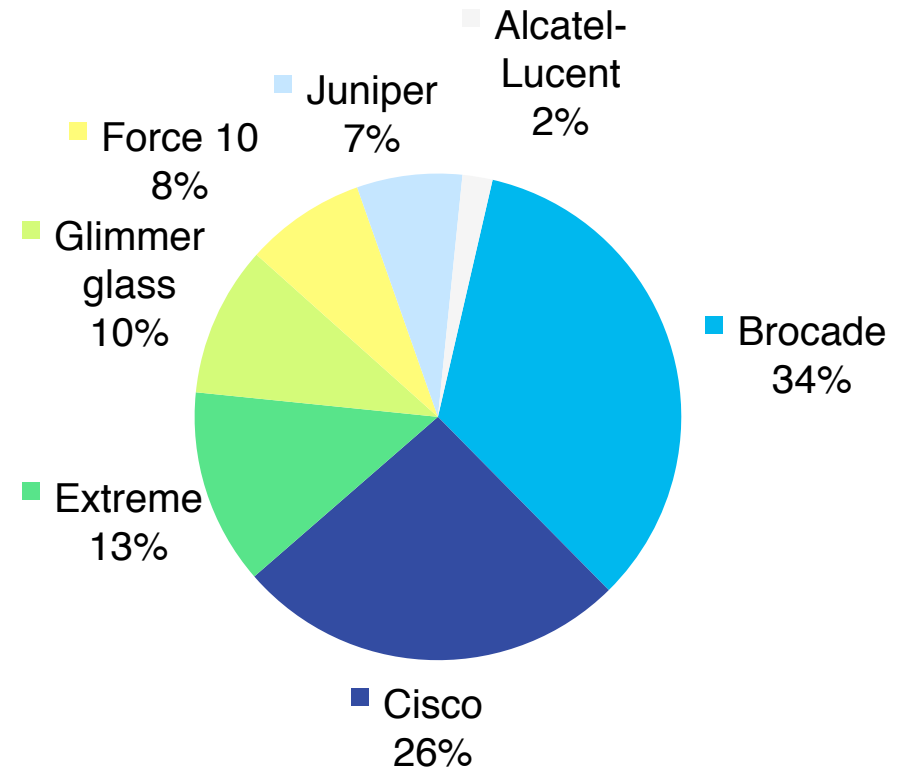
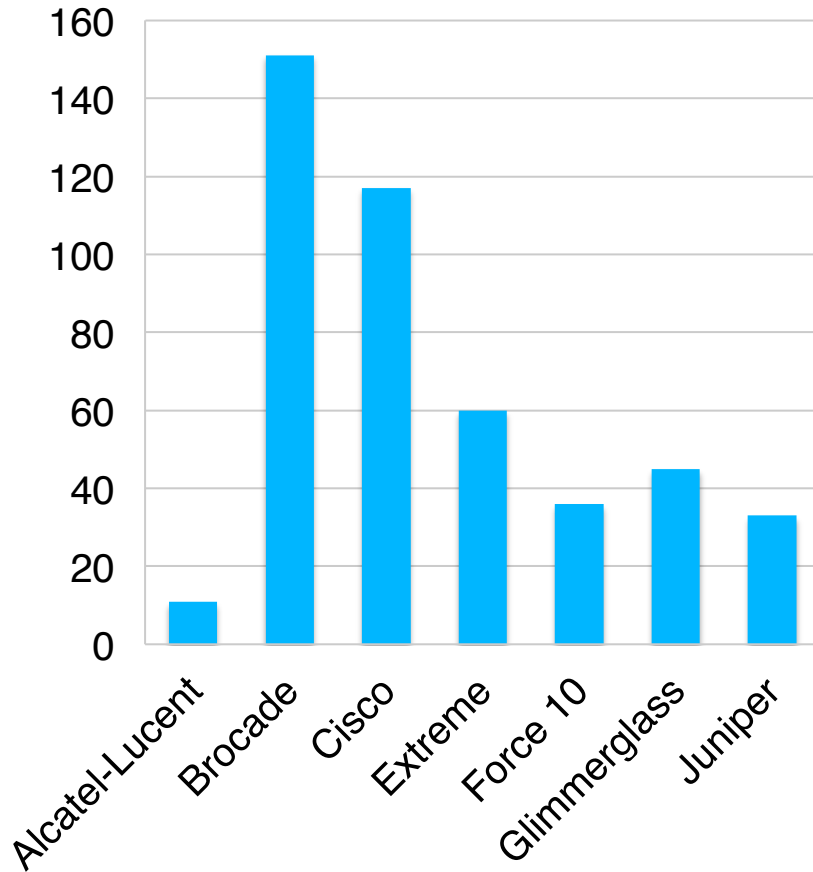


Euro-IX Database

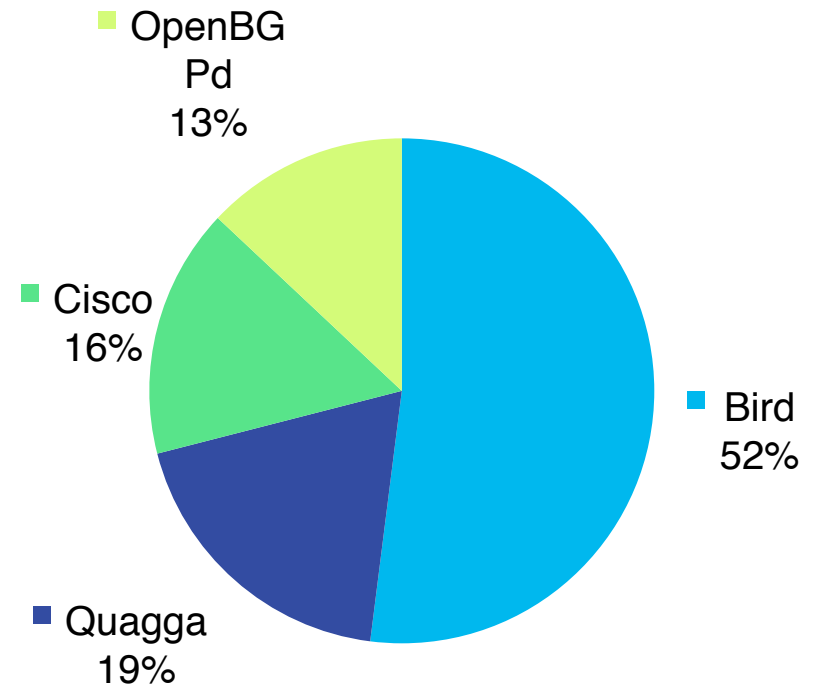
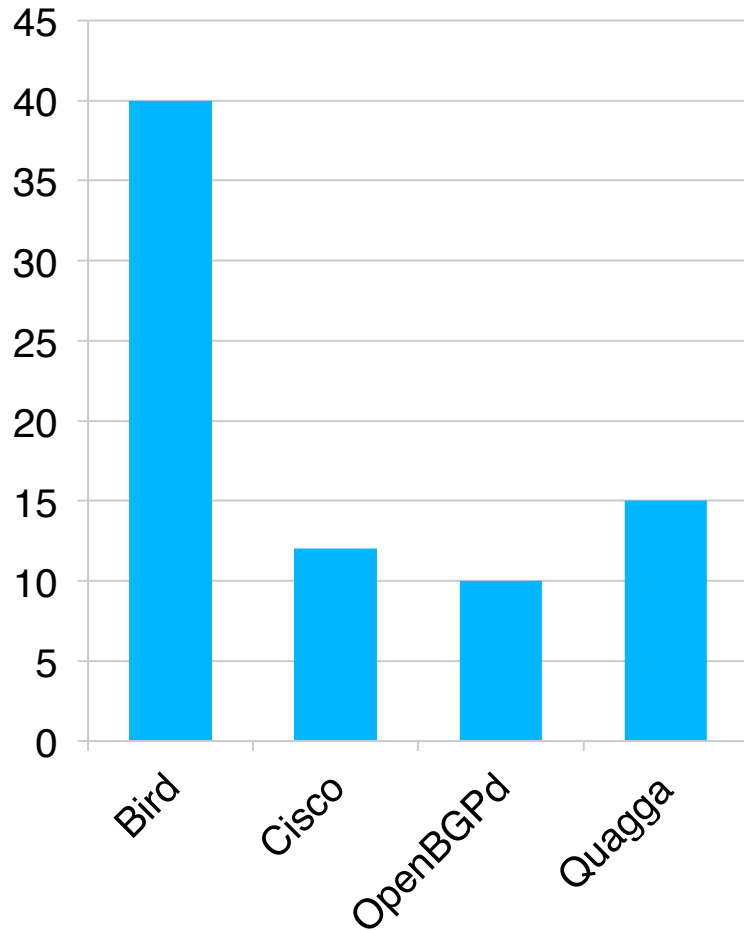
Range of ASNs connected to Members



Switch/Router DB – Vendors used



Route Server DB – Deamons used





Euro-IX Tools

Euro-IX Tools

- IXP Service Matrix - euro-ix.net/tools/ixp_matrix
- Peering Matrix - euro-ix.net/tools/peering_matrix
- ASN Search euro-ix.net/tools/asn_search
- ASN Filter - euro-ix.net/tools/asn_filter
- Newest ASN entries - euro-ix.net/tools/asn_newest
- Most common ASNs - euro-ix.net/tools/asn_common

ASX Search Tool

Enter an ASN, IXP or organisation name:

Query

Search

Note: The ASN information contained within this database is a combination of both affiliated and non-affiliated IXP content. While the affiliated IXP content is highly accurate, the non-affiliated IXP content is updated on a best effort basis and is nonetheless considered to be quite accurate.

AF-IX		
IXP Participants	IPv6 active	Unique ASNs
275	43	223
North America		
IXP Participants	IPv6 active	Unique ASNs
2161	390	1005
LAC-IX		
IXP Participants	IPv6 active	Unique ASNs
1105	490	763
APIX		
IXP Participants	IPv6 active	Unique ASNs
1469	350	872
Euro-IX		
IXP Participants	IPv6 active	Unique ASNs
7881	4183	4188
Global		
IXP Participants	IPv6 active	Unique ASNs
12891	5456	7394

ASN Filter

ASNs that peer at:

NAP INCA (Peru)
6NGIX (Korea, Republic of)
AAIX (Austria)
ACT-IX - Canberra (Australia)
ADN-IX (France)
AIXP (Tanzania, United Republic of)
ALB-IX (Albania)
AlbertalX (Canada)
AMPATH (United States of America)
AMS-IX (Netherlands)
AMS-IX Caribbean (Netherlands Antilles)
AMS-IX East Africa (Kenya)
AMS-IX Hong Kong (China)
AMS-IX New York (United States of America)
ANG-IXP (Angola)

- List all
- Only
- And other IXPs
- And at ⇒
- But not at ⇒
- And other IXPs, but not at ⇒

NAP INCA (Peru)
6NGIX (Korea, Republic of)
AAIX (Austria)
ACT-IX - Canberra (Australia)
ADN-IX (France)
AIXP (Tanzania, United Republic of)
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AMS-IX Hong Kong (China)
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Filter

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	ADN-IX	ALB-IX	AMS-IX	AMS-IX Caribbean	AMS-IX East Africa	AMS-IX Hong Kong	AMS-IX New York	ANGONIX	ARMIX	BBIX - Fukuoka	BBIX - Nagoya	BBIX - Okinawa	BBIX - Osaka	BBIX - Tokyo	BBIX - Tokyo	BCIX	BIX	BIX	BIX.BG	BNIX	CATNIX	CIX	CIXP	CoreSite - Any Los	CyruSOne	DE-CIX Frankfurt	DE-CIX Hamburg	DE-CIX Munich	DE-CIX New York	DIX - Baileirup	DIX - Skanderborg	
AMS-IX	679	114	17	565	83	0	0	679	1	0	0	0	0	0	0	0	0	0	2	0	26	15	0	13	20	7	0	19	31	0	305	12	7	1	0	0	
AMS-IX Caribbean	7	2	29	5	71	0	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
ARMIX	8	6	75	2	25	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
BBIX - Tokyo	8	1	13	7	87	0	0	2	0	0	0	0	0	0	0	0	0	0	8	0	2	1	0	2	0	0	0	0	3	0	2	1	2	1	0	0	
BCIX	62	22	35	40	65	0	0	26	0	0	0	0	0	0	0	0	0	0	2	0	62	3	0	5	3	1	0	1	8	0	31	8	7	1	0	0	
BIX	51	33	65	18	35	0	0	15	0	0	0	0	0	0	0	0	0	0	1	0	3	51	0	2	4	0	0	3	4	0	16	1	2	1	0	0	
BIX.BG	54	25	46	29	54	0	0	13	0	0	0	0	0	0	0	0	0	0	2	0	5	2	0	54	0	0	0	5	0	16	2	3	1	0	0		
BNIX	45	17	38	28	62	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	3	4	0	0	45	2	0	3	3	0	17	0	0	0	0		
CATNIX	29	15	52	14	48	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	29	1	0	1	0	4	0	0	0	0		
CIX	29	20	69	9	31	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	29	0	0	0	3	0	0	0	0		
CIXP	37	8	22	29	78	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	3	0	0	37	1	0	13	1	0	0	0		
CoreSite - Any2 Los Angeles	147	59	40	88	60	0	0	31	0	0	0	0	0	0	0	0	0	0	3	0	8	4	0	5	3	1	0	1	147	0	28	2	3	1	0	0	
DE-CIX Frankfurt	585	111	19	474	81	0	0	305	0	0	0	0	0	1	0	0	0	0	2	0	31	16	0	16	17	4	3	13	28	0	585	19	16	1	0	0	

IXP Service Matrix

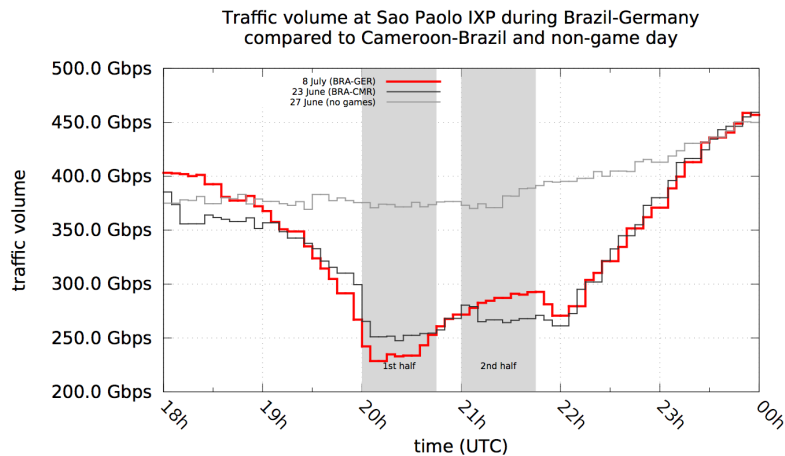
IXP	↑ Location	Asn	Rs Asn	# Of Customers	# I Pv6 Ready	% I Pv6 Ready	# Of Sites	Last Month Traffic (Gb/S)	Public Stats	Non Profit	Priv. Peering	Ipv6 Lan Type	Ipv6 Registry	Multicast	Vlan Services	Out Of Band Access	24x7 Service	24x7 Access
ADN-IX	Valence		N/A	0	0	0	0	0	-	-	-				-	-	-	-
ALB-IX	Tirana		N/A	0	0	0	0	0	-	-	-				-	-	Y	-
AMS-IX Traffic	Amsterdam	1200	6777	679	539	79.4	12	2927	Y	Y	Y	ISP Peering LAN	RIPE	No	Y	-	Y	Y
AMS-IX Caribbean Traffic	Willemstad, Curacao	28017	N/A	7	0	0.0	1	0	Y	Y	Y				Y	-	Y	Y
AMS-IX East Africa Traffic	Mombasa	327740	N/A	0	0	0	1	0	Y	Y	Y				Y	-	Y	Y
AMS-IX Hong Kong Traffic	Hong Kong	58516	N/A	0	0	0	1	0	Y	Y	Y				Y	-	Y	Y
AMS-IX New York Traffic	New York	62981	N/A	0	0	0	4	0	Y	Y	Y				Y	-	Y	Y
ANGONIX	Luanda		N/A	0	0	0	0	0	-	-	-				-	-	-	-
ARMIX	Yerevan	51225	N/A	8	8	100.0	1	0	-	Y	-				-	-	Y	Y
BBIX - Fukuoka	Fukuoka		N/A	0	0	0	0	0	-	-	-				-	-	-	-



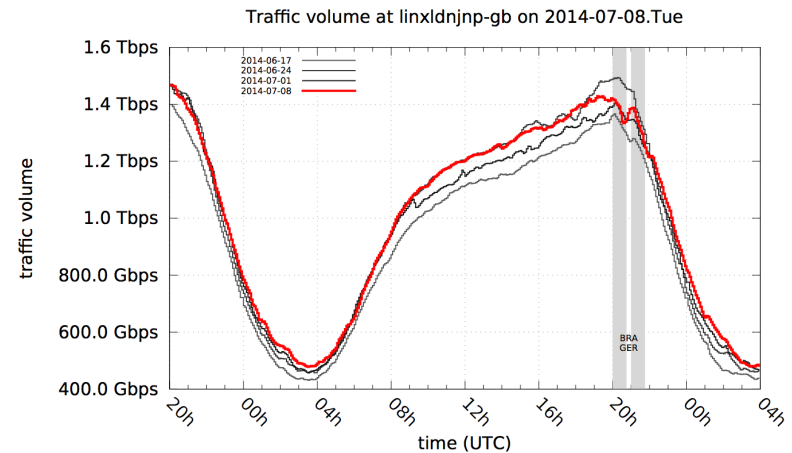
Euro-IX projects

➤ Traffic during FIFA World Cup

- Collaboration with RIPE NCC
Full Report - <https://labs.ripe.net/Members/emileaben/internet-traffic-during-the-world-cup-2014>



Traffic at PTT Sao Paulo
(Brazil vs. Germany)



Traffic at LINX London - Juniper LAN
(Brazil vs. Germany)

➤ Euro- IX Project

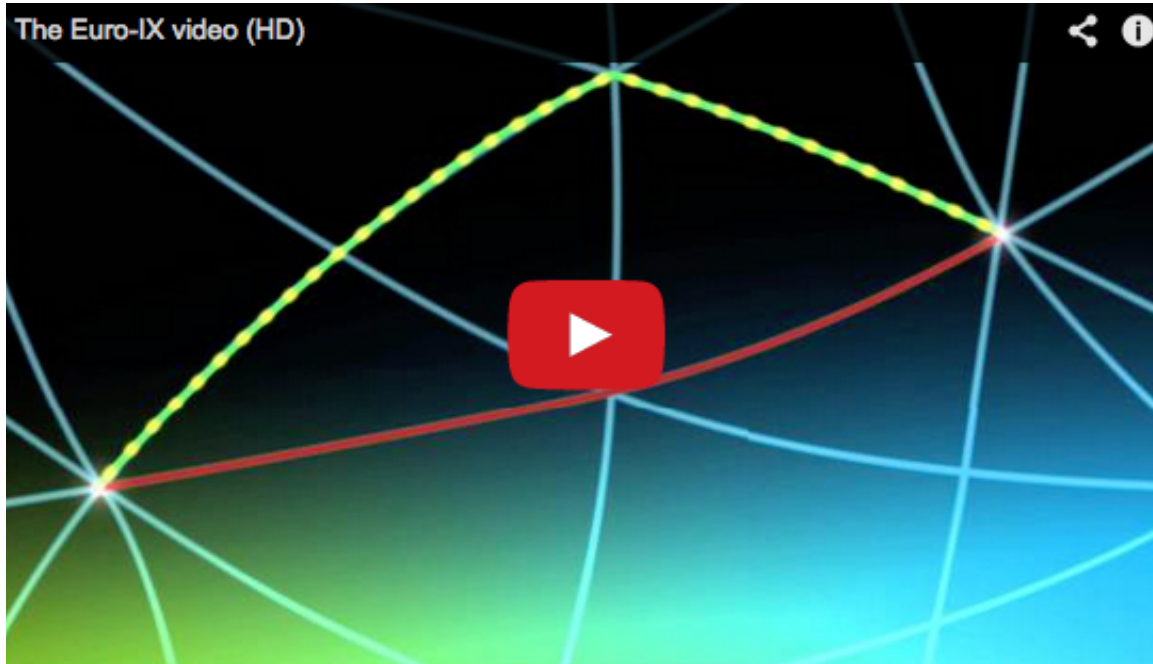
- IXP BCOPs updated -
<https://www.euro-ix.net/euro-ix-bcp>
- IXP Bogon list - Team Cymru
<http://www.team-cymru.org/ixp>



➤ Euro- IX Project

- Work done by the Euro-IX Data Task Force is being implemented, thanks to Elisa and Nick - <https://www.euro-ix.net/euro-ix-bcp> IXP Member list JSON Scheme
 - 8 IXPs already implemented!

➤ Internet Revealed, a film about IXPs



<https://www.youtube.com/channel/UCFyucVRAAMzxyJlsxnGwsjw>

Available in French, German, Portuguese, Spanish, Romanian, Arabic, Russian, Czech and Italian!

Interested in translating the video in your Language? Contact us!



Thank you!

Bijal Sanghani

bijal at euro-ix dot net

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