



euro-IX

# Automation

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What is the IX-F?

# ➤ What is the IX-F?

- Collection of Internet Exchange Point Associations (IXPAs)
  - AFIX
  - APIX
  - Euro-IX
  - LAC-IX

# ➤ What is IX-F?



# ➤ What is the IX-F?

- MOU signed by APIX, Euro-IX & LAC-IX to form the IX-F in November 2012 - [www.ix-f.net](http://www.ix-f.net)
- AFIX signed the MOU to join in 2014
- Plan to work on Global projects -
  - IGF Best Practices
  - ITU IXP Consultation
  - IX-F Database
  - Other Projects related to IXPs

# ➤ What is the IX-F?

- **AFIX**

  - Nishal Goburdhan – JINX (South Africa)

  - Kyle Spencer – UIXP (Uganda)

- **APIX**

  - Gaurab Raj Upadhaya - NPIX (Nepal)

  - 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)



# IX-F Database

# ➤ IXP Database Project

- There are many IXP Databases...

Navigation Search Public Exchange Points

Exchange Name: City: Country: Media Type: Continental Region: Search

List of Public Exchange Points

| Exchange Name     | Long Name   | City/Region      | Country | Continental Region | Media Type | Participants |
|-------------------|---|------------------|---------|--------------------|------------|--------------|
| ASIX              | Asia Extra Internet Exchange                      | HongKong         | HK      | Far East           | Ethernet   | 8            |
| ACTIX             | ACT Internet Exchange                             | Carlsbad, AZ     | US      | Australia          | Ethernet   | 13           |
| ASIX-DE           |   | Valencia         | ES      | Europe             | Ethernet   | 2            |
| ASIX-GB           |   | Atlanta          | US      | North America      | Ethernet   | 8            |
| ASIX-IT           | ASIX-IT - Italia International University/College | Rome             | IT      | Europe             | Multiple   | 2            |
| ASIX-IL           | American Internet Exchange                        | Amsterdam        | NL      | Europe             | Ethernet   | 1,200        |
| ASIX-IL-Cardenas  | American Internet Exchange                        | Caracas          | VE      | South America      | Ethernet   | 11           |
| ASIX-IL-Hong Kong | American Internet Exchange Hong Kong              | Hong Kong        | HK      | Asia Pacific       | Ethernet   | 27           |
| ASIX-IL-New York  | American Internet Exchange                        | New York         | US      | North America      | Ethernet   | 14           |
| ASIX-IL-Lisbon    | Anglo Internet Exchange point                     | Lisbon           | PT      | Africa             | Ethernet   | 2            |
| ASIX-IL-Auckland  | Auckland Peering Exchange                         | Auckland         | NZ      | Asia Pacific       | Ethernet   | 16           |
| ASIX-IL-Norway    | American Internet Exchange                        | Norway           | NO      | Europe             | Ethernet   | 2            |
| ASIX-IL-Tokyo     | Academia Sinica Internet Exchange                 | Tokyo            | JP      | Asia Pacific       | Multiple   | 2            |
| ASIX-IL-Taipei    | mph ASIX-IL                                       | Taipei, National | tw      | Asia Pacific       | Multiple   | 2            |
| ASIX-IL-Arizona   | Arizona Internet Exchange                         | Phoenix, Arizona | US      | North America      | Ethernet   | 10           |
| ASIX-IL-Berlin    | Berlin Internet Exchange                          | Berlin           | DE      | Europe             | Ethernet   | 13           |

www.datacentermap.com/ixps.html

Internet Exchange Points

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

TRUSTED SERVER HOSTING SINCE 1994

Managed Hosting Michael Hocking

TeleGeography

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 to view the Internet exchange 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 up-to-date as possible. Click here for more information about the map or by visiting www.internetexchangemap.com.

PCH

EDUCATION RESEARCH POLICY

| Region        | Country                  | City                                 | Interconnection Point                  | Participants | Facilities | Peering | Established | URL |
|---------------|--------------------------|--------------------------------------|--|--------------|------------|---------|-------------|-----|
| Asia Pacific  | Japan                    | Tokyo                                | Japan Internet Exchange of Information | 5            | 2          | 2       | May 2002    | JP  |
| Africa        | South Africa             | Johannesburg                         | Alpha Internet Exchange                | 5            | 1          | 1       | 2004        | ZA  |
| Europe        | London                   | Anglo Internet Exchange              |  | 10           | 1,000      | 1       | 2000        | GB  |
| Europe        | London                   | Point de Rencontre Internet Exchange |  | 1            | 1          | 1       | 1           | FR  |
| Latin America | Argentina (Buenos Aires) | Buenos Aires                         | ISP-ISP/ASIS Buenos Aires              | 10           | 1,000      | 1       | 2004        | AR  |
| Latin America | Brazil                   | Buenos Aires                         | ISP-ISP/ASIS Buenos Aires              | 10           | 1,000      | 100     | Aug 2000    | BR  |
| Latin America | Chile                    | Santiago                             | ISP-ISP/ASIS Santiago                  | 5            | 1,000      | 1       | Aug 2004    | CL  |



# ➤ Existing issues

- No single trusted data source
- Poor quality & no or very little APIs / automation
- “We’ll only peer with you, if you’re in PeeringDB”
- All databases are updated manually
- We’re moving into a world of automation
- IXPs hold accurate information but lack automation

# > Historical Problem



PeeringDB - Database for networks and data centres

# IX-F Database

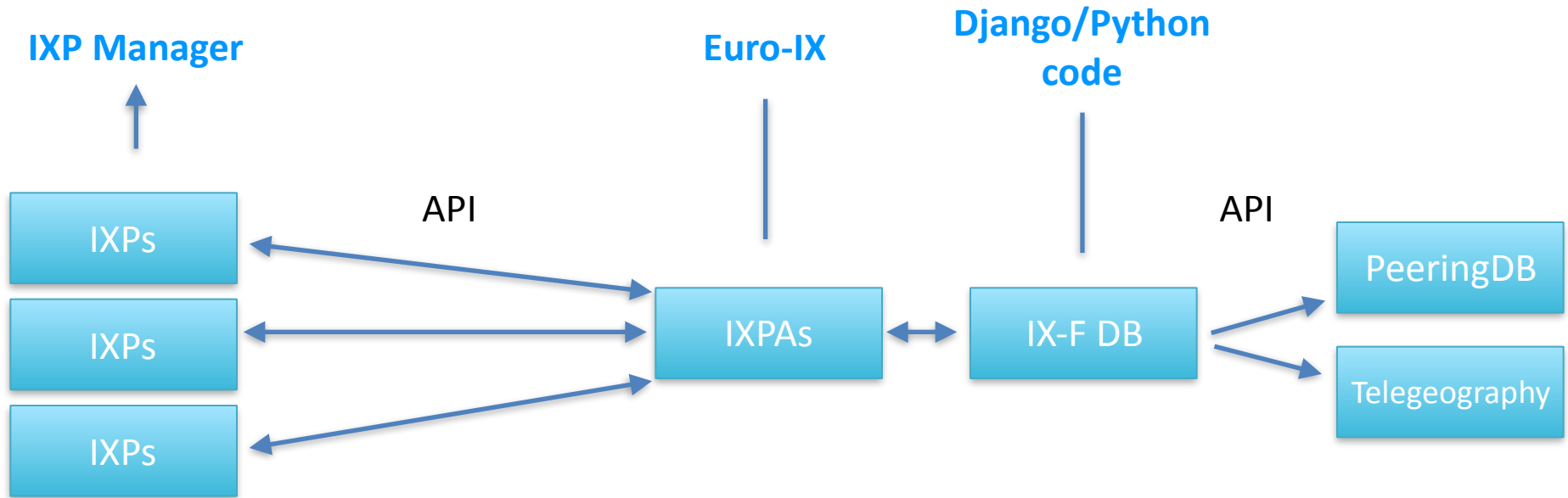
IX-F DB API server written using Python / Django, which can:

- get / create / update / delete IXP, organisation, IP addressing and network information
- all interaction is JSON
- all non-sensitive information will be publicly available
- Members of IXPA's will be able to create, update and delete IXPs from the databases.

# ➤ IX-F Database

- 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>

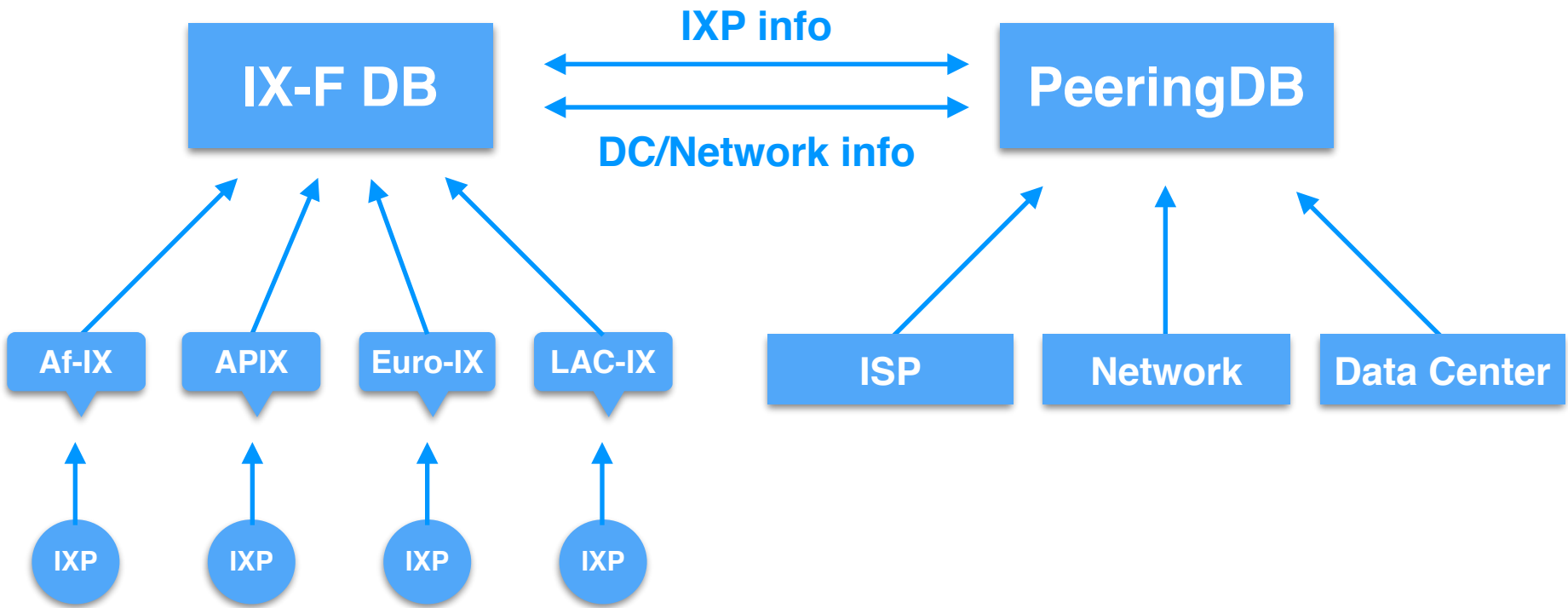
# ➤ Where we are...



# IX-F Database

## Summary

- Designed for IXPs to export (push) data with minimal intervention
- Simple modifications can be used for IXP to IXPA or to PeeringDB
- At present Euro-IX is the only IXPA interface ready to talk with PeeringDB - we encourage **ALL** IXPs to use the Euro-IX website while others are being worked on.
- APIX started work, LAC-IX and AFIX to come..





# Euro-IX IXP JSON Schema



# ➤ Euro-IX IXP JSON Schema

Talking about automation..

- Contains both IXP data & IXP Participant data
  - ASN (member list), locations, switch, IXP info
- Open, consistent & an atomic design
- Currently 12 IXP independent implementation
- Open source implementation in IXP Manager
- Source available on github: <https://github.com/euro-ix/json-schemas>

# ➤ In search of accurate information

- Give network operators the choice of getting accurate information from either IX-F or PeeringDB
- This data can be obtained using APIs
  - PeeringDB, Telegeography
- Increases use of automation
  - saves time, saves money, increases accuracy.

# ➤ The Internet Revealed – IXP Movie



Now available in English, Portuguese, French, Spanish, Turkish, Romanian, Arabic and German, check out our Youtube channel:

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

=> more languages to come, if your interested in translating the video, contact us!



# Thank you!

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