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IXP database and tools

NIX.cz member meeting
Praha, Czech Republic

What do we do?

- Two fora per year

- Maintain and develop the website, database and tools

- Annual European IXP Report

- Mentor-IX programme

- Fellowship programme

- Benchmarking Club (BMC)

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Talk to us and each other

- Mailing lists
- Newsletter – Subscribe here:
  - euro-ix.net/news-and-events/newsletter/
- Working Groups
- Social Media
  - Twitter   @euroix
  - Facebook   fb.me/maineuroix
  - YouTube   youtube.com/channel/UCFyucVRAAMzxyJIsxnGwsjw

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❯ Association of IXPs

84 affiliated IXPs:

- 56 IXPs in the Euro-IX Region in 49 Countries, operating over 100 Peering LANs

- 28 IXPs from the rest of the world

- Newest Members:

  Digital Realty

  Beirut-IX

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Patrons

13 Patrons

- Arista
- Brocade
- Ciena
- Coriant
- ECI Telecom
- Equinix
- Extreme Networks

- Huawei
- Interxion
- Juniper Networks
- MRV
- Nokia
- Telehouse

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IXP Database

IXPDB

- The Internet eXchange Point Database - IXPDB

  - Under construction under a Internet eXchange federation (IX-F) Project

  - IX-F has four members, AFIX (Africa), APIX (Asia), Euro-IX, LAC-IX (Latin America & Caribbean)

  - Plan is to build a global comprehensive database on IXPs

  - Contract with CZ.NIC to develop the IXPDB and website for the Internet eXchange Point Associations (IXPAs)

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IXPDB

- Key Features:
  - A central source of comprehensive data on IXPs including;
    - essential contact information, name, emails
    - connected IP Addresses and ASNs
    - visible prefixes
    - port speeds
    - traffic levels
    - switch capacity
    - hardware brands
    - software services
    - facility information
    - and more…

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IXPDB

- Direct integration with IXPs via common software tools (e.g. IXP Manager, APIs, route servers, looking glasses)

- Integration of third party data (e.g. PeeringDB, RIRs, IRR) helps to provide a comprehensive view of the interconnection ecosystem and encourages data clean-up by increasing its visibility

- IXPs have direct control over the visibility of their own data (e.g. visible to network operators, visible to my IXPA, visible to the world)

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IXP Database – where are we?

Database is in place for IXPs to record their information about themselves and the operators they serve, we urge all IXPs to start working with the IX-F to build the IXP database.

- IXP API is available - https://db.ix-f.net/api/ixp

- IXF Member List Directory - http://ml.ix-f.net

Networks, speak to your IXP to build a IX-F member list JSON export!!

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IXP Database – use case

Thanks to Andy Davidson for the example

"who am I not peering with at LONAP?"

- You have a script which load direct adjacencies into an array

- You need a complete and canonical list of peers to compare differences

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IXP Database – use case

Using the IXP API

https://db.ix-f.net/api/ixp

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IXP Database – use case

```
{
    "ixp_info": {
        "status": "active",
        "updated": "2014-02-17T10:07:51Z",
        "name": "London Network Access Point",
        "created": "2011-08-16T13:26:26Z",
        "shortname": "LONAP",
        "ixp_id": "IX-F#18"
    },
    "timestamp": "2015-09-16T08:17:31.116Z",
    "version": "2014110401",
    "member_list": [
        {
            "asnum": 20915,
            "name": "100 Percent"
        },
        {
            "url": "http://www.2connectbahrain.com/",
            "asnum": 51406,
            "name": "2Connect"
        },
        {
            "url": "http://www.34sp.com",
            "asnum": 41357,
            "name": "34SP.com Ltd"
        },
        {
            "url": "http://4d-dc.com/",
            "asnum": 31463,
            "name": "4D Data Centres"
        },
        {
            "url": "http://www.afilias.info",
            "asnum": 12041,
            "name": "Afilias"
        },
        {
            "url": "http://www.akamai.com",
            "asnum": 20940,
            "name": "Akamai Technologies"
        },
        {
            "url": "http://www.alentus.com",
            "asnum": 21321,
            "name": "Alentus UK Ltd"
        },
```

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IXP Database – use case

```python
import urllib, json

url = "http://db.ix-f.net/api/ixp/18/member-list"
response = urllib.urlopen(url)

ixpdata = json.loads(response.read())

my_peers = [8916,20940,20915, 51406, 41357, 31463, 12041, 21321, 12536, 16509, 20712, 33920, 4

for member in ixpdata["member_list"]:
    if member["asnum"] not in my_peers:
        print "Get some peering with " + str(member["asnum"]) + " (" + member["name"] + ")"
```

IXP Database – use case


```
enigma:Desktop andy$
enigma:Desktop andy$ python ixp.py
Get some peering with 6871 (PlusNet)
Get some peering with 8689 (PowerGroup (Power Internet Ltd))
Get some peering with 8676 (PRT Systems)
Get some peering with 28792 (Public Internet Limited)
Get some peering with 31402 (Rank Interactive (Blue Square Limited))
Get some peering with 35662 (Redstation)
Get some peering with 5552 (Redstone Communications Ltd)
Get some peering with 5503 (RM Education Plc)
Get some peering with 51409 (Sectorsix)
Get some peering with 50056 (Advantage Interactive Ltd)
Get some peering with 29550 (Simply Transit Ltd.)
Get some peering with 48961 (Warwicknet Ltd)
Get some peering with 20738 (Webfusion)
Get some peering with 44444 (Websense Hosted R&D Ltd. (UK))
Get some peering with 49158 (Wifinity)
Get some peering with 13037 (Zen Internet)
enigma:Desktop andy$
```

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IXP Database – IXF Member List

- Will contain both IXP data & IXP participant data
  - ASN (member list), locations, switch, RS, etc etc
- Open, consistent & a standard design
- Currently 27 IXP independent implementations
- Open source implementation in IXP Manager
- Source available on GitHub;

  https://github.com/euro-ix/json-schemas

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IXP Database – use case

Why not just use the IXPs own data or other systems?

- This gives you a single API for many IXPs

- Get the same format for all IXPs, its standard – wohoo!

- Data is fed from the IXP and is authoritative

- Human readable tools help everyone analyise the data

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IXP Database – What's next?

- Extend and internationalise the admin interface for all IXPAs (APIX, LAC-IX and AF-IX)

- Create bespoke APIs

- New features and enhancements to enrich the data

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IXP Database

In search of accurate information

- Peering networks can go to two sources of data to guarantee accuracy

- Tools and portal available on the Euro-IX website, development for APIX, LAC-IX and AF-IX in 2018.

- IXPAs have regional reach to local IXPs

- The data is complementary to database services that the RIR/NIRs & PeeringDB provide

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Euro-IX Projects

Euro-IX Workshop and Hackathon

- Route Servers

  - Draft for route server large communities document on GitHub (https://github.com/euro-ix/rs-workshop-july-2017/wiki/Route-Server-BGP-Community-usage)

    - Definition of route server large BGP communities for IXPs

    - Route server features list - https://github.com/euro-ix/rs-workshop-july-2017/wiki/RS-Features-list-and-details
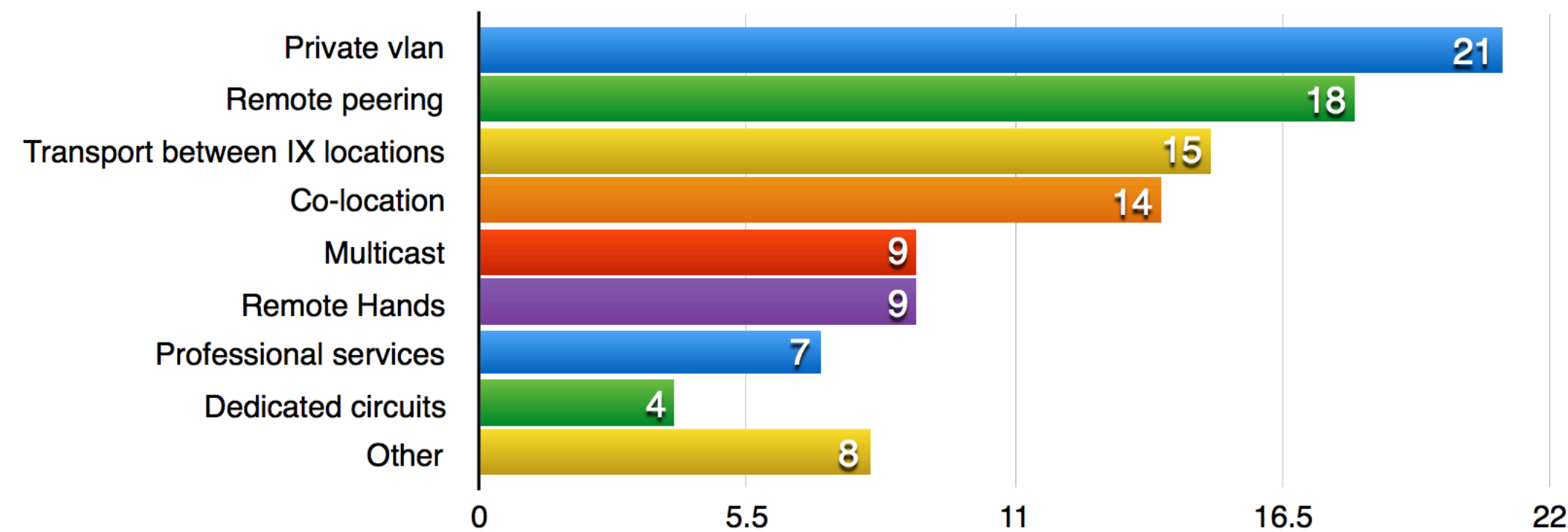
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Spamhouse Issues

- Issues with Spamhouse blocking IXP
  - Spamhouse asked some Euro-IX members to disconnect some networks they believed to be spammers or have customers who engage in spam.

  - We acknowledge the damage that Spam and related abuse does

  - Spamhaus has black-listed IXP mail servers, which causes communication issues between IXP operators and it's participants

  - Engaged with Spamhouse and looking at next steps how we can work together to stop them doing this.
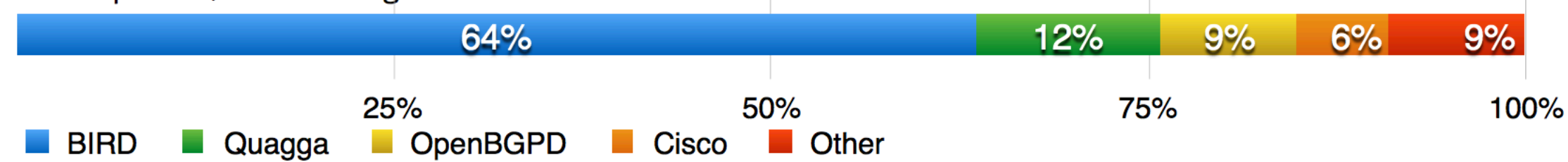
Euro-IX Reports

37/ Do you currently use Route Servers?
30 responses, Yes (24), No (6)

Yes	No
80%	20%

25% 50% 75% 100%

15/ What extended services do you offer?
28 responses with many offering more than one service:

- Private vlan — 21
- Remote peering — 18
- Transport between IX locations — 15
- Co-location — 14
- Multicast — 9
- Remote Hands — 9
- Professional services — 7
- Dedicated circuits — 4
- Other — 8

0   5.5   11   16.5   22
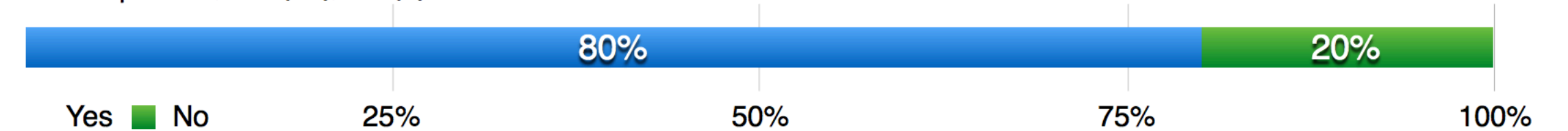
52/ By what method do you receive the most service requests?
Multiple responses, Email 29, Telephone 13, Website 3, Others 5 (IRC (2), Facebook, Twitter, Skype)

- Email — 29
- Telephone — 13
- Website Portal — 3
- Other — 5

7.5   15   22.5   30

■ Email ■ Telephone ■ Website Portal ■ Other

41/ If you use Route Servers, which one do you use?
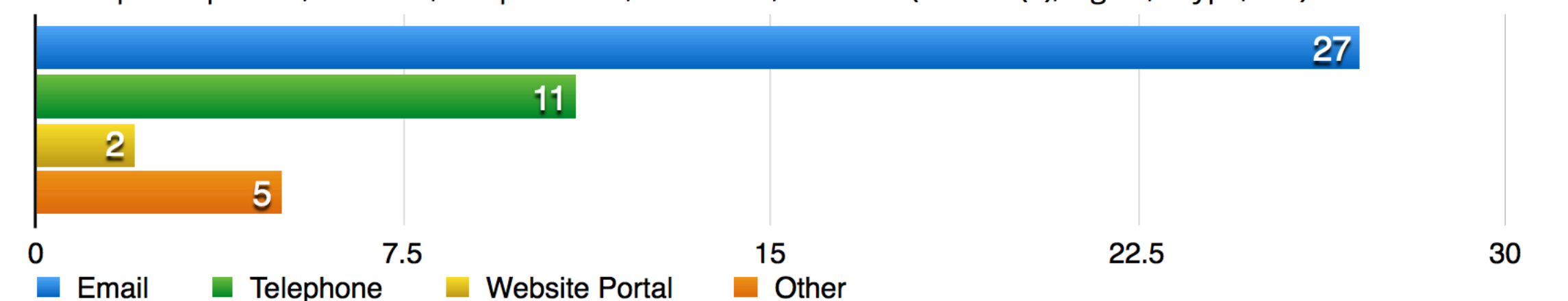30 responses, with 3 listing more than one daemon

BIRD	Quagga	OpenBGPD	Cisco	Other
64%	12%	9%	6%	9%

25%   50%   75%   100%

■ BIRD ■ Quagga ■ OpenBGPD ■ Cisco ■ Other
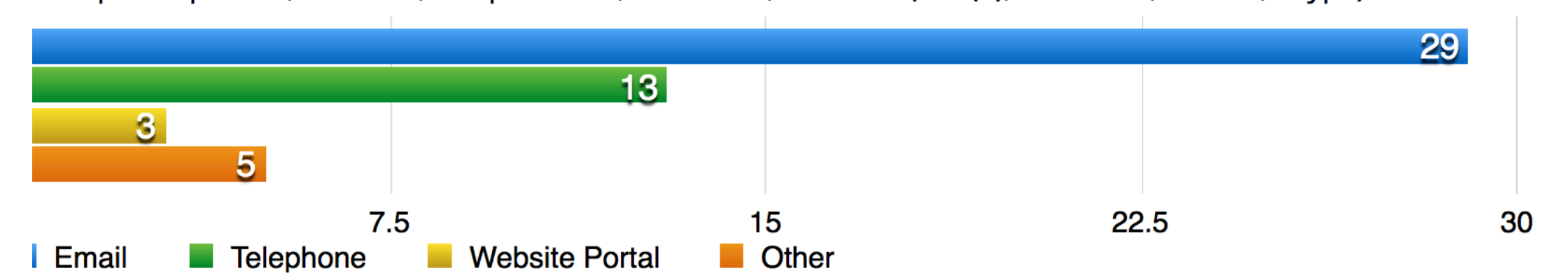
53/ By what method do you receive the most incident reports?
Multiple responses, Email 27, Telephone 11, Website 2, Others 5 (Twitter (2), Signal, Skype, IRC)
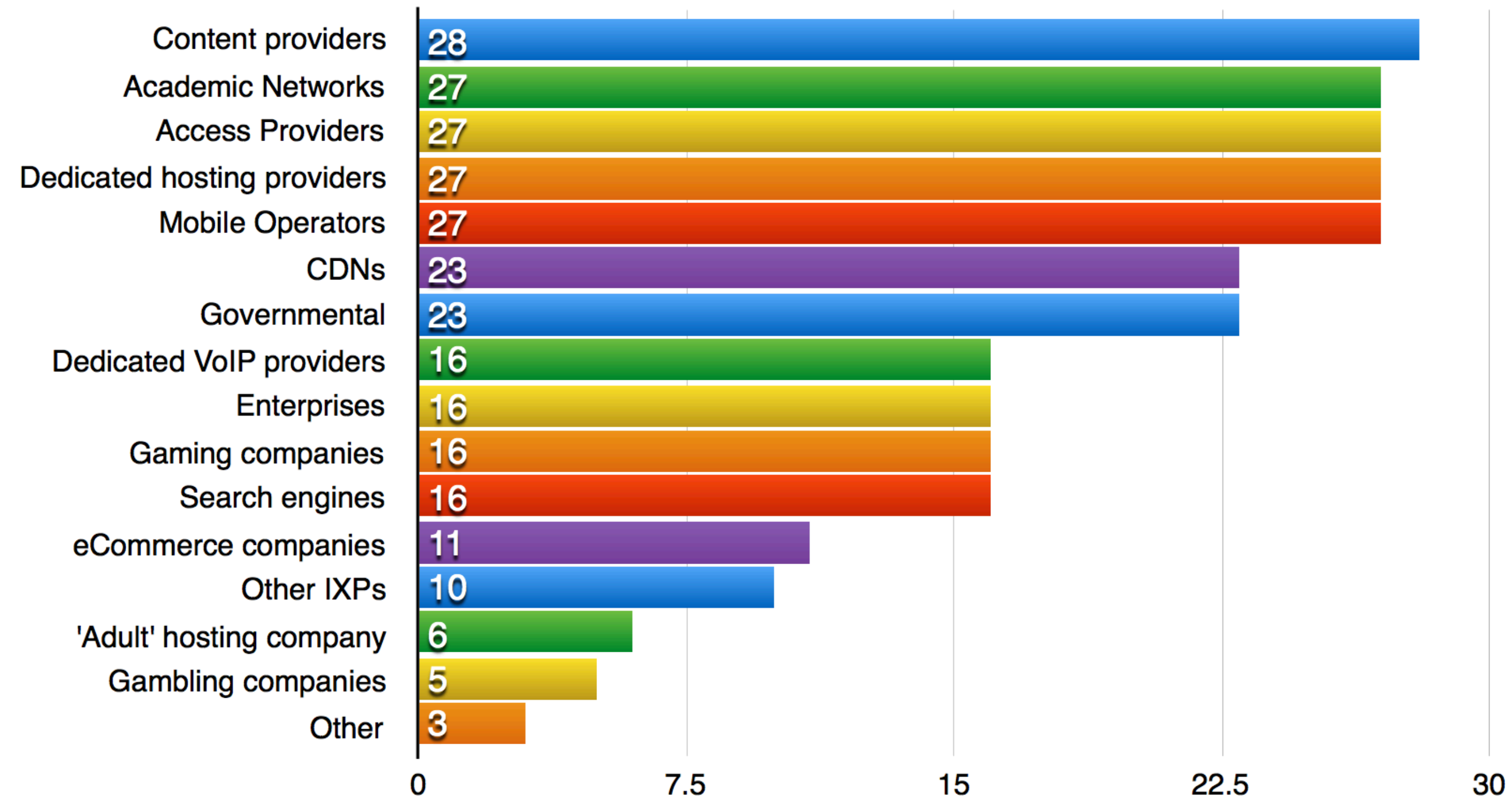
- Email — 27
- Telephone — 11
- Website Portal — 2
- Other — 5

0   7.5   15   22.5   30

■ Email ■ Telephone ■ Website Portal ■ Other

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Euro-IX Reports

56/ Do you have any of the following types of members/customers at your exchange?
281 responses, multiple answers per IXP

| Type	Value
Content providers	28
Academic Networks	27
Access Providers	27
Dedicated hosting providers	27
Mobile Operators	27
CDNs	23
Governmental	23
Dedicated VoIP providers	16
Enterprises	16
Gaming companies	16
Search engines	16
eCommerce companies	11
Other IXPs	10
'Adult' hosting company	6
Gambling companies	5
Other	3

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Euro-IX Mentor-IX and Fellowship

Funding to support IXPs attend Euro-IX forums and join Euro-IX

- 28th Forum, one fellow Nico Tshintu Bakajika, KINIX (DRC)
- 29th Forum, two fellows, Mauricio Oviedo, CRIX (Costa Rica) and Leonard Obonyo KIXP (Kenya)
- 30th Forum, five fellows, Mauricio Oviedo, CRIX, Fabian Mejia, NAP.ec, Nico Tshintu Bakajika, KINIX, Ahmed Bakhat Masood, PKIX and Leonard Obonyo, KIXP
- We need further funding to keep this going, support the fund, €10, €100, €1000, €10,000 what ever your IXP can afford ☺
- Further information about the fellowship can be found - https://www.euro-ix.net/ixps/support-ixps/fellowship-program/
- **Thanks to DE-CIX, RIPE NCC, ISOC, INEX, FICIX and InterLAN**

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> Communications

- Newsletter and global IXP discussion mailing list
  - Subscribe - euro-ix.net/news-and-events/newsletter/
  - Subscribe - https://lists.ix-f.net/mailman/listinfo/tech-discuss

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Internet Revealed, a film about IXPs
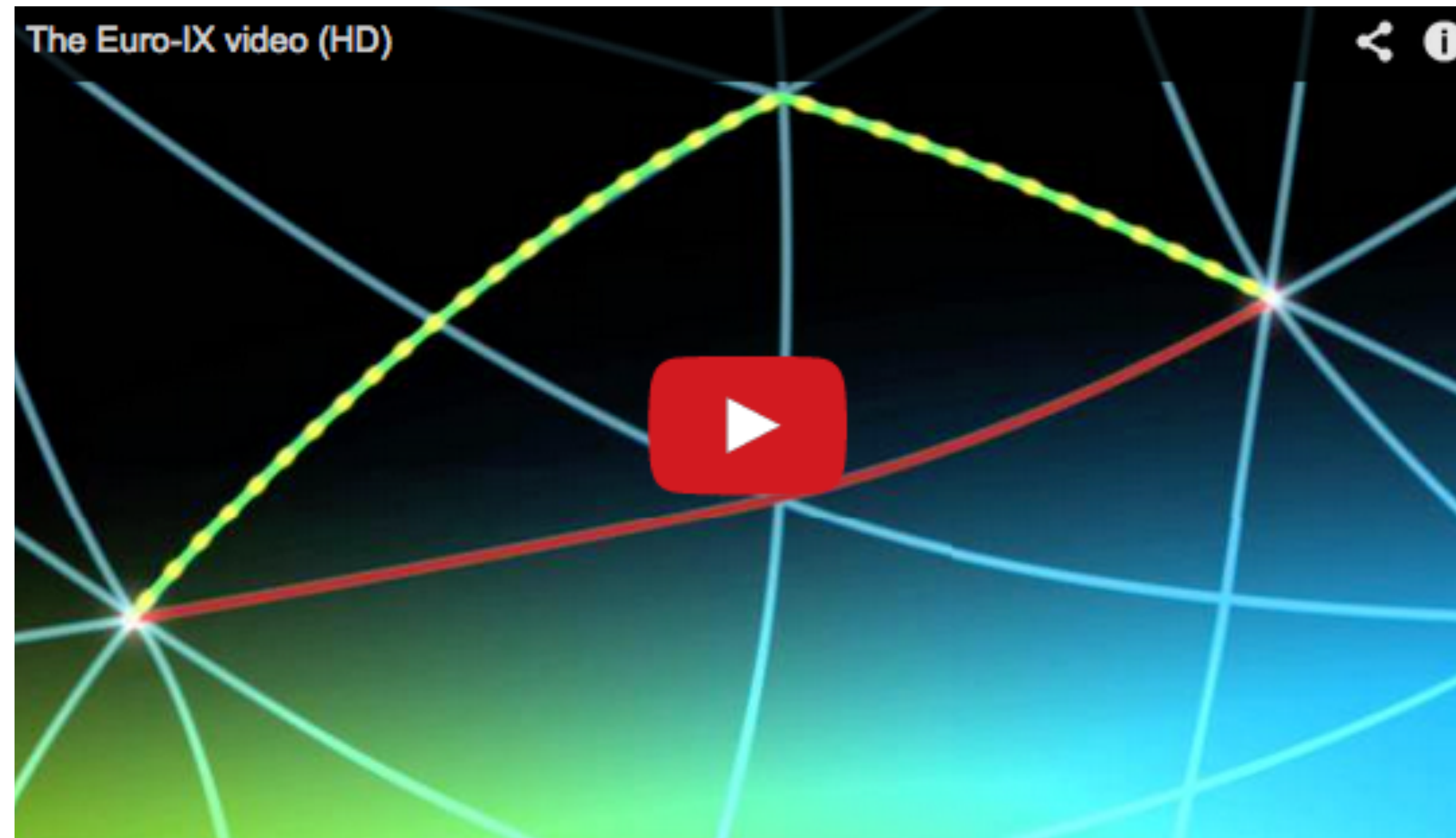
https://www.youtube.com/channel/UCFyucVRAAMzxyJIsxnGwsjw
Available in French, German, Portuguese, Italian, Spanish, Romanian, Arabic, Russian, Czech, Greek and Mandarin!
Interested in translating the video in your Language? Contact us!

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Questions?

Thank You!

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