

the Internet Exchange Neutrality Project

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Agenda

1. Background
2. Process being used
3. What are the main expectations of a neutral IXP?
4. Example clauses from the draft standard
5. More information
6. Questions and answers

Definition:

- ❑ *An Internet Exchange Point (IXP) is a network facility that enables the interconnection of more than two independent Autonomous Systems, primarily for the purpose of facilitating the exchange of Internet traffic.*
- ❑ Source: <https://www.ix-f.net/ixp-definition.html>

There are a very large number of IXPs in the world today:

- ❑ Approaching 1000?
- ❑ Source: https://bgp.he.net/report/exchanges#_exchanges

Background: illustrating the importance of IXPs



HURRICANE ELECTRIC
INTERNET SERVICES

Internet Exchange Report

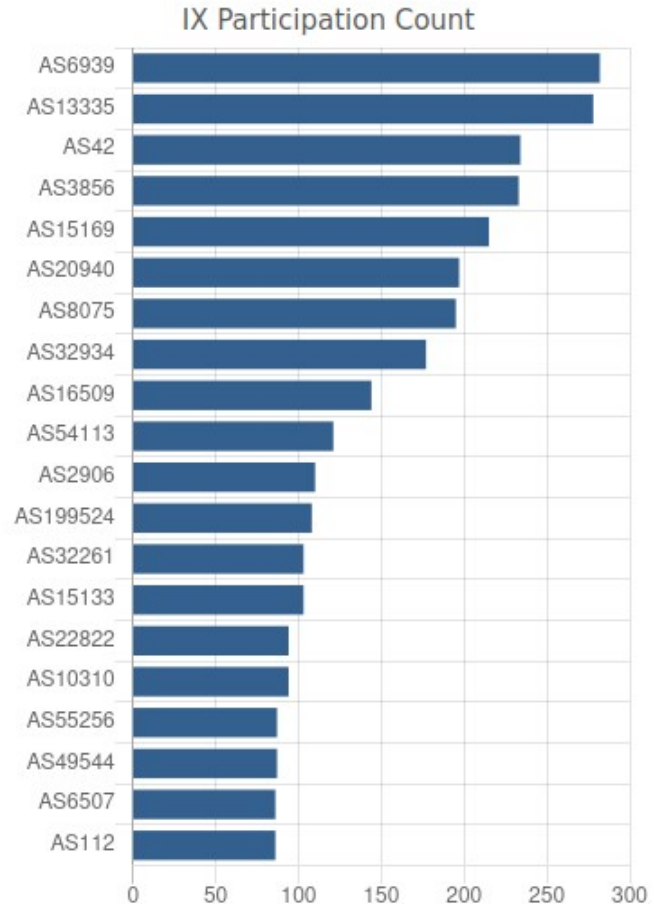
Quick Links

- [BGP Toolkit Home](#)
- [BGP Prefix Report](#)
- [BGP Peer Report](#)
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Internet Exchanges

Exchange Participants

IX Participation Count		
ASN	Name	IXes
AS6939	Hurricane Electric LLC	282
AS13335	Cloudflare, Inc.	278
AS42	WoodyNet, Inc.	234
AS3856	Packet Clearing House, Inc.	233
AS15169	Google LLC	215
AS20940	Akamai International B.V.	197
AS8075	Microsoft Corporation	195
AS32934	Facebook, Inc.	177
AS16509	Amazon.com, Inc.	144
AS54113	Fastly, Inc.	121
AS2906	Netflix Streaming Services Inc.	110
AS199524	G-Core Labs S.A.	108
AS32261	SUBSPACE	103
AS15133	EdgeCast Networks, Inc. d/b/a Verizon Digital Media Services	103
AS22822	Limelight Networks, Inc.	94
AS10310	Oath Holdings Inc.	94
AS55256	Netskope Inc	87
AS49544	i3D.net B.V	87
AS6507	Riot Games, Inc	86
AS112	DNS-OARC	86



Background

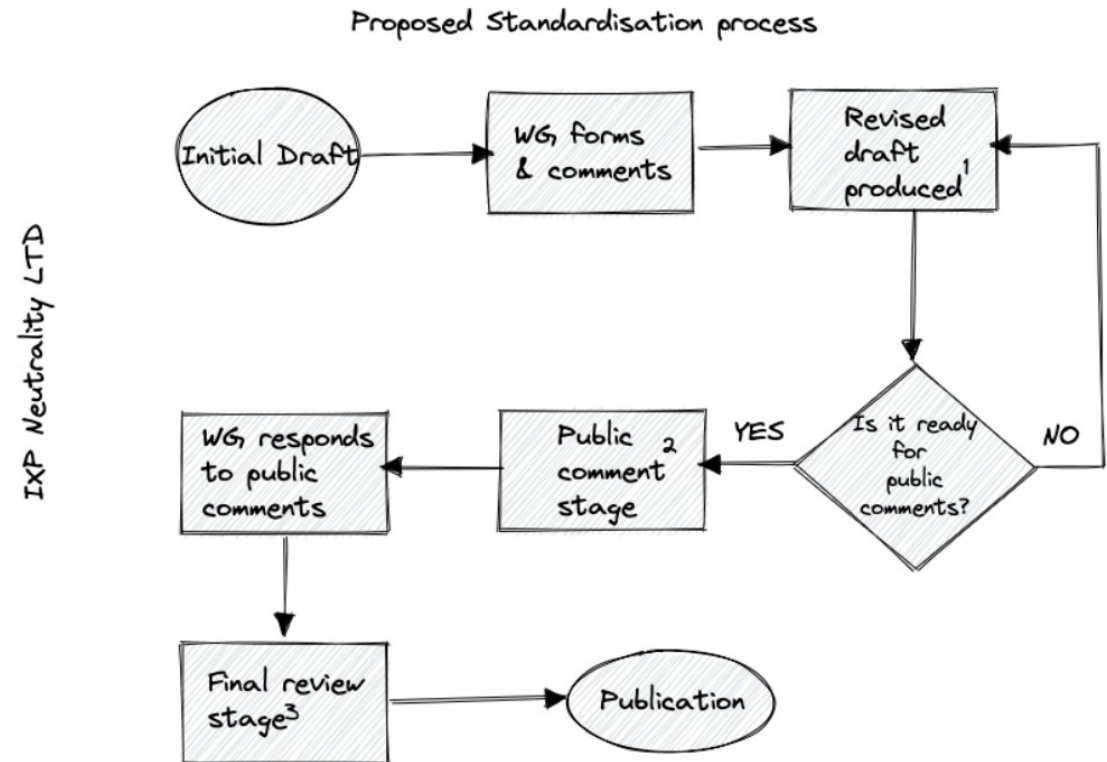
- ❑ So, IXPs play a significant role in the growth and performance of the Internet.
- ❑ Many IXPs describe themselves as being “*neutral*”
 - ❑ However, this term is vague and differently interpreted among IXPs and IXP participants.
 - ❑ As a result, the use of this term brings small value and, in some cases, can be confusing or misleading.
- ❑ The intent of this project is to provide a clear and well-accepted definition of IXP neutrality in the form of a standard:
 - ❑ which lists specific, objectively measurable and verifiable IXP neutrality criteria that can be externally audited and certified.
 - ❑ Note: establishing certification is not in the first phase of the project, we need a standard first!

Process being used: a community-based approach

An IXP Neutrality Standard makes sense only if it is widely accepted and adopted by the IXP community.

For that reason:

- a Working Group has been charged to develop the standard, with individuals of related background, from diverse geographies and roles.
- during the development of the standard, feedback from the IXP stakeholders (IXPs, IXP participants, related organisations etc.) will be requested and consensus will be sought, especially before the finalization and publication of any version of the standard.



Notes:

- 1: Details to be established by the WG
- 2: Details to be established as part of overall governance
- 3: May include a further period of public scrutiny (essentially to debug this)

What are the main expectations of a neutral IXP?

In our opinion, IXP neutrality is related to:

- ❑ the *equal and fair* treatment of an IXP towards its participants
- ❑ the *transparency* an IXP should maintain in the context of the above

Drafting of the standard started on that basis, but of course everything will eventually be decided by community consensus.

Example clauses from the draft standard: 1. Self-statement

□ Draft requirement:

□ *The IXP operator shall publish a self-statement of transparency and neutrality per IXP that it operates.*

□ Should this clause be mandatory or not?

□ It is proposed to be ***mandatory***

□ This is the key compliance clause, so must be mandatory.

□ It has the role of making any claims of neutrality really clear.

Example clauses from the draft standard: 2. Published portfolio

□ Draft requirement:

□ *A published service portfolio shall exist which will list all the IXP services offered by the IXP and all their options that affect pricing. If applicable, delivery times and SLA of these services shall be included.*

□ Should this clause be mandatory or not?

□ It is proposed to be *mandatory*

□ Without this, the defined scope of a particular IXP claiming to be neutral is unclear, so it makes no sense for it to be optional

Example clauses from the draft standard: 3. Published price list

Draft requirements:

A published price list shall exist, including setup and recurring fees for provisioning, upgrading and terminating of all IXP services within the published portfolio.

Each version of the pricelist shall include its effective start date and shall describe how it will be applied to existing IXP services (e.g., if pricing of existing services will be updated to the effective pricelist or not, etc.).

Should this clause be mandatory or not?

It is proposed to be **mandatory**

For many people, this is going to be the very visible ‘acid test’ of IXP neutrality, so it makes no sense for it to be optional

Please see:

- <https://neutral-inter.net/>

Or participate in one of our outreach events, via:

- RIPE, Apricot, Euro-IX, LAC-IC, Af-IX, APIX, CIRA, etc.

Questions?

We would like to thank and acknowledge the encouragement and financial support from the Internet Society (ISOC).