



ITU Workshop on the establishment of IXPs

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The Internet Exchange Point
Associations (IXPAs)
and the
Internet Exchange Federation
(IX-F)

➤ What is an IXPA?

- A membership association for the operators of Internet Exchange Points
- Organised on a regional basis:
 - AFIX – Africa
 - APIX – Asia-Pacific
 - Euro-IX – Europe
 - LAC-IX – Latin American and Caribbean
- Provide mutual support, information sharing and best practice development for the IXP operator community

IXPA principles

- As organisations controlled by the IXP operators, they are *responsive* to operator needs
- Being regionally based they are *inclusive* and ensure operators from all regions can participate in a leading role in organisational governance
- IXPA's play a significant role in promoting, optimising and adding further diversity and scalability.

➤ What is the IX-F?

- Global coordinating organisation for Internet Exchange Point Associations (IXPAs)
- Enables mutual support between regional IXPAs
- Creation history
 - MOU signed by APIX, Euro-IX & LAC-IX to form the IX-F in November 2012 - www.ix-f.net
 - AFIX signed the MOU to join in 2014

IX-F Board

- **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)

➤ Why not one global body?

- Regional IXPAs are more
 - **Relevant:** can focus on best practices most relevant to local needs
 - **Responsive:** enable diversity of advice, as appropriate to local circumstances
 - **Practical:** better able to accommodate practical considerations, like travel distances to meetings
 - **Inclusive:** Enable full participation in governance and leadership by IXP operators in the region

Key benefits of IXPs

➤ Some key technical benefits

- Reduction of network costs
 - By avoiding unnecessarily ‘long-distance’ round-trips
 - By assisting mutually beneficial interconnection
 - By contributing to a positive-growth feedback loop in the local network economy
- More stability and robustness
 - By enabling a greater degree of interconnectedness...
 - ...including with networks from other countries
 - And by giving networks more direct control of their own network edges

➤ Avoid unnecessarily long round-trips

- IXPs can save traffic being routed halfway around the world merely to cross the same city (or same room!)
- This doesn't mean routing traffic around the world isn't sometimes necessary or desirable
- But often these costs (financial and latency) can be saved for local content

➤ Assist mutually beneficial interconnection

- IXPs are not involved in the decisions of network operators as to with which networks they choose to peer
 - IXPs merely provide a facility to make peering easier (and so, cheaper)
- But by reducing the costs (financial, technical, organisational) of interconnection, IXPs create the conditions where networks can choose to peer more widely

Positive-growth feedback loops

- A positive-growth feedback loop for IXPs
 - Attracting more networks to join an IXP boosts the peering opportunities available
 - This attracts more networks to join
- A positive-growth feedback loop for the local Internet economy
 - Reducing the costs for network operators should feed through to lower costs for their users
 - This will drive greater demand for network services, leading to increased profitability and investment, further lowering unit costs

Greater interconnectedness boosts robustness

- Use of IXPs results in practice in network operators making more direct connections to other networks
 - Greater control of the factors of resilience
 - Direct access to content/users eliminates potential points of failure
 - Consonant with the general Internet architecture: distributed networks are less fragile in aggregate, so greater interconnectedness boosts robustness

Best practice development and information sharing in the IXPAs

Best Practice development by IXPA's

- Best practices are not rules
 - Adoption is voluntary
 - Gives essential flexibility and enables adaption by IXP
 - Diversity of view is acceptable
- Development by IXP operators ensures best practices reflect real-world experience, not just theoretical or laboratory results
- IXP operators are the primary beneficiary of good advice to IXP operators, and so committed to continuously improving the knowledge and advice available.
- For continuous improvement, practices must continuously evolve

Raising awareness

- IXPAs welcome participation from IXP operators
 - Sponsor programmes are available
- IXPs welcome consultation with their own government
- IXPAs welcome the opportunity to engage with governments interested in promoting IXPs, especially to provide advice on the components of an enabling environment for IXPs
- Welcome the ITU's decision to help introduce Member States to relevant organisations producing widely accepted best practices

Some examples

Member views workshop

- Invited representatives from large networks share their thoughts on what they want from an IXP
- An opportunity to learn
 - Especially for smaller and new IXPs seeking to attract such operators
- Frank, confidential input on what IXPs do well, and what can be improved

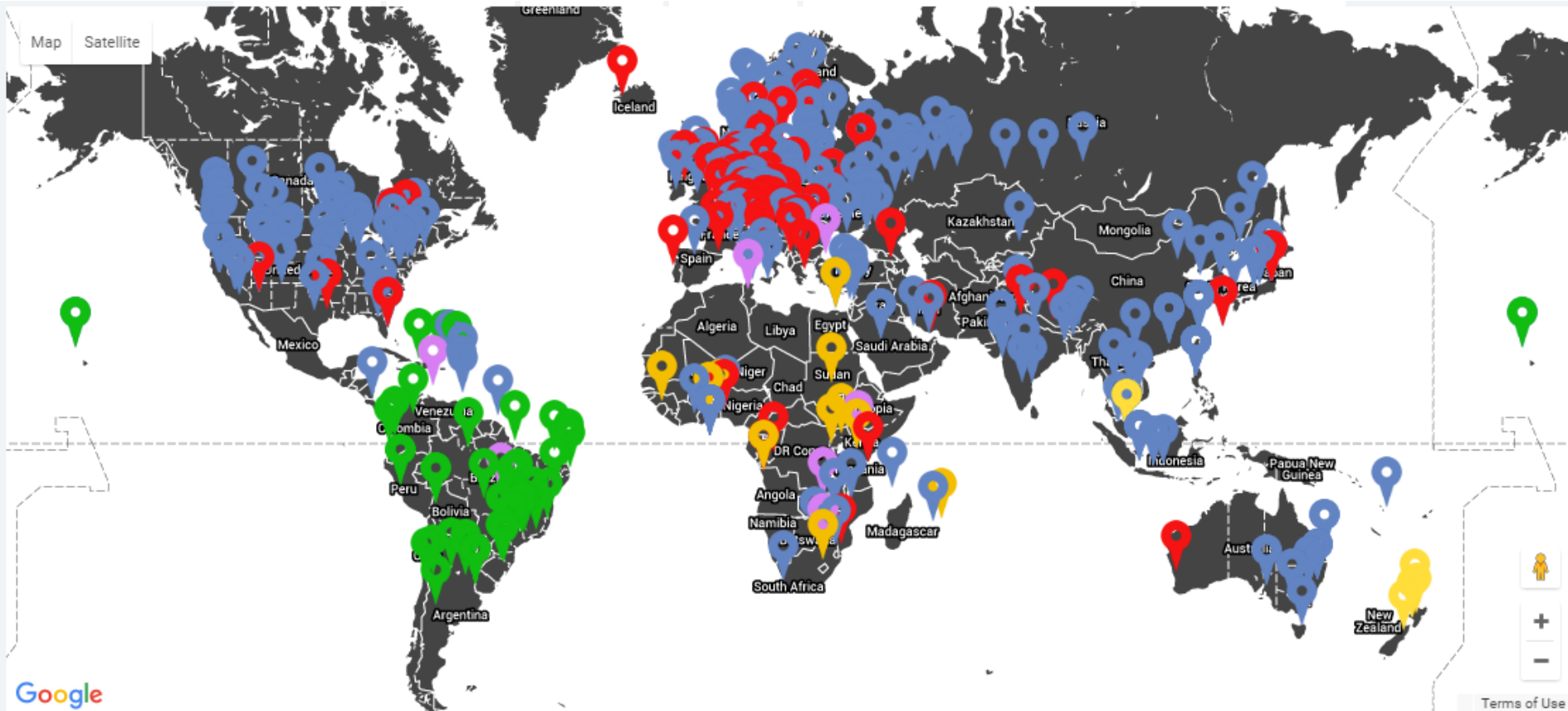
Technical workshops

- Presentations and tutorials by IXPs for IXPs
- Technology briefings from vendors and standards setters
 - Product and standards roadmaps
- Security and operational experiences
- Helps smaller and new IXPs benefits from experiences of others, and to discuss their own
- Helps voice of IXPs be heard

➤ Software development

- Open Source software developed by the IXP community for use in IXPs
- Open development by operators ensures rigorous quality and focus on meeting operator needs

IXP Map and database



Thank you!

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