



# AFRINIC IXPs UPDATE

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*IXP Arab Group workshop Tunis,  
Tunisia 11 – 12 November 2014*

# AGENDA

- ☀ About AFRINIC
- ☀ AFRINIC Initiative for IXPs
- ☀ Policies under discussion for IXPs
- ☀ IXPs & AFRINIC training program



# About AFRINIC

IP Address Allocation  
&  
ASN Assignment

AFRINIC's Services

Reverse DNS Zone for  
AFRINIC Address  
blocks

AFRINIC's Services

Whois database  
maintenance

AFRINIC's Services

Training & Capacity  
Building

AFRINIC's Services

Facilitate IP Resource  
Policy Development

AFRINIC's Services

Community  
development

AFRINIC's Services

# AFRINIC Initiatives for IXPs 1/2

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① We support IXP creation:

- Free resources for critical infrastructure (Critical infrastructure is defined here [127-afpub-2006-gen-001](#) section 5 & 6)
  - a) Internet Exchange Point
  - b) Core DNS service Provider

**---Over 11 000 IPv4 addresses assigned for IXPs---**

# AFRINIC Initiatives for IXPs 2/2

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- ① We are involve:
  - Free peering to IXPs to improve accessibility of our services

**---63 peers for AFRINIC among with we have JINX---**

## IXPs in AFRICA

COUNTRIES	IXPs
South Africa	6
Angola, Egypt, Kenya, Tunisia, Tanzania	2
Burundi, Benin, Botswana, Congo-Kinshasa, Congo- Brazzaville, Cote D'Ivoire, Ghana, Gambia, Mauritius, Malawi, Mozambique, Namibia, Nigeria, Rwanda, Sudan, Uganda, Zambia, Zimbabwe	1
<b>TOTAL</b>	<b>34</b>

## IXPs in ARAB WORLD

COUNTRIES	IXPs
Lebanon	1
Bahrain	1
United Arab Emirates	1
Tunisia	2
Egypt	2
<b>TOTAL</b>	<b>7</b>

# IXPs Policy Under Discussion

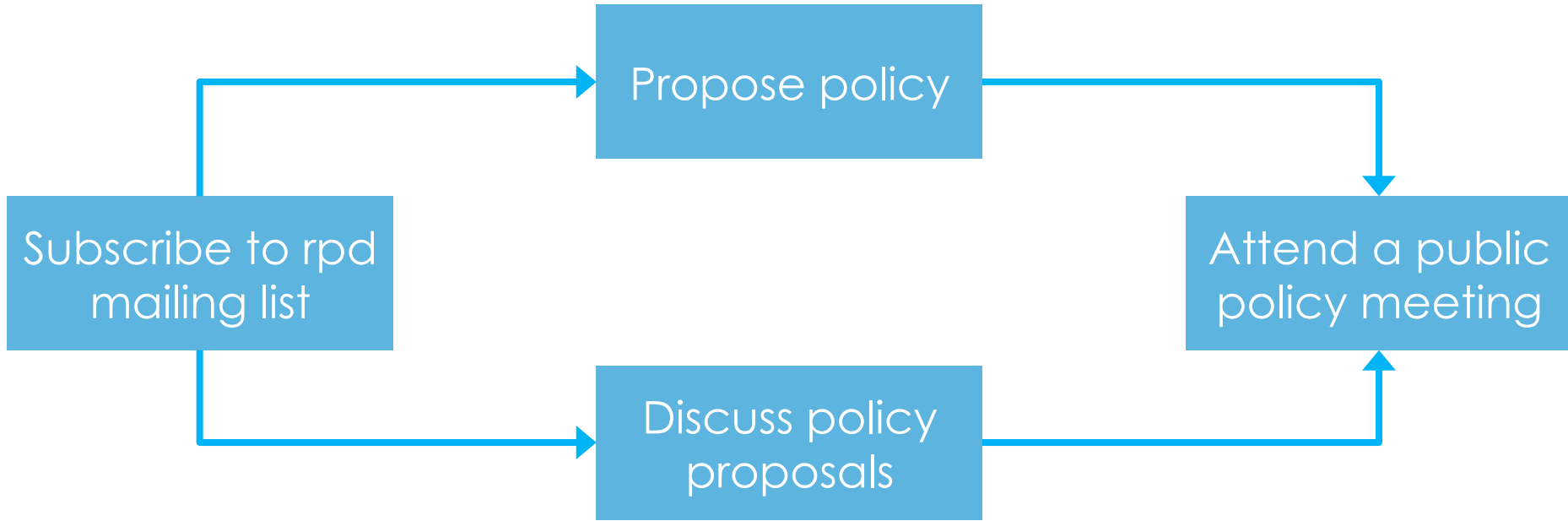
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☀️ Resource Reservation for Internet Exchange Points:  
AFPUB-2014-GEN-004-DRAFT-01:

...This policy requests AFRINIC to reserve, and publish IPv4 resources, and 2-byte ASNs for use by IXPs only...



# Your Opinions Count



<https://lists.afrinic.net/mailman/listinfo.cgi/rpd>

# How IXPs benefit from AFRINIC training

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☀️ Free training on Internet related technology

- ① Onsite Training
- ② Webinars

Keep in touch for the AFRINIC's next training season  
“Call for training 2015” over our mailing lists

# Merci

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# Thank you



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# IXP financial and governance models: Best Practices for sustainability

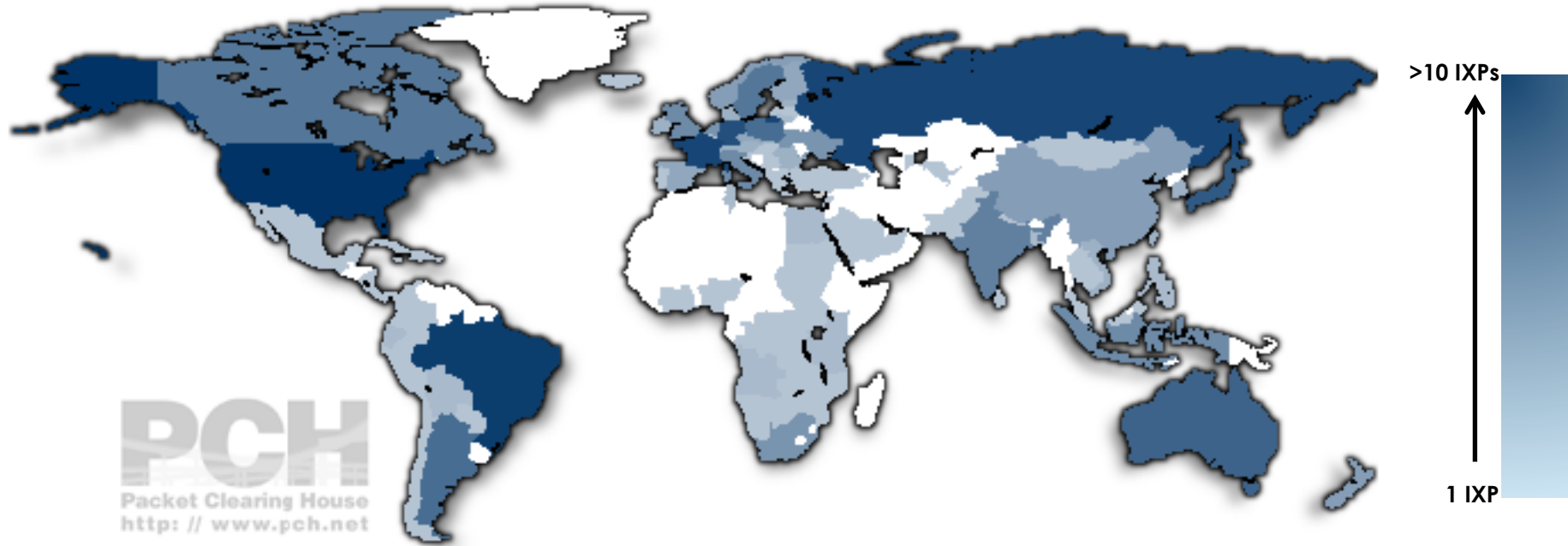
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# AGENDA

- ☀ Current state in the world
- ☀ IXP (Internet Exchange Point) definitions
- ☀ IXPs Financial and governance models
- ☀ Pros and Cons

# IXPs Map



114 countries run IXPs in the world (November 2014 )

# What is IXP?

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According to The European Internet Exchange Association (Euro-IX):

**---an IXP is as a “physical network infrastructure operated by a single entity with the purpose to facilitate the exchange of Internet traffic between Autonomous Systems---**

# Requirements for an IXP

CASES	NEED of IXP?	Comment
1 ISP	NOT	No need *(Monopoly or not)
2 ISPs	Probably NOT	They know each other and exchange traffics if need be (Private peering recommended)
3 ISPs	Probably YES	The success of ISPs in this situation depends on many factors: <ol style="list-style-type: none"><li>1. They know each other (private peering)</li><li>2. They don't trust each other but they understand the need of an IXP, third party can be called (regulator, ISPA, voluntary...)</li></ol> EX: developing countries
> 3 ISPs	YES	High concurrence They don't trust each other Third party is needed (regulator, privates, ISPA, Voluntary) EX:



# IXPs Models

NON-FOR-PROFIT	COMMERCIAL
<p>Run mostly by:</p> <ul style="list-style-type: none"><li>■ Government (regulator)</li><li>■ ISP Association</li><li>■ REN</li><li>■ Voluntary</li></ul>	<p>Run mostly by:</p> <ul style="list-style-type: none"><li>■ Private organisation to make money</li></ul>

# Advantages of commercial IXPs

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- ☀️ Clear objective (how to make profits)
- ☀️ Customers oriented
- ☀️ High investment potential
- ☀️ Possibility to charge extra fees for services
- ☀️ Greater accountability to their customers
- ☀️ Full time &/or half time staff

# Disadvantages of commercial IXPs

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- ☀ Tend to become an ISP (concurrency with costumers)
- ☀ Complicated to set up (developing countries)

# Advantages of non-for-profit IXPs

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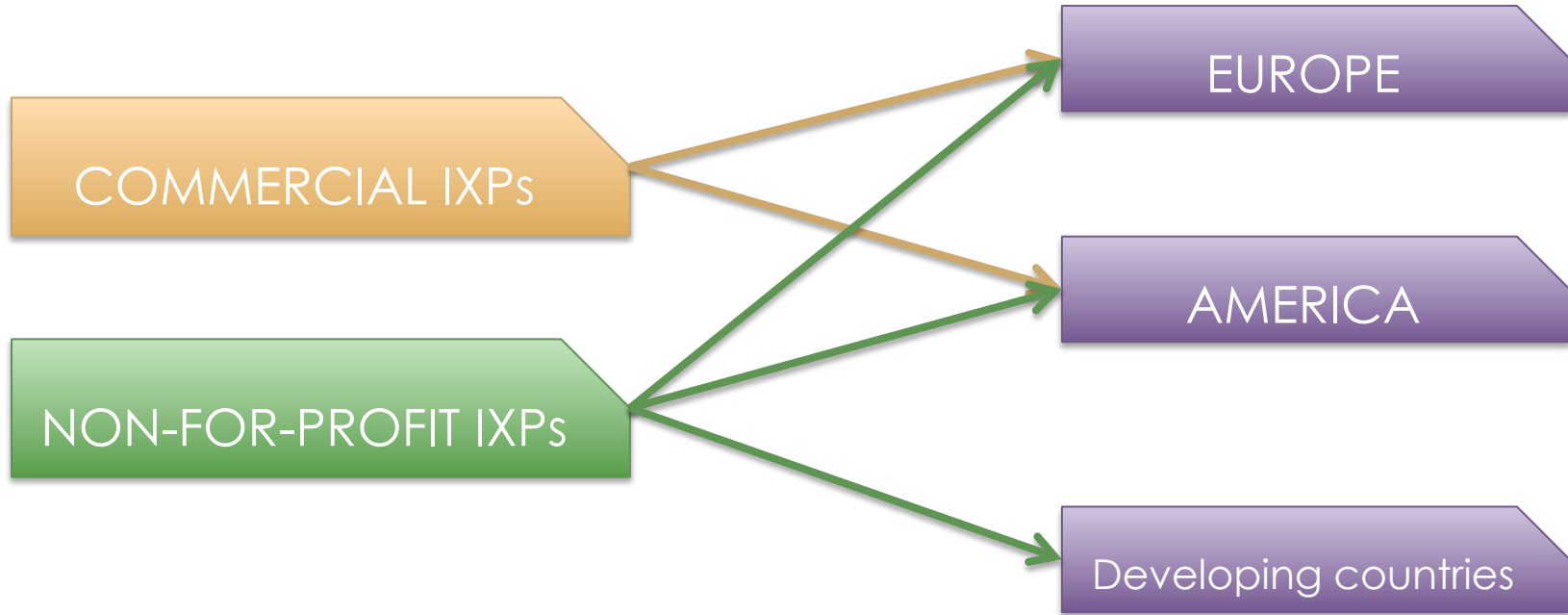
- ☀️ Receive equipment for free
- ☀️ Member oriented
- ☀️ Easy to set up (can be deployed everywhere)
- ☀️ Low cost and maintenance
- ☀️ Easy to grow

# Disadvantages of non-for-profit IXPs

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- ☀ More dependent of third party
- ☀ Low investment potential
- ☀ Zero full time staff
- ☀ Lower accountability to their members

# ISPs Models For Sustainability Per Region



In AFRICA >99% non-for-profit  
and 80% are form ISPA

Source: euro-ix.net

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# The national legal framework for encouraging good establishment of IXPs

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# Some Cases

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- ☀️ KIXP (Kenya Internet Exchange Point)
- ☀️ IXPN (Nigeria Internet Exchange Point )
- ☀️ LINX (London Internet Exchange)
- ☀️ RINEX (Rwanda Internet Exchange)
- ☀️ JINX (Johannesburg Internet Exchange)

# KIXP case

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- ① KIXP started operations in 2000 under cover of the Telecommunication Service Providers Association of Kenya (TESPOK).
- ② After its launch, Telkom Kenya filed a complaint with the national regulator, the Communications Commission of Kenya (CCK) that shuts down KIXP.
- ③ TESPOK finally received the approval of CCK after having a case submitted to the Communication tribunal

# IXPN Case

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- ① Started in Ibadan in 2003 with only 2 members, the Nigeria ISP association (ISPAN) shows interest to setup an IXP in Lagos in 2005
- ② The President O. Obasanjo directs the regulator Nigerian Communications Commission (NCC), to do their best to establish this IXP.

# LINX and JINX Case

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- ① London and Johannesburg Internet Exchange operate under the cover of ISP association of their respective countries and are created under non-profit Internet industry body.
- ② with the existence of a legal framework, government don't need to facilitate the establishment of an IXP.

# RINEX Case

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- ① Created in 2004 with SIDA (the Swedish International Development and cooperation Agency) and KTH (Swedish Royal Technical Institute) financial support,
- ② Problem to continue to maintain the IXP because of the lack of ISP association
- ③ The Government's Rwanda Information Technology Authority (RITA) have been call to help until the establishment of a non for profit organisation that will take over...

# Conclusion

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- ☀️ Legal framework on Internet related issues must be established.
- ☀️ ISP must understand how IXPs are important for their corporation.
- ☀️ Facilitate the ISPA creation
- ☀️ Government over the regulator should maintain the neutrality and equity in the corporation by using existing laws
- ☀️ ...

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