

Lessons Learnt from Peering

Building Africa's digital future

26 August 2015

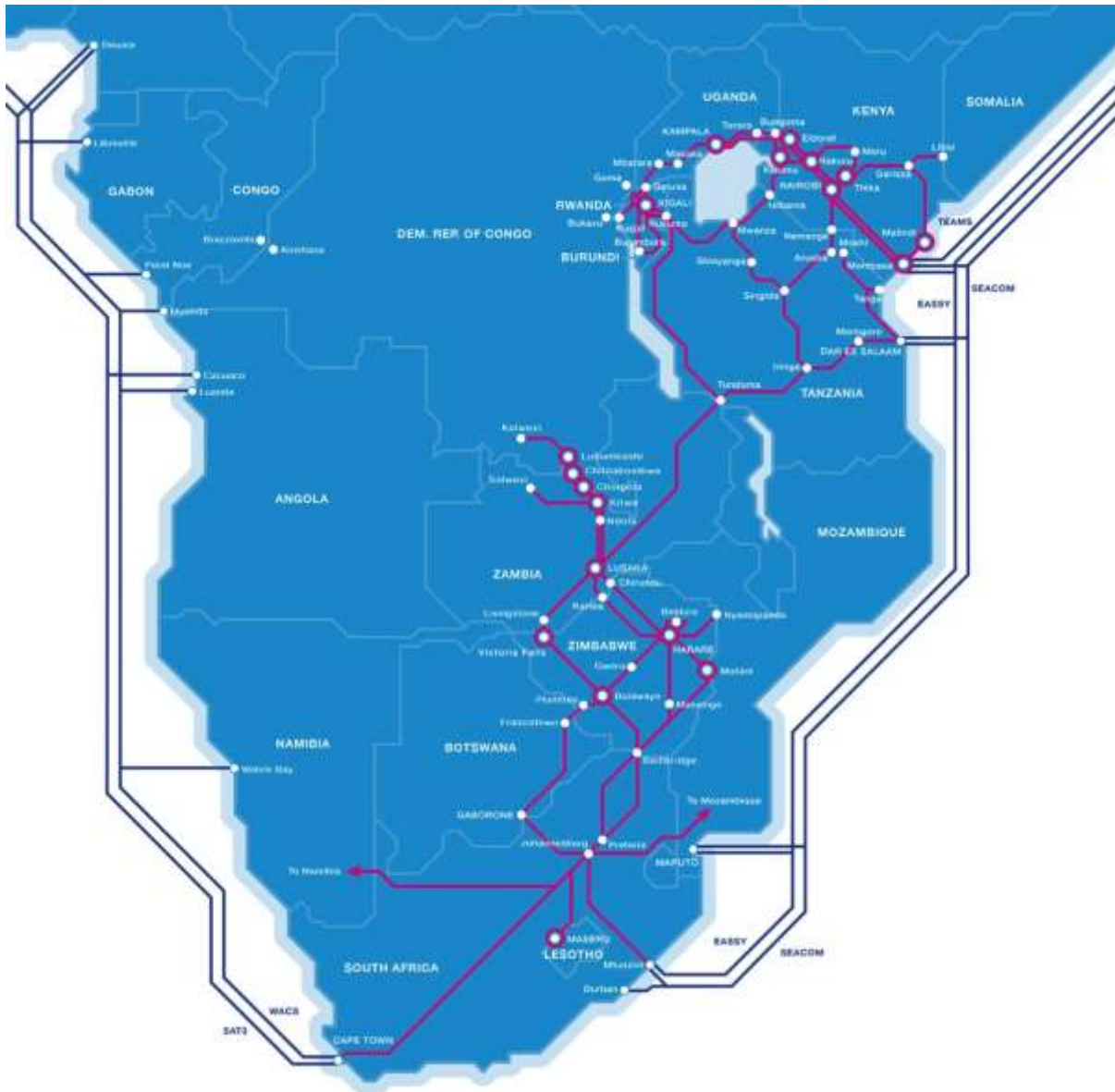
An overview of Liquid Telecom



Operating companies



Where we are



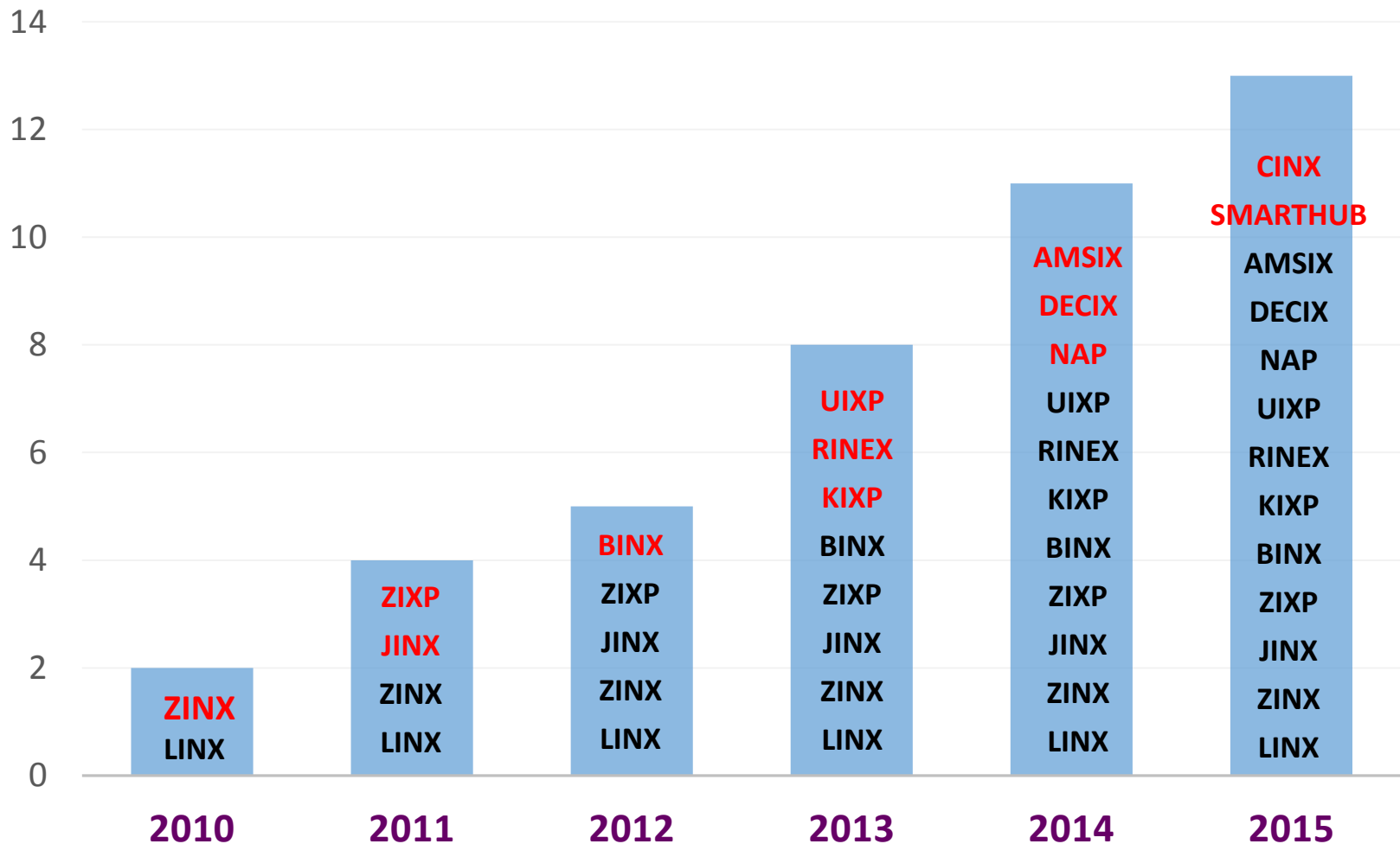
- One Network.
- The largest cross-border single fibre network in Africa – 18,000 km
- Fully redundant routes.
- Open-access – the carriers carrier.
- Active connections to 5 sub sea cables.

Peering Points



- We love peering!
- Present at more African IXPs than most
- NAP, JINX and KIXP most significant
- Also present at ZINX, BINX, ZIXP, UIXP, RINEX and CINX
- We support IXPs and participate in them actively
- We peer in Europe at LINX, AMSIX, DECIX
- London – strategic hub because of sub sea cable routes

Peering Points used by Liquid Telecom Over 5 Years



Highest Ranked by Renesys Peering Index



- Top 100 Globally
- Highest Ranked in Africa by far

Dyn | IP Transit Intelligence

[view our IPv6 data](#)

[Dashboard](#)

[Registrations](#)

[Internet Index](#)

[Provider Report](#)

[Network Watch](#)

[Market Watch](#)

★ Africa IPv4 Internet Index Ratings

IPv4 Peering Base — Africa

1	★ Level 3
2 New	★ Yahoo!
3	★ GTT
4	★ Closed Joint Stock Company TransTeleCom
5 ↓ 3	★ Google
6 ↓ 1	★ Abovenet
7 ↓ 1	★ CenturyLink
8 ↓ 1	★ KPN
9	★ SprintLink Global Network
10	★ TELE2
11 ↑ 2	★ Liquid Telecom

IPv4 In the Rankings (Global) ?

★ Liquid Telecom

AS 30844

IPv4 Peering Base

97 ↓ 3	★ DrukNet ISP	17660	<input type="checkbox"/>
98 ↑ 7	★ LG Uplus (LG DACOM)	3786	<input type="checkbox"/>
99 ↑ 83	★ Valve Corporation	32590	<input type="checkbox"/>
100	★ Liquid Telecom	30844	<input type="checkbox"/>
101 ↓ 2	★ BHARTI Airtel Ltd.	9498	<input type="checkbox"/>
102 ↓ 4	★ i3B - Internetbreitband GmbH	39912	<input type="checkbox"/>
103 ↓ 2	★ Open Peering Initiative	20562	<input type="checkbox"/>

[View Listing](#)

Challenges of Peering At Multiple POPs



Traffic Challenges



- Routing Problems when Peers advertise different prefixes at each IXP
- uRPF – some Peers need symmetric traffic flows
- Cross-border Capacity Management
- Issues with CDN routing

Benefits of Peering



In Africa Sometimes Elephants take
a long time to come to the party



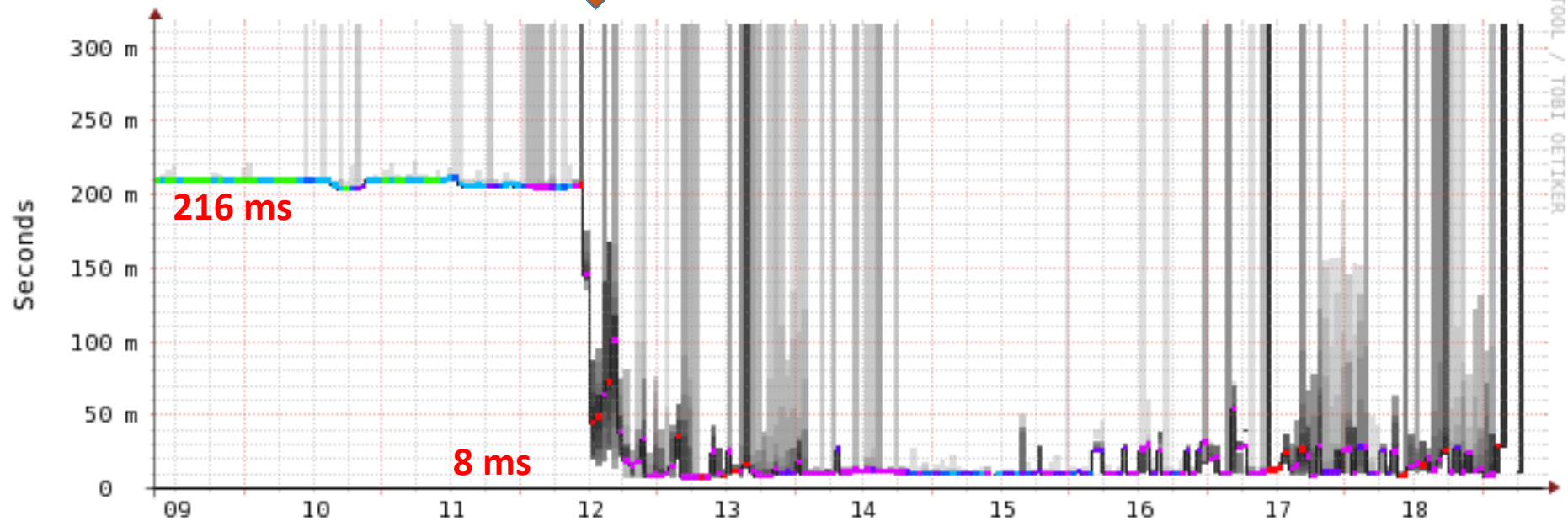
But they enjoy
the benefits
when they get
there

Latency - Example

Peering Established



Navigator Graph



median rtt: 77.3 ms avg 210.0 ms max 7.2 ms min 10.6 ms now 89.7 ms sd 861.1 m am/s
packet loss: 24.58 % avg 99.01 % max 0.00 % min 82.53 % now
loss color: 0 1/20 2/20 3/20 4/20 10/20 19/20
probe: 20 ICMP Echo Pings (56 Bytes) every 300s end: Wed Aug 19 10:26:31 2015

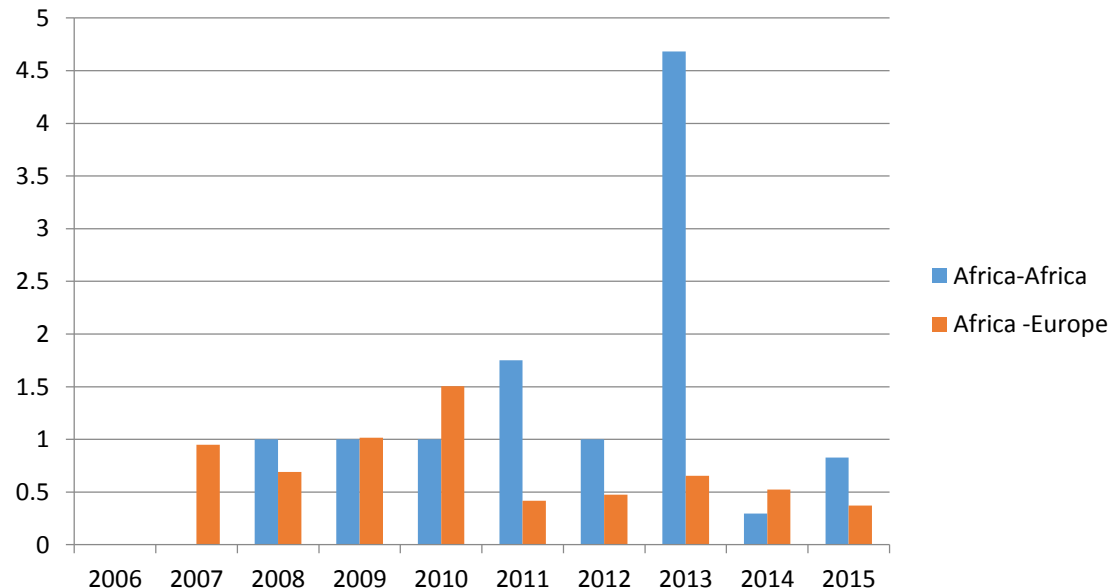
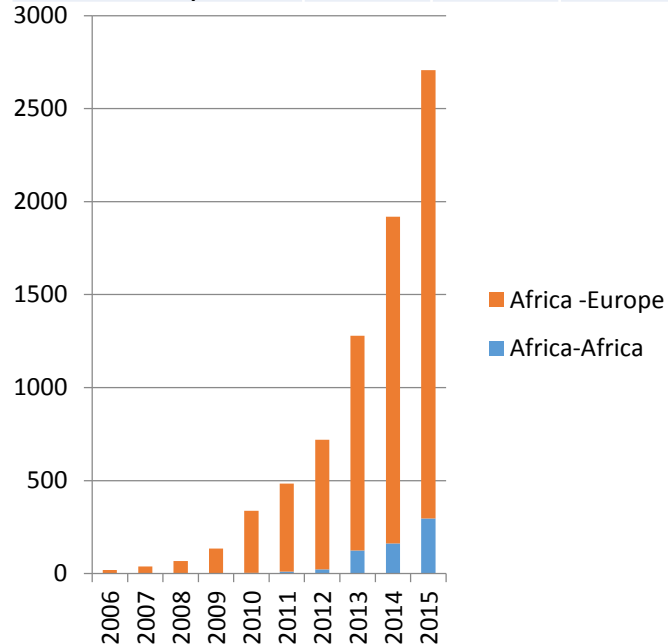
Lessons Learnt Along the Way



Growth in Intra- African Transit Capacity is Consistently higher than Africa-Europe!



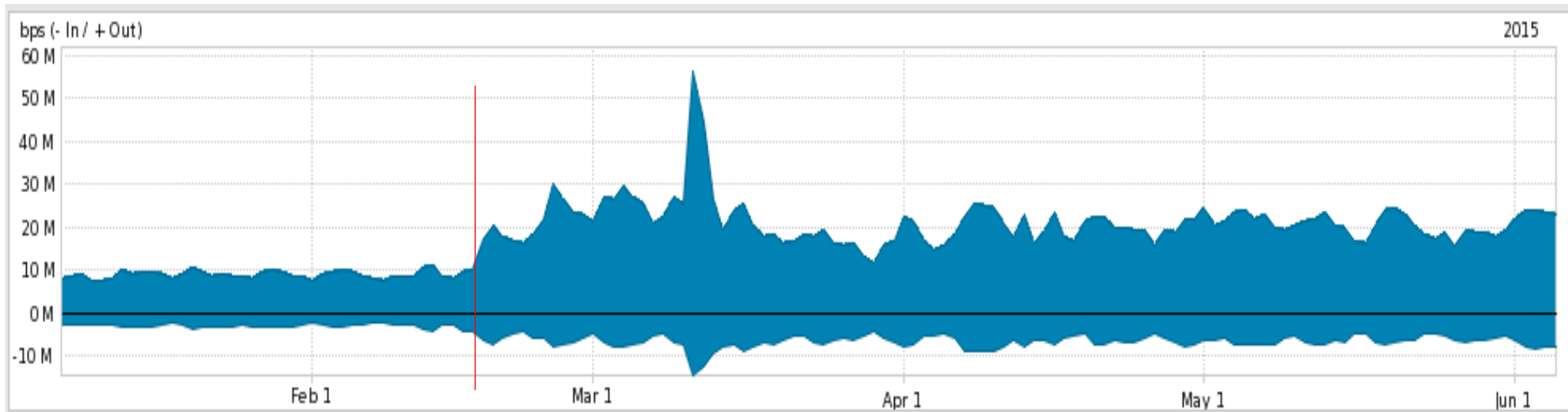
International Bandwidth By Region - Source Telegeography										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Africa-Africa	0	0	1	2	4	11	22	125	162	296
Africa -Europe	20	39	66	133	333	472	697	1153	1757	2411
Percentage Growth										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Africa-Africa			100%	100%	100%	175%	100%	468%	30%	83%
Africa -Europe		95%	69%	102%	150%	42%	48%	65%	52%	37%



Increase in Throughput



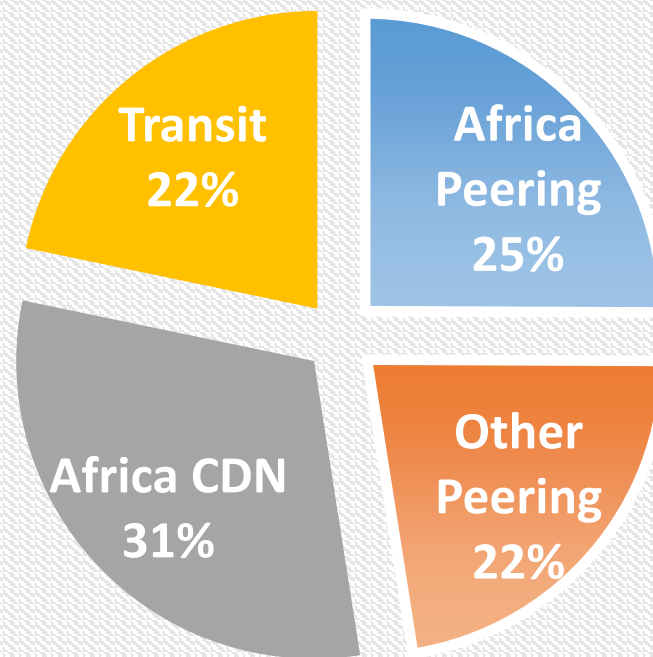
- When latency is lowered, throughput increases.
- Local traffic volume increases



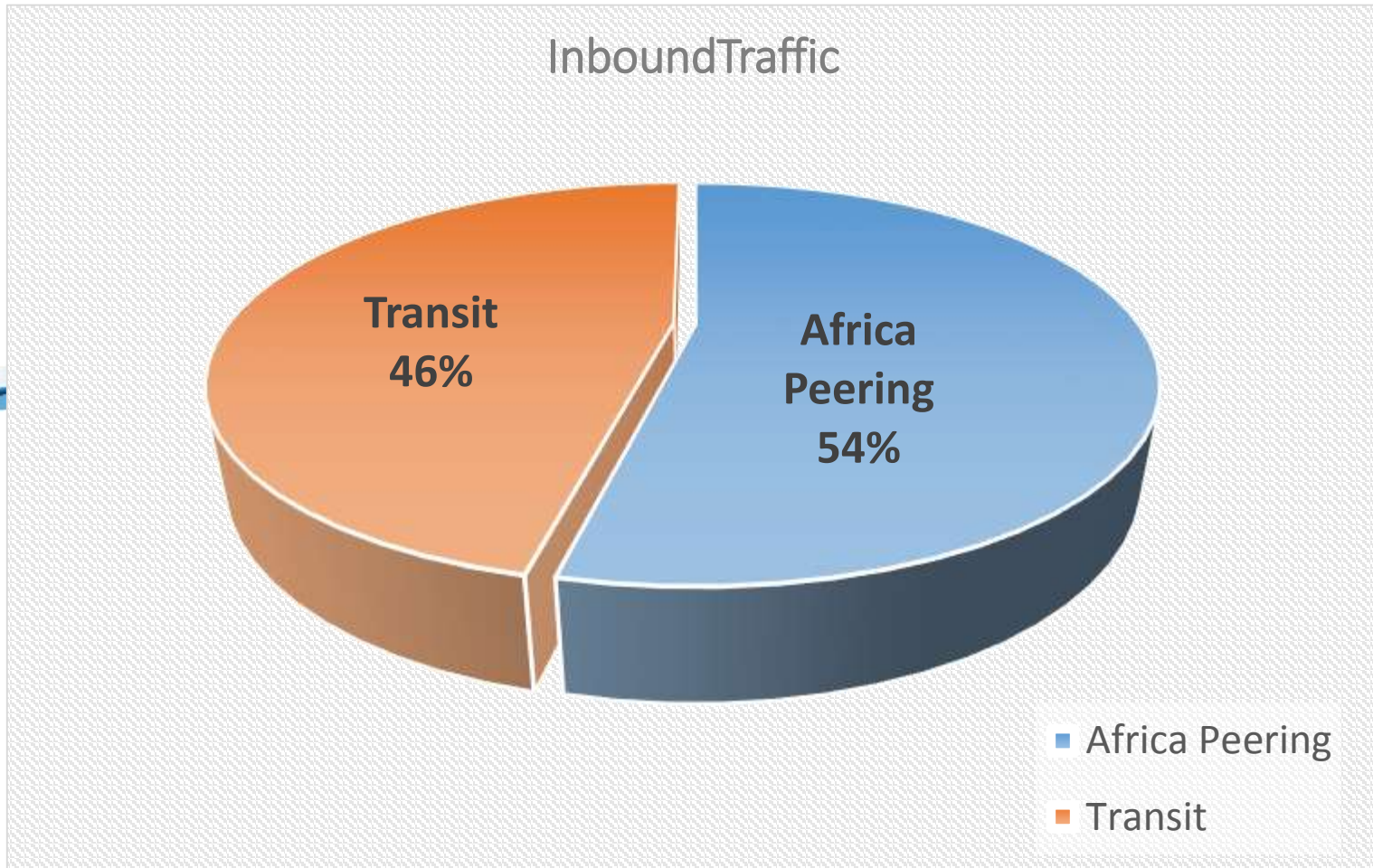
Peering Established

Inbound Traffic Sources

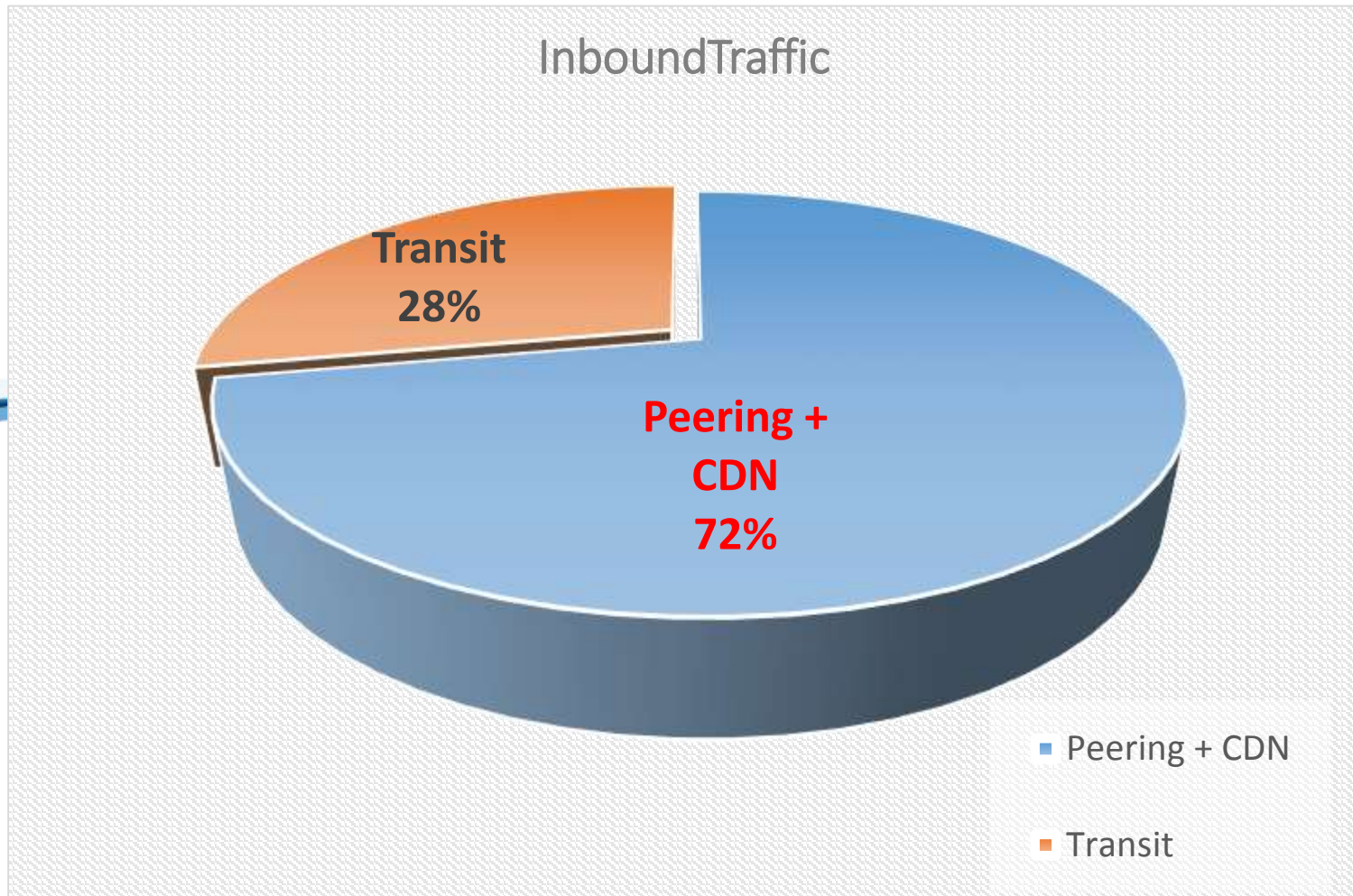
InboundTraffic



Peering Vs Transit



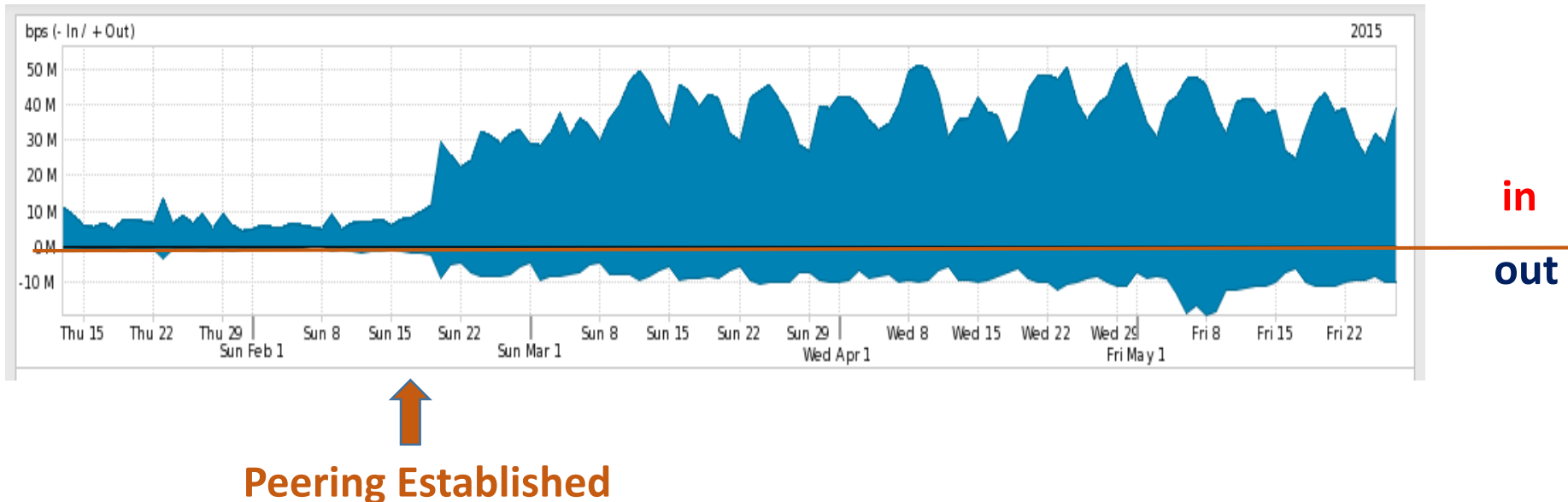
Peering+ CDN Vs Transit



Traffic Balance



- Traffic balancing surprises:
- Difficult Peers do not always have more traffic to offer!



Customers Bypass Peering



- Some customers are using VPN to access content they are restricted from – so bypassing peering
- Lack of enforcement on Intellectual Property Laws - hindrance to those interested in streaming business

Thank You,
Peer On ...

