



INEX Operations Update March 2017

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Internet Neutral Exchange Association
Company Limited by Guarantee



New Members / Connections

- AS13335 - Cloudflare (INEX LAN2)
- AS201607 - Celtic Broadband (WISP in Limerick / Kerry)
- AS20940 - Akamai (INEX Cork)
- AS12041 - Afiliis
- AS112 - AS112 service (INEX Cork)
- AS206663 - MTS Media (WISP in S/SE)
- AS206723 - Carnsore Broadband (WISP in WX)
- AS61186 - Zendesk [!RS]
- AS5400 - BT AS5400 [!RS]

100Gb - From the Last Ops Update:

INEX Operations Update

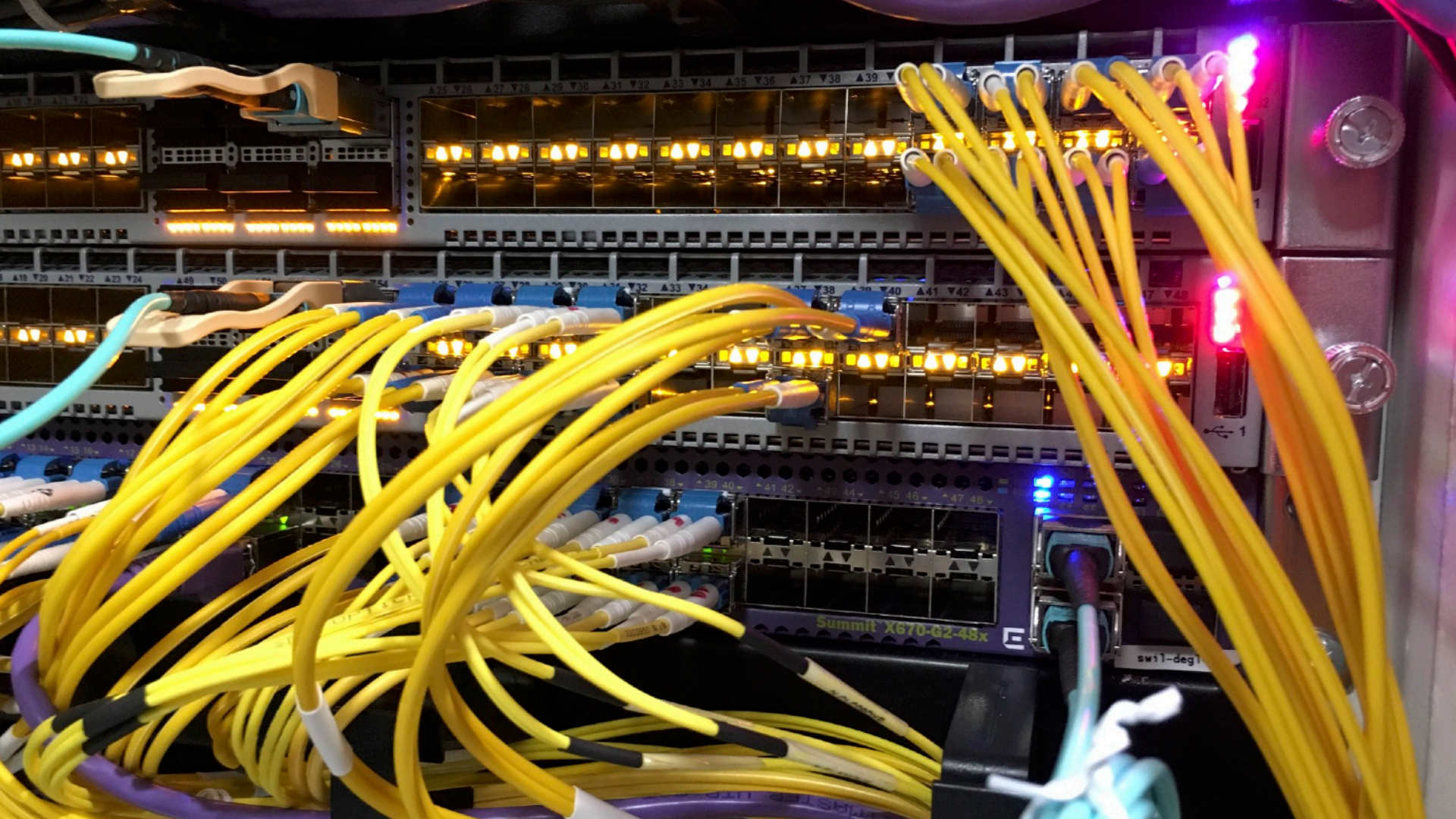
100G Evaluation

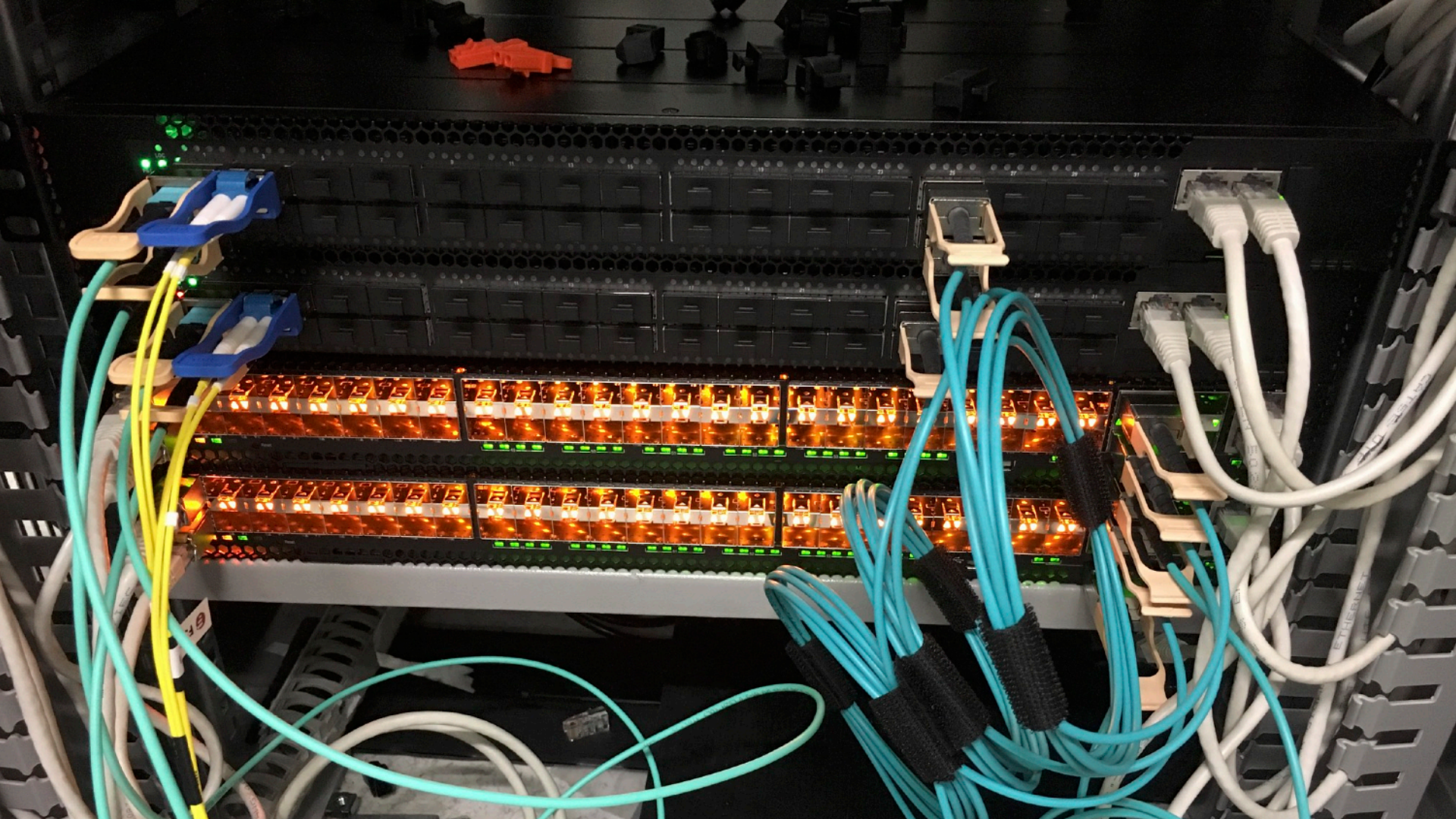
- Currently evaluating three different 100GE switching platforms
- Broadcom trident 2+ / tomahawk / jericho chipsets
- Decision next week
- VXLAN overlay network - fully routed, no LAG/ECMP hashing problems
- Metro 100G DWDM platform planned for late 2017Q1 / early 2017Q2

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100Gb - Arista DCS-7280SR (-48C6)





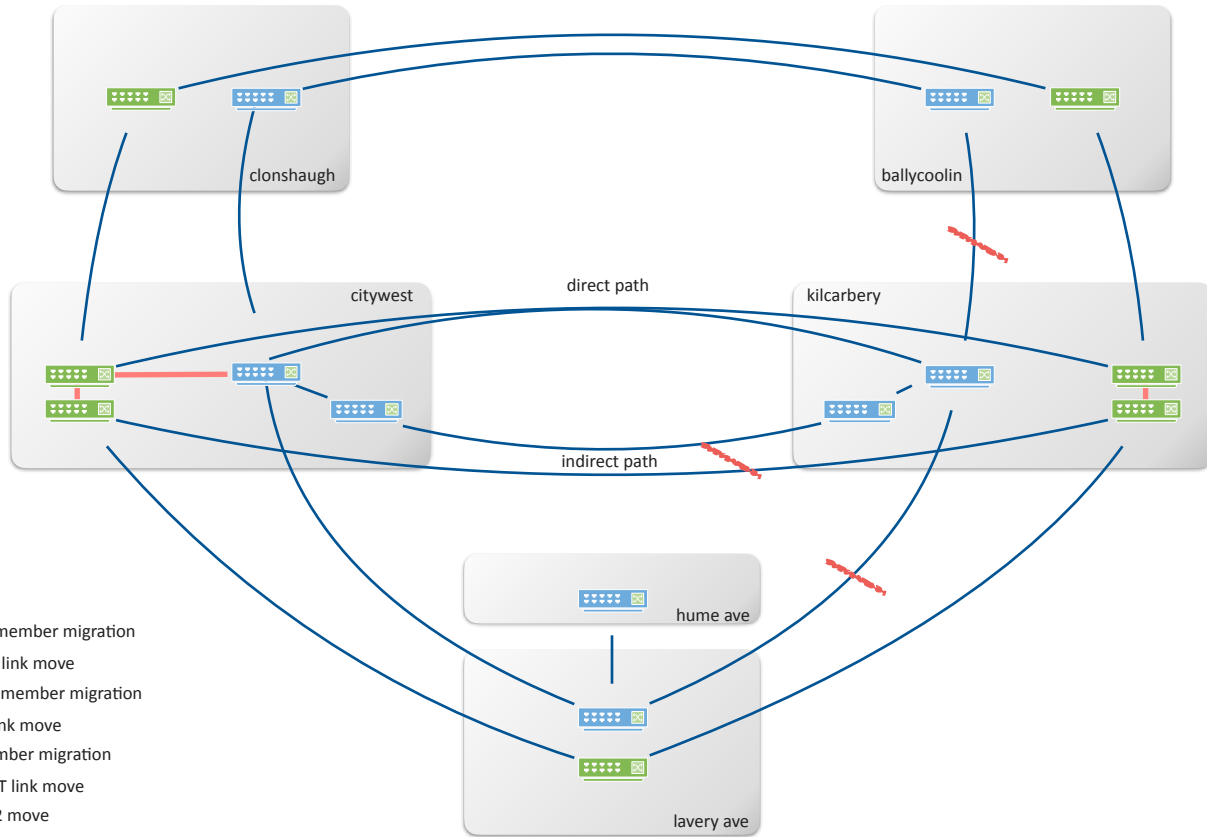


100Gb - INEX LAN1 Forklift Upgrade - Overview

- Five sites upgraded over two maintenance windows:
 - Drop LAN1 resilience - Feb 16th
 - NWB1 / CLS1 / PWT1 - March 2nd
 - CWT1 / KCP1 - March 9th
- This includes:
 - Complete LAN1 patch panel audit of customer x-connects
 - 7 x core / 10Gb edge switch upgrades
 - ~115 member port migrations
 - Zero member issues

100Gb - INEX LAN1 Forklift Upgrade - VXLAN

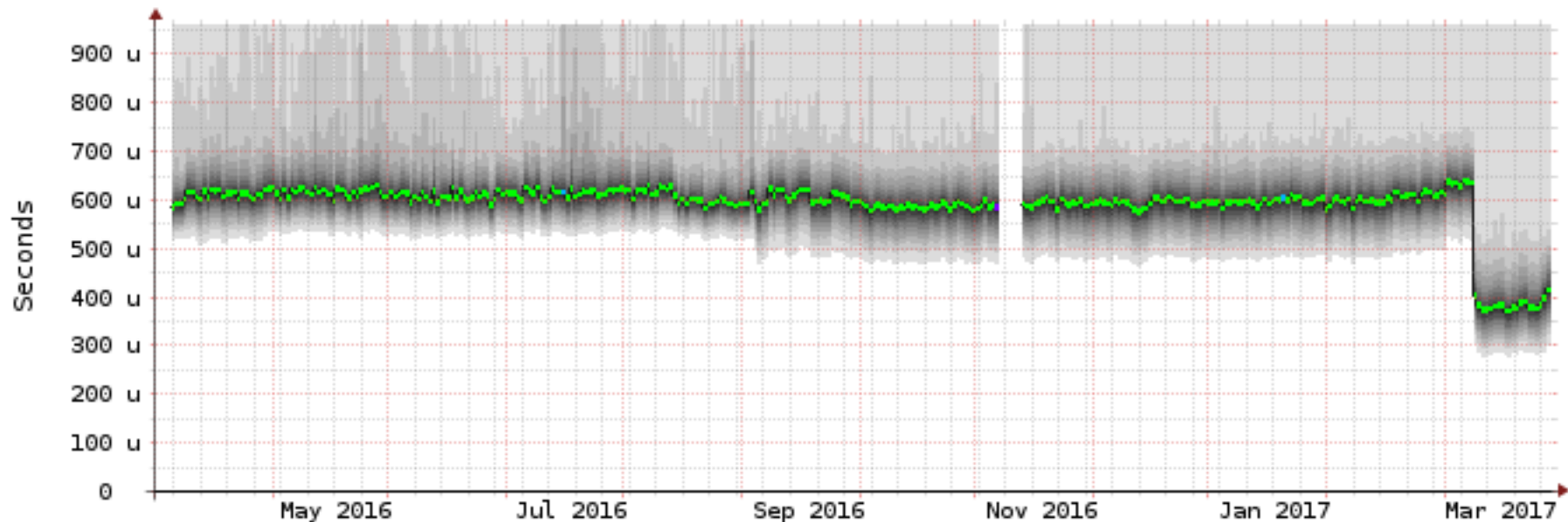
- INEX LAN1 is now VXLAN
 - No more spanning tree
 - BGP mesh (currently VTEPs - router loopbacks)
 - ECMP over core aggregate links (configured with bfd)
 - Load balancing achieved by setting the VXLAN packet source port to a hash of properties from the original packet
 - BUM traffic uses head end replication now
 - Plan to switch to EVPN once Arista EOS support is tested and stable



- Ballycoolin member migration
- NWBP-VFW link move
- Clonshaugh member migration
- VFW-CWT link move
- IXDUB1 member migration
- IXDUB1-CWT link move
- KCP switch 2 move
- KCP switch 1 move
- CWT-KCP link move
- CWT switch 2 move
- CWT switch 1 move

INEX OPERATIONS UPDATE

Navigator Graph



RRDTOOL / TOBI OETIKER

median rtt: 591.1 us avg 639.9 us max 370.5 us min 391.5 us now 0.1 ms sd 11.1 am/s

packet loss: 1.66 % avg 100.00 % max 0.00 % min 0.00 % now

loss color: ■ 0 ■ 1/20 ■ 2/20 ■ 3/20 ■ 4/20 ■ 10/20 ■ 19/20

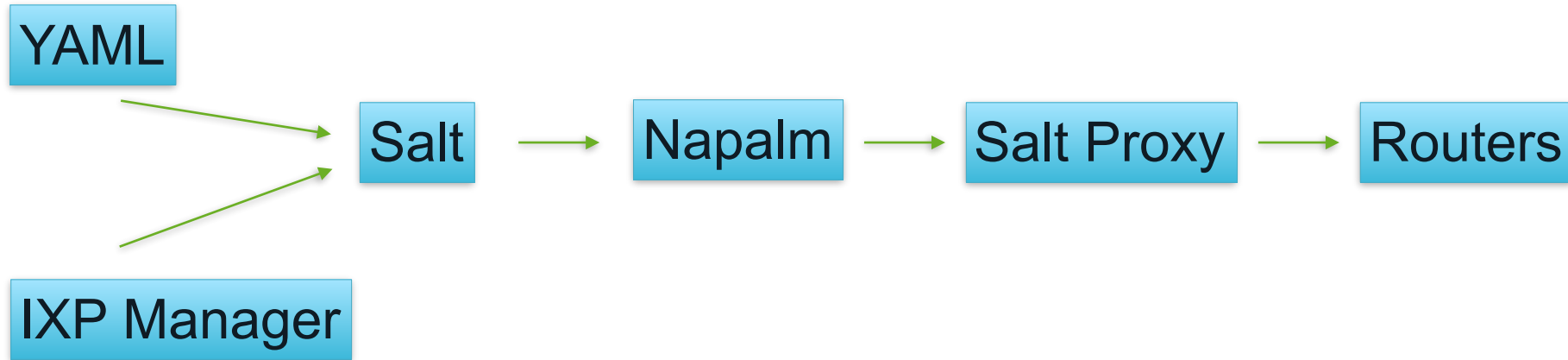
probe: 20 ICMP Echo Pings (56 Bytes) every 300s

end: Wed Mar 29 14:48:11 2017

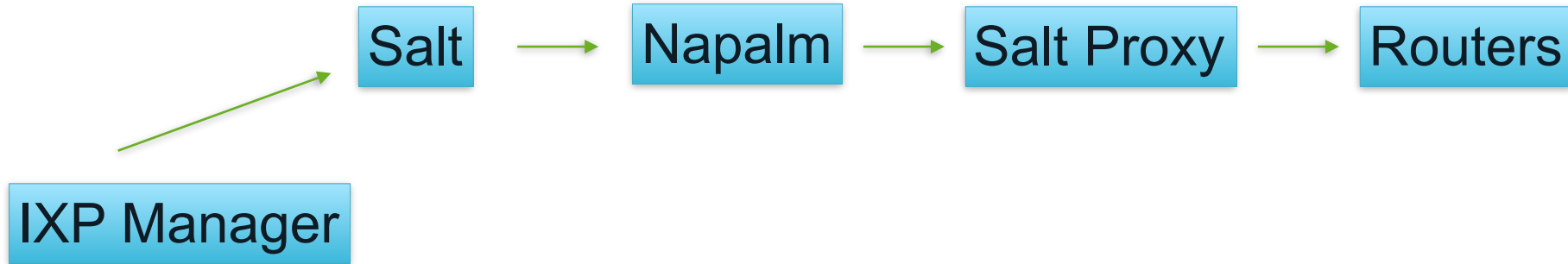
100Gb - INEX LAN1 Forklift Upgrade - Automation

- Inspiration:
 - *RIPE72: Network Automation with Salt and NAPALM*, CloudFlare (Mircea Ulinic)
- Ability to automate became one of our vendor evaluation criteria
- IXP Manager + Salt + Napalm

100Gb - INEX LAN1 Forklift Upgrade - Automation



100Gb - INEX LAN1 Forklift Upgrade - Automation



LAN2 Forklift Upgrade

- LAN2 is (mostly) Brocade TI24X
- LAN1 Extreme kit going to LAN2 sometime in 2017
 - KCP1 already upgraded
 - Extreme kit is X670-G2 (2015)

INEX Cork

- Akamai's node has helped push more content
- RIPE K root server is ready to be installed
- AS112 service brought live in Dec 2016
- Currently 2 x Brocade TI24X's
 - Will upgrade to 2 x Cumulus boxes during 2017

IXP Manager - From the Last Ops Update:

INEX Operations Update

ixpmanager.org

- Development now backed with 3Y commitment for funding, €60k/y
- Island Bridge Networks hiring a developer to start on Dec 12
- Normal break-in period expected before productivity
- Full development plan available on ixpmanager.org
- Euro-IX has agreed to review and perform due diligence

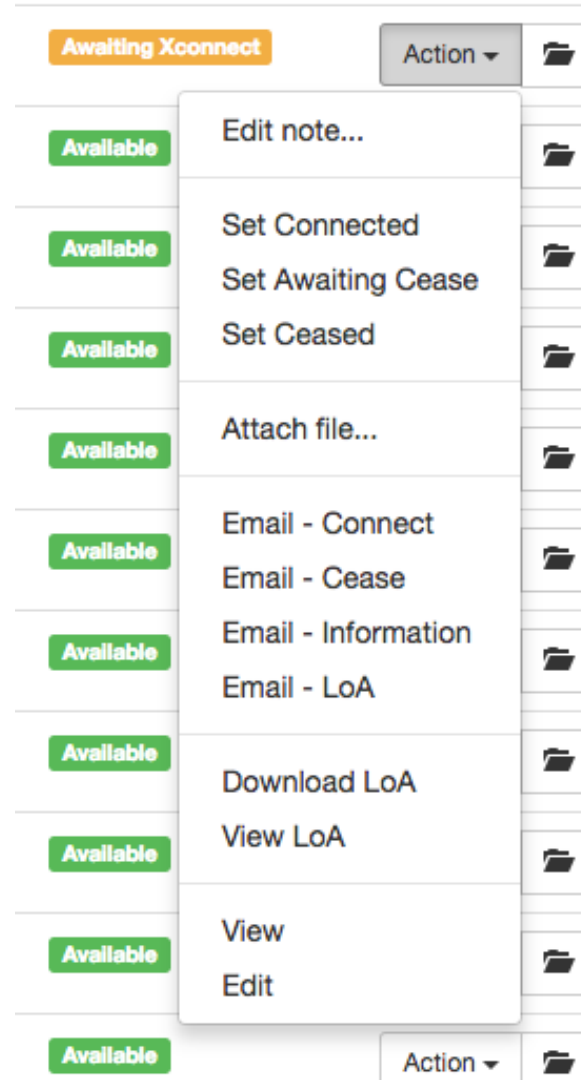
IXP Manager

- Welcome Yann Robin!
- First 'big' project complete: Patch Panel / Cross Connect Management
 - <https://ixp-manager.readthedocs.io/>

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IXP Manager

- Patch Panel Features:
 - Lifecycle events
 - History / archive
 - Email templates (Markdown)
 - LoA generation
 - Attach files
 - Public / private notes
 - Duplex ports as simplex



IETF Work

- RFC8092 - BGP Large Communities Attribute
- draft-ietf-grow-large-communities-usage-05
- draft-iops-grow-bgp-session-culling-01 - Mitigating Negative Impact of Maintenance through BGP Culling

THANK YOU

Any Questions?

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<https://www.inex.ie/support/>

