Network Operations Update

LINX 113

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Agenda

1 Network Availability

2 Operational Issues

3 Service Delivery Update

1

Network Availability

Network Availability

Network Availability across all Peering LANs is relatively high.

LAN	Feb 2021	March 2021	April 2021
LON1	99.9958%	99.9886%	99.9996%
LON2	99.9999%	99.9992%	99.9995%
LINXManchester	99.9999%	99.9999%	99.9999%
LINXScotland	100%	100%	100%
LINXWales	99.9998%	99.9999%	99.9999%
LINXNoVA	99.9999%	99.9949%	99.9999%
JEDIX	100%	100%	100%

2

Operational Issues

Operational Issues – NoVA

- 2 March 2021 – Brief outage at Digital Realty – ACC5
  - 2 – 3 minutes, affected 36 members
  - Hardware error after a configuration change
  - JTAC investigated and indicated it was due to the REs being rebooted separately
  - After adding/removing enhanced IP configuration, both REs must be rebooted together to avoid any unexpected behavior

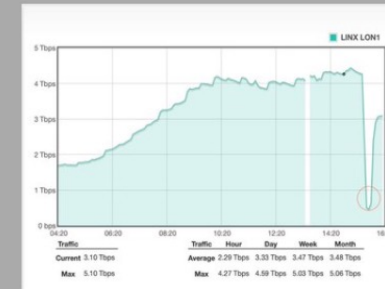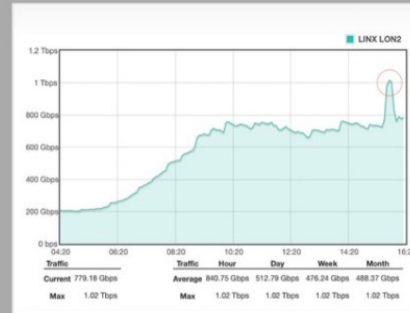# Operational Issues – LON1 VPLS to EVPN Migration

Dr. Peering
@DrPeering

I've got good news and I've got bad news from London and @LINX_Network today:

#LINX lon2 LAN peaked above 1Tbps
#LINX lon1 LAN peaked below 1Tbps

See portal.linx.net/stats/lans

#hugops #thesenumbersdontaddup #peering

Operational Issues – LON1 VPLS to EVPN Migration

- 9 March 2021 – Initial maintenance to remove all remaining VPLS configuration
  - After removing VPLS configuration from two routers, we experienced traffic loss between three routers.
  - After troubleshooting with Juniper, and restoring traffic, the changes to the remaining routers were postponed to a later day to allow further troubleshooting.

- 10 March 2021 – Short (10 minute) outage on LON1 caused by L2 learning process of Junos stalled on core3-thn during a routine configuration push deploy via NCA (automation)

Operational Issues – LON1 VPLS to EVPN Migration

> 23 March 2021 – VPLS configuration completely removed in early morning and maintenance appeared to be a success
>> Later in the morning, while troubleshooting a member issue, bouncing a port on edge2-thn caused a similar issue
>> While investigating with JTAC, our NOC pushed a NCA (automation) change on edge1-thw triggered another outage

Operational Issues – LON1 VPLS to EVPN Migration

> 23 March 2021 – continued
>> To assist JTAC with troubleshooting, L2 learning trace options were enabled on every device to allow greater debugging, which was deployed as a push though NCA (automation). Shortly after this happened traffic loss was seen across the entire network.

Operational Issues – LON1 VPLS to EVPN Migration

› Juniper recreated the issue in their lab and confirmed:-

  › After the VPLS configuration is removed, the router id is changed to 0 in the kernel, which triggers a loop condition when the l2ald process restarts.

  › A second restart of the l2ald process clears the state.

  › As the issue triggered on VPLS removal, so not expected to hit us again now that the network is completely migrated to EVPN.

Operational Issues – LON1 – Line Card

> 17 March 2021 – edge3-thn member facing line-card unresponsive
>> Affected 12 members for approximately 2 and half hours
>> Agent Smith MPC-3D-16XGE-SFPP card was replaced and service was restored

Operational Issues – LON1 – Power Outage

> 17 May 2021 – Power Outage - Loss of connection core3-tch
>> Affected 18 members for approximately 2 and half hours
>> Triggered by the failure of one of the core3-tch power supplies
>>> This tripped the main breaker and a complete loss in the A feed for that rack
>>> The shift of power to B feed caused the 16A breakers on that feed's PDU to fail causing a loss of power to core3-tch
>> Resolved when our Engineers replaced the faulty power supply and moved some equipment in the rack to the 2nd 16A breaker on each PDU to prevent overloading of the 16A breakers in case of increased power draw in failure scenarios

Operational Issues – LON1 – Power Outage Lessons

> Similar to a power outage we had last October at LD6

> After that outage we performed power audits at our sites to mitigate issues, but didn't execute as well as we should have

> In the rack with core3-tch, we missed the uneven distribution of DWDM equipment

> We are currently re-validating the data collected during our site audits, with furthermore details verification of expected power levels on each PDU/breaker during normal operation and fault scenarios (i.e. complete loss of a feed)

> We are also investigating our options to be able to further increase available power at specific racks.

Operational Issues – LINXManchester

- 19 May 2021 – Power Outage – Teledata (TDD)
  - We lost reachability to our equipment for about 6 minutes affecting 12 members
  - Teledata confirmed they had a power issue affected their datacentre
  - Supply didn't fail over to the generators as expected
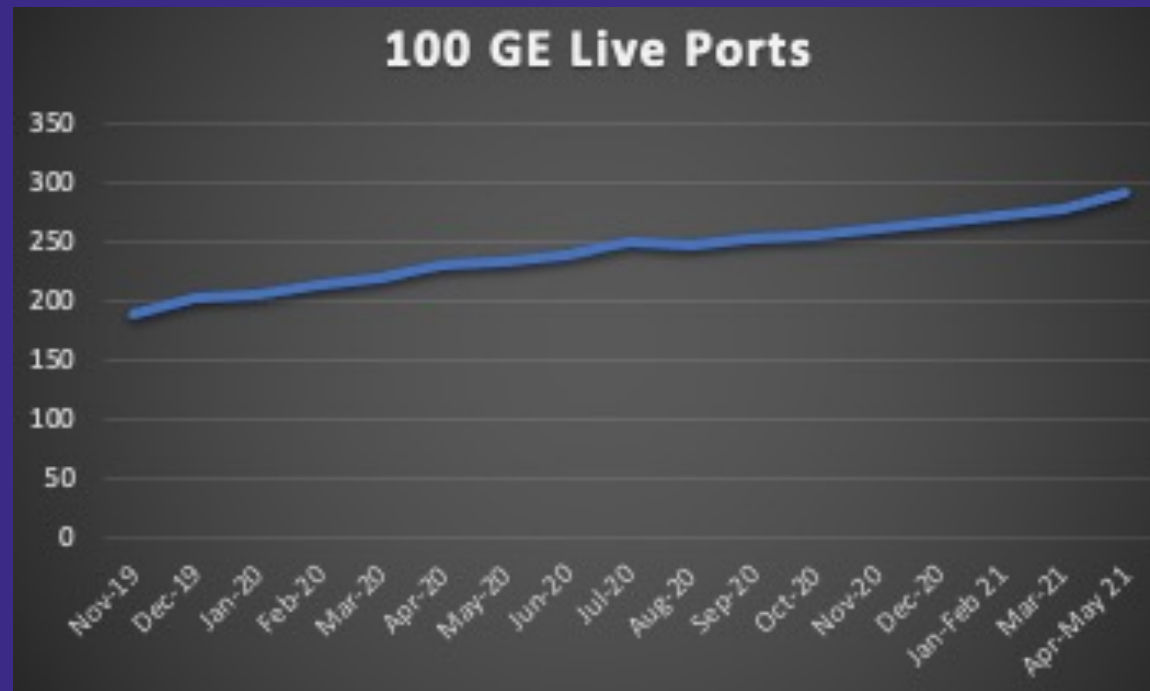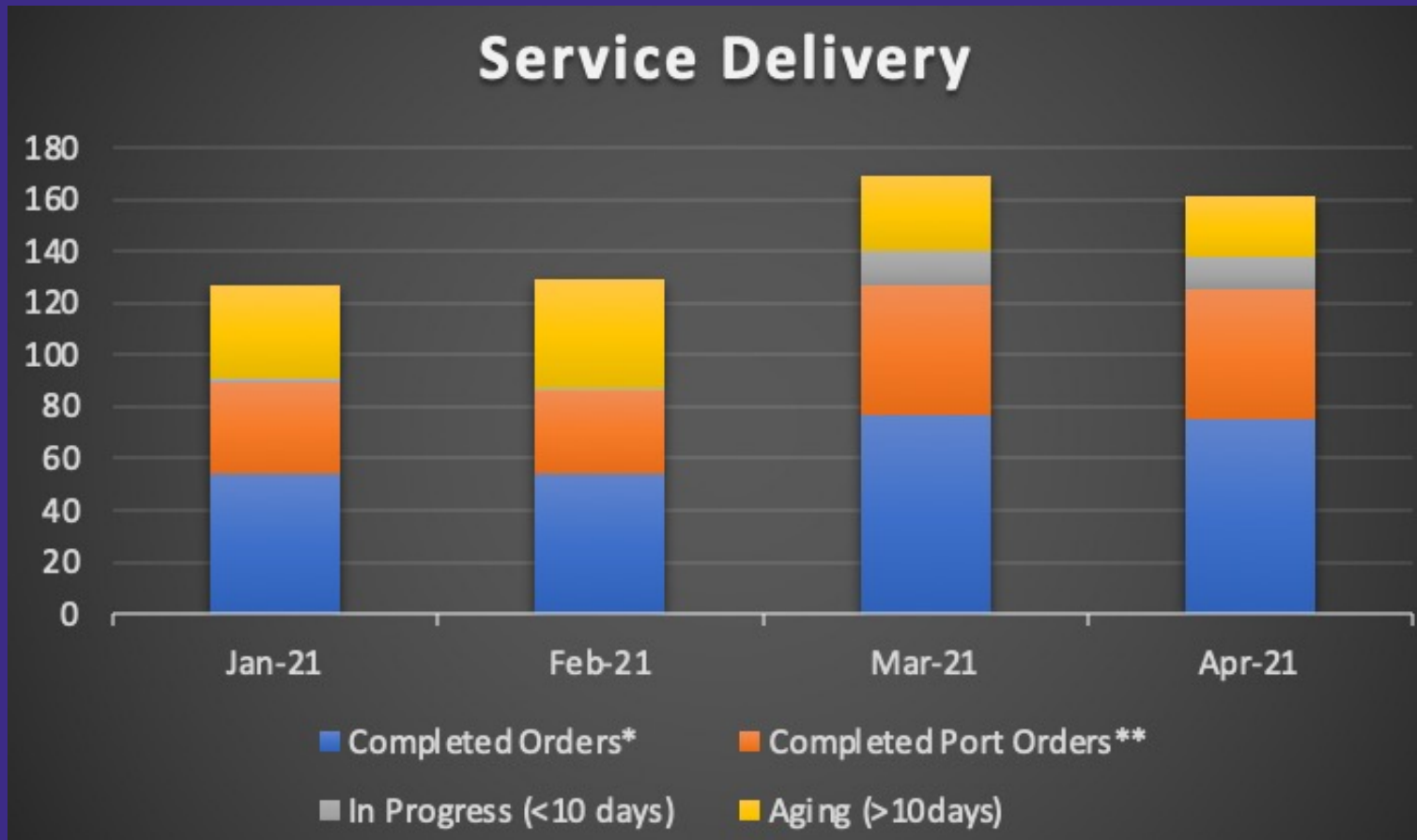 - We are awaiting their full RFO

3

Service Delivery Update

Service Delivery Update

> Continual growth of 100G orders
>> Currently 292 live 100G ports
>> LINX Manchester 18 100G live
>> NoVA 7 100G live

100 GE Live Ports

Service Delivery Update

Service Delivery

Service Delivery Update

> Colocation Services
>> Since beginning of the year, have worked with a member to provide
>>> Dedicated suites (Equinix Slough & Telehouse)
>>> Cabling needs under tight deadlines

Thank you

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