LINX127

Technology – Operations Update

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19th November 2026

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Operations Update

Manchester Refresh

Route Server Update

LAN Hygiene

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Operations Update

Incidents

LAN	Incidents
LON1	2
LON2	0
Manchester	0
Scotland	0
Wales	0
NoVA	0
Jeddah, Riyadh, Damman	0
Nairobi, Mombasa	5
Accra	0
Systems (including route-servers)	1

Portal: https:/portal.linx.net/maintenance-and outages

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Incidents & Problem Management

LON1

31 July 2026 - Line card edge2-eq4-slot 1 went down at 1432 BST and self-restored.

- edge2-eq4 had a linecard unexpectedly reboot. All 45 members connected to this card lost service for about 5 minutes.
- RFO: MDA reset due to an internal echip error (component inside the MDA itself). SROS prompted the card to reboot to recover from this error. No further errors seen post reboot.

30 October 2026 - Unexpected restart of member line card FPC4 on core4-tch

- 3-minute outage affecting all members connected to FPC4 on core4-tch, causing port flaps and loss of peering.
- JTAC confirmed that FPC4 hit a known issue. We have Junos upgrades planned for later in the month.

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Incidents & Problem Management

LON2 – Route Server

28 July 2026

Unscheduled restart of BGP routing daemon process on rs2-lon2

- Size of Impact: All peers with rs2-lon2 (AS8714, 195.66.237.230, 2001:7f8:4:1::220a:2) will have seen BGP to us go down
- The OpenBGPD restart was caused by unattended upgrades on ubuntu servers restarting the BGP routing daemon.

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Incidents & Problem Management

Nairobi – Dark Fibre Issues

09 JUL

ICN isolation

ICN–PAN failed while ICN–ADN was already down; both paths unavailable.

18 AUG

ADN isolation

ADN–ICN and ADN–IXN routes down; damaged manhole and suspected cable tampering by unknown persons.

06 SEP

ICN isolation

ICN–ADN/ICN–PAN fibre damage from cable theft and damage from a moving truck.

09 SEP

ICN isolation

Both fibre routes cut; cable theft and overhead cable pulled down by an overloaded truck.

15 OCT

PAN and ICN isolated from IXN and ADN

PAN/ICN separated from IXN/ADN; cable cutting by unknown persons.

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Upcoming Maintenances of Note

Upgrades of Junos planned both on LON1 and our internal and management networks.

- Internal and management in late November and early December.
  - Maintenance notifications being posted.
- LON1 upgraded by the end of the year.

Like everyone else we've been responding to recent vulnerabilities in various applications and devices with mitigations, patches and upgrades and we expect this trend to continue.

Some vulnerabilities may require a rapid response and notifications periods for any service interruptions may be shorter than usual.

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Change Freeze



NoVA Thanksgiving Change Freeze

From 17:00 EST on Wednesday, 25 November to 09:00 EST on Monday, 30 November 2026



Holiday Season Change Freeze

From 17:30 UTC on Friday, 18 December through to 09:00 UTC Monday, 4 January 2027

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Manchester Refresh

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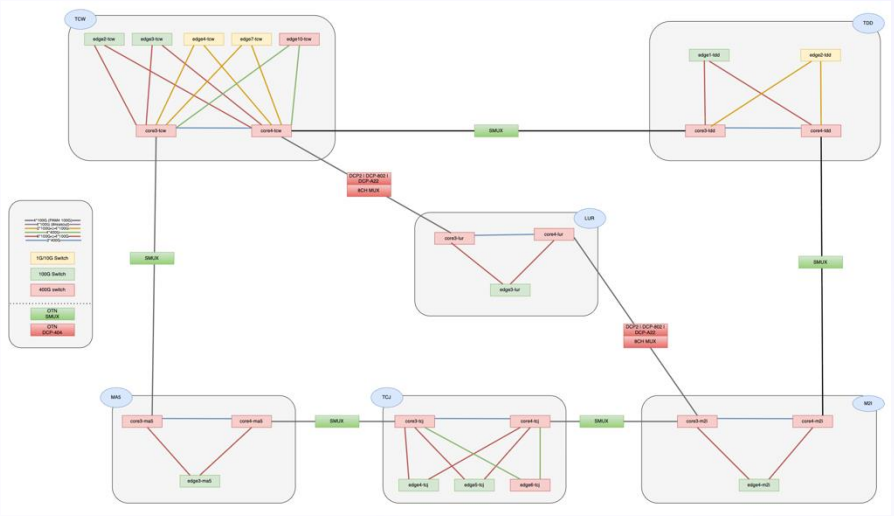
Manchester Hardware Refresh

- Vendor selected for refresh - Nokia IXR platform running SR Linux
- Equipment order placed
- Parallel build of new network Q1-2027

Migrations expected to follow similar plan to recent LON2 refresh

- NNI built between existing and new network
- Members migrated on a per site basis
- Migrations planned for Q2-2027



Route Server Update

Route Server Update

- Member IPv6 prefix limit recommendation with route-servers
  - Incident in early November many members tripped their own max-prefix-limit.
  - Due to ~30,000 prefixes becoming valid from AS6939.
    - LON1, Manchester, Scotland.
  - New recommendation is to set to ~90,000 < 100,000.

- Completing BIRD software upgrades on all RS1 route-servers.
  - Upgrade to version 2.17.2
  - Should be completed just after LINX127



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Route Server Update - ASPA

Adding ASPA to compliment validation on RPKI ROA's on all LINX route-servers

- Initial deployment of ASPA will be non-action
  - Check for any anomalies from member announcements as not to affect traffic
  - New ASPA validation communities will be added
- ASPA objects will be dynamic on all RS1's (BIRD)
- ASPA objects will be static on all RS2's (OpenBGPd)
  - OpenBGPd does not support delivery of ASPA objects via RTR yet



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LAN Hygiene

What is LAN Hygiene?

Making sure that the LAN traffic is healthy by ensuring:

- Single MAC address per port.
  - Loop prevention.
- Correct ARP & ND for the assigned IP addresses.
- LINX router resource protection.
  - Preventing mac-ip table exhaustion.
- No unwanted protocols.
  - LLDP, etc.
- Minimal flooded traffic.
  - Unicast flooding disabled

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What We've Done

Cleaned up incorrect member IPv6 Link Local Addresses.

- 19 Issues raised proactively by LINX
- 9 Issues raised by members.

We have worked with members with specific IPv6 reachability issues.

- LINX software upgrades in August resolved some reported issues on LINX NoVA.
- Member router software issues (incorrect LAG programming).
- Member router control-plane ICMP rate limiting.
- Member neighbor cache size issues.

Still working with a few members where NS is correctly sent but they do not respond.

Weekly update on progress around these issues being sent to ops@lists.linx.net.

What We've Done

Quarantine testing has been extended and improved.

- Aligned portal self-service changes and 'manual' assisted by the NOC.
  - Members have visibility of NOC assisted quarantine testing through portal.linx.net.
- Added extra checks for IPv6 Link Local Addresses.

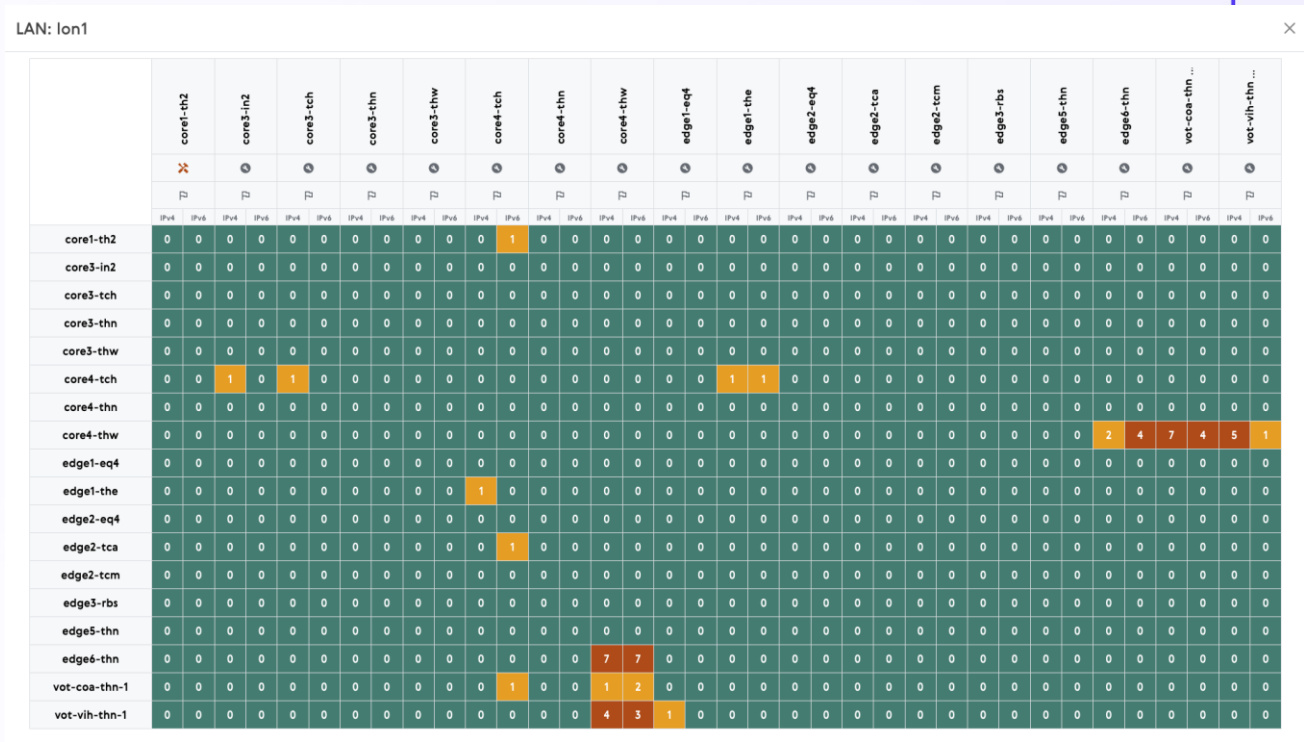
IXP-Watch modified.

- Issues used to be picked up from email reports containing multiple issues.
- Now opens a Jira ticket for every member issue.

Availability Metric Improvements

Enabled IPv6 flowmon for LAN reachability testing.

- Flowmon tool has had IPv6 capability for some time.
- Back-end additions were needed to support the additional IPv6 reachability checks.
  - Still some lose ends to finish up.
- Published LAN availability metrics currently IPv4 only.
  - Potentially change this to include IPv6 in the future.



What We're Doing Now

Evaluating LAN filtering improvements.

- Working in the lab to confirm the capabilities and refine potential filters.

Potential improvements to internal tools.

- IXPect as a potential IXP-Watch replacement.
  - Still early in development.
  - https://ixpect.net
- ixp-xping as a potential to replace flowmon.
  - Great tool; challenge is integration with our current back-end.
  - https://github.com/lonap/ixp-xping

Adding and improving other internal reachability tools.

IXP Industry Perspective

Peering LAN Security workshop at Euro-IX 45 in October.

- Consensus that member expectations have changed over the years. From expecting IXPs to be completely transparent to expecting a peering LAN to be 'clean'.
- Every IXP is currently approaching Peering LAN Security individually.
- Euro-IX will establish a Peering LAN Security Working Group.
- Improve collaboration and produce best practice guidelines.
- If you notice issues at ***any*** IXP please let them know.



@lists.linx.net Mailing lists

We now actively pause members that are bouncing our mailing lists and notify them.

- If you receive a notification please fix any issues and contact support to be unpaused.

ops@lists.linx.net gets emails for member port cancellations.

- On large LANs this can be noisy.
- May be more useful to summarise member changes?
  - Could also include new members?
  - Weekly? Monthly?
  - Add a machine-readable version (JSON)?

We would welcome feedback on this.

Thank you!

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