400GE Readiness for Members

LINX's Path to 400GE

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Evaluation of the 400GE landscape

In March 2020 we started looking at our incumbents and other possible vendors

Key objectives:

- Long-term high-density 400GE solution

- Capable of integrating with our (then) VPLS network and future EVPN plans

- Capable of integrating with our automation and management tools

Wider landscape

The general situation was uncertain due to the pandemic.

> Lockdown
> Travel restrictions

We already had to postpone plans to verify a hitless-migration to EVPN on the Juniper estate

Juniper

At the time did not offer high-density 400GE on the MX960 platform

We could have re-introduced the PTX but LINX was in the process removing them

Introduce the QFX but this was not a long-term strategic option

Wait 24 months for the high-density card on the MX10k platform

Edgecore / IP Infusion

Edgecore did not offer a high-density 400GE platform and native MPLS support at the same time.

IP Infusion's OcNOS was not ported to any of the platforms.

  integration cycles take at least 6 months for supported platforms

  12-18 months for newer ones.

Arista

Offered the highest port density

Offered the best automation and telemetry capabilities

Did not support VPLS or Ethernet OAM and both were required for LON1
(the migration to EVPN was not a certainty back then)

Nokia

Supported all the required features at the outset

Good port density and most competitive

In use at other IXPs

FranceIX (VPLS environment with Juniper EX)

DE-CIX

Timeline

In the summer of 2020, we decided to put 400GE general deployment plans on hold until the start of 2021.

But to go ahead and test the Nokia 7750 SR-2s during the autumn, and as a cross-connect solution in anticipation of any 400GE orders

Timeline

Carried out a test of the Nokia 7750 SR-2s in October-November 2020

Migrated LON1 from VPLS to EVPN during Q1-2021

Re-evaluated our 400GE options in April 2021
> There were some challenges around supply chain

> Decided to test the Juniper MPC-10 cards for the MX960

> Decided to test the Nokia SR-7s platform as it provided better long-term scalability than the SR-2s

Outcomes

Completed the PoC to certify the Nokia SR-7s as a foreign PE in LON1 (Sept 2021)

Completed the PoC to certify Juniper's MPC-10 cards. (Oct 2021)

400GE deployment plans (LON1)

400GE is available to order today:

> At any of the Telehouse locations (served from THN)
> At Harbour Exchange (Equinix LD8)

Future deployments based on member demand

Supported Optical interfaces

Interface	Reach	Protocol	Modulation
400G-LR8	10km	IEEE 802.3bs	8 x 50G PAM4
400G-FR4	2km	100G lambda MSA	4 x 100G PAM4

LINX will add other interfaces as vendor support increases and new 400GE kit is deployed.

Future plans (LON1)

400GE in the core and the edge

- LON1
    - 400GE on Juniper MX10k
    - 400G transport with Ciena and Smartoptics

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Future plans (other LANs)

- LON2/MAN/JED-IX
  - 400GE Edgecore
  - 400GE IP Infusion
  - 400G transport with Ciena and Smartoptics

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Thank you

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