



Network Operations and Engineering Update

LINX 112

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LINX 112



Agenda

- 1 Network Availability
- 2 Operational Issues
- 3 Service Delivery Update
- 4 Engineering Projects

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Network Availability

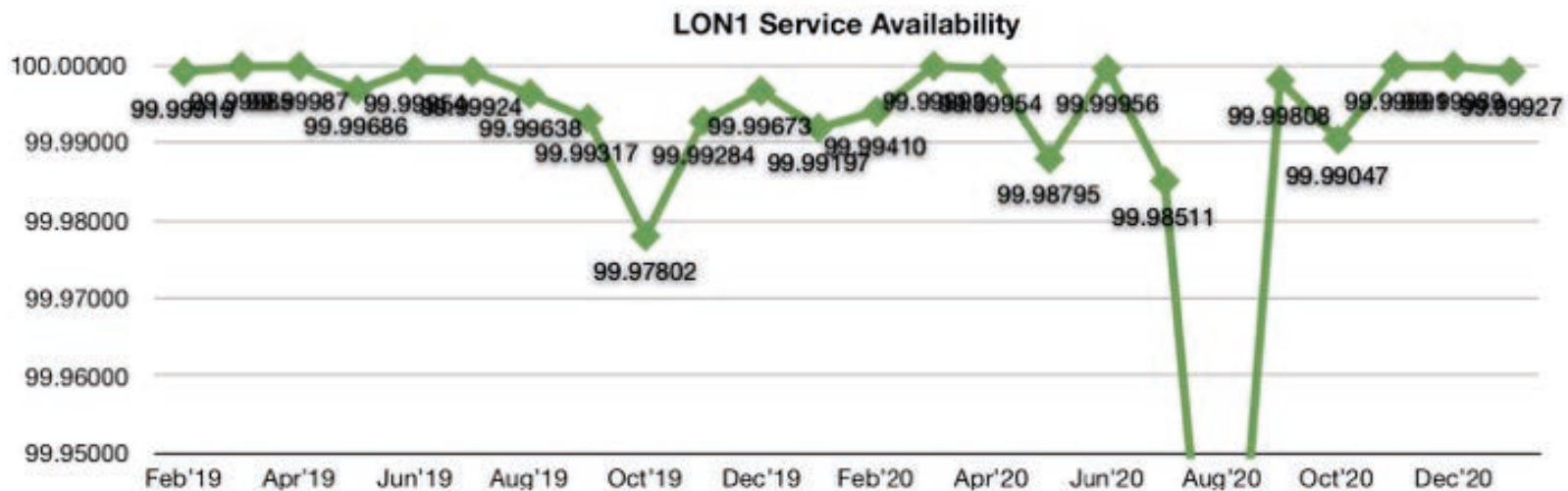
Network Availability

Network Availability across all Peering LANs remains high.

Consistently maintained maintain five nines and above across all LANs on a monthly basis

LAN	Nov 2020	Dec 2020	Jan 2021
LON1	99.99999%	99.99999%	99.99992%
LON2	99.99999%	99.99999%	99.99999%
LINXManchester	100%	99.99999%	100%
LINXScotland	100%	100%	100%
LINXWales	99.99998%	99.99999%	100%
LINXNoVA	100%	100%	99.99997%
JEDIX	100%	99.99999%	99.99999%

Network Availability



2

Operational Issues

Operational Issues – Route Servers

- 4/December/2020 – BGP sessions dropped rs3.LON1, rs4.LON2, rs2.MAN1
 - During an unsuccessful collector and route server maintenance (of IX-API compatibility patches and other improvements) three secondary route servers were accidentally updated to an incorrect configuration
 - Fixed with restoration of the automated route server configuration deploys
- 10/January/2021 - LON2 rs4.linx.net (LON2) Down
 - Issue observed on NIC card by IS and it was rebooted
 - It didn't come back up and they had to take the route-server down when the NIC card was replaced by our vendor
 - Affected members connected to rs4's BGP sessions

Operational Issues – Route-Servers

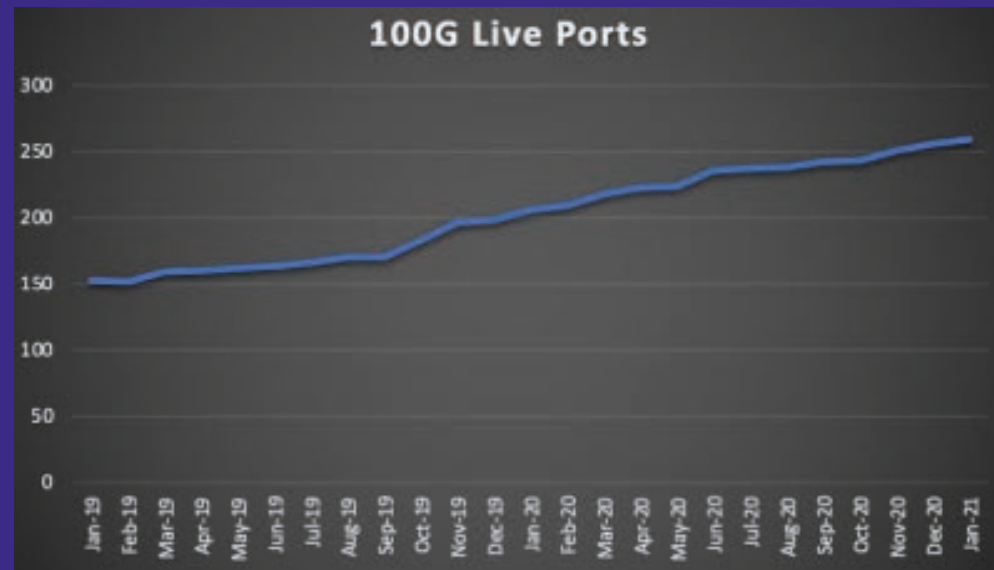
- 18/January/2021 – NoVA rs1.nva1.linx.net Brief Outage
 - Members connected to rs1.nva1 (206.55.196.230 / 2001:504:31::220a:1) shall have seen a brief outage.
 - This was caused by a CB on the MX960 going offline, which subsequently triggered the FPC rebooting during a routine PEM replacement

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Service Delivery Update

Service Delivery Update

- Continual growth of 100G orders
 - Currently 270 live 100G ports
 - LINX Manchester 17 100G live with at least 2 in provisioning



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Engineering Projects



Engineering Projects

- > LINX Manchester
- > LINX LON1 EVPN Migration
- > LINX NoVA
 - > Iron Mountain
 - > QTS
- > Route-Server Communities

LINX Manchester

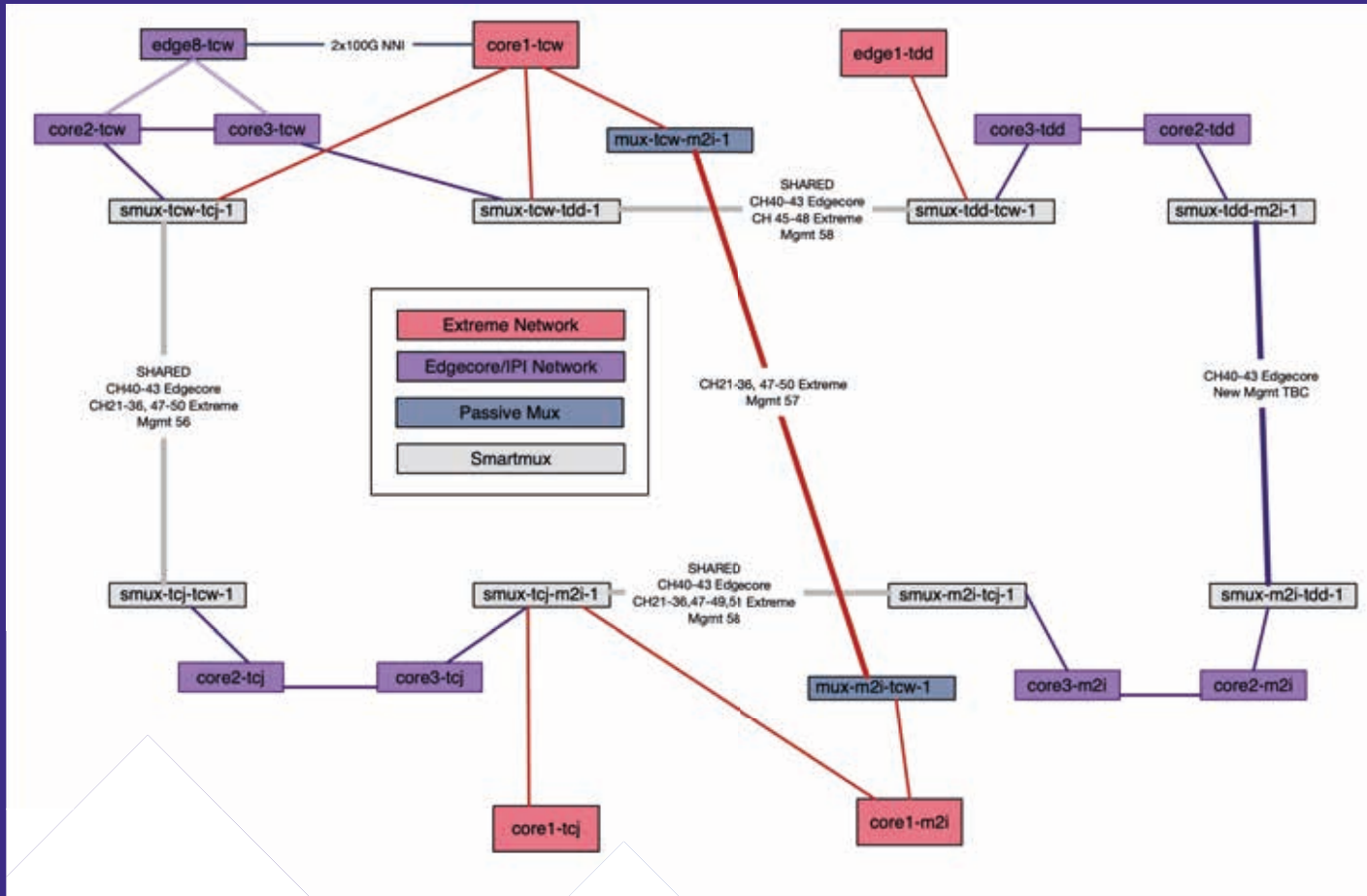
- Extreme network is being migrated to Edgecore/IP Infusion.
- As per LON2, will move away from simple L2 EAPs set up and will now be running EVPN with VXLAN.
- Brings the benefit of reduction in flooding through proxy arp/nd and significantly reduces the risk of loops on the network.
- DWDM core will run at 4x100G utilising Smartoptics Smartmux solution.
- NCA will be enabled for LINX Manchester on migration.

LINX Manchester

- Teledata (TDD) site will become a full site and 100G capable as a result of the migration.
- Install of Edgecore switches and new DWDM transport complete.
- Existing Extreme core has been migrated to the Smartmux's to allow for a parallel build of the new network.
- NNI between the 2 networks in Equinix Williams House will be made live this week, 100G switch will go live at Teledata.
- Remaining sites to be migrated shortly afterwards.

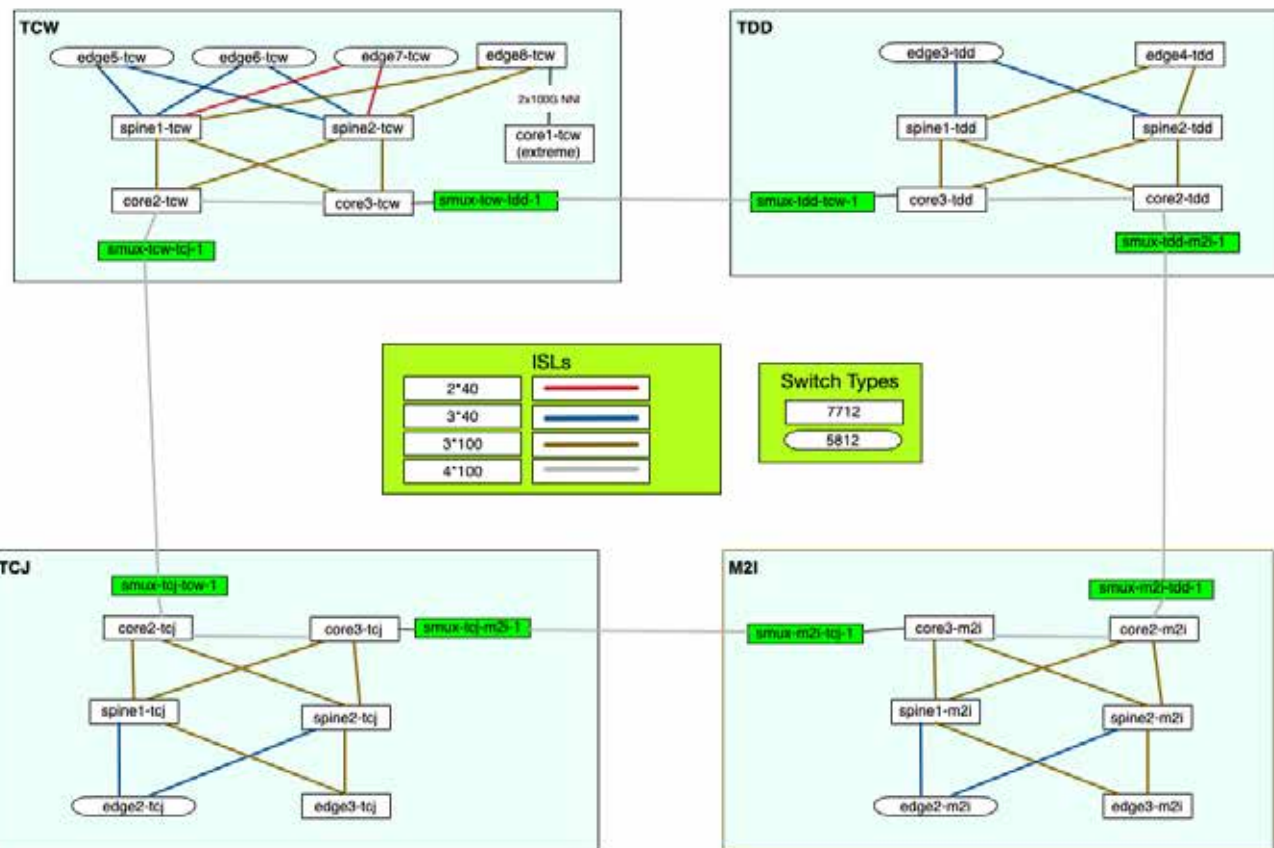
LINX Manchester

NNI/Parallel Build



LINX Manchester

New Topology



LON1 EVPN Migration

- EVPN PoC completed successfully in late October 2020 with bugs identified in previous PoCs resolved.
- Junos upgrades to 18.4R2-S6 (needed for EVPN) completed and EVPN rollout now underway with first 2 nodes (edge1-tca and edge4-eq4) upgraded last week.
- Devices are upgraded to a “Super PE” state.
- EVPN is enabled, but VPLS config remains, enabling devices to talk EVPN to migrated nodes, but still communicate VPLS with non migrated devices. Allows network to be migrated in a phased rollout rather than a “big bang”.

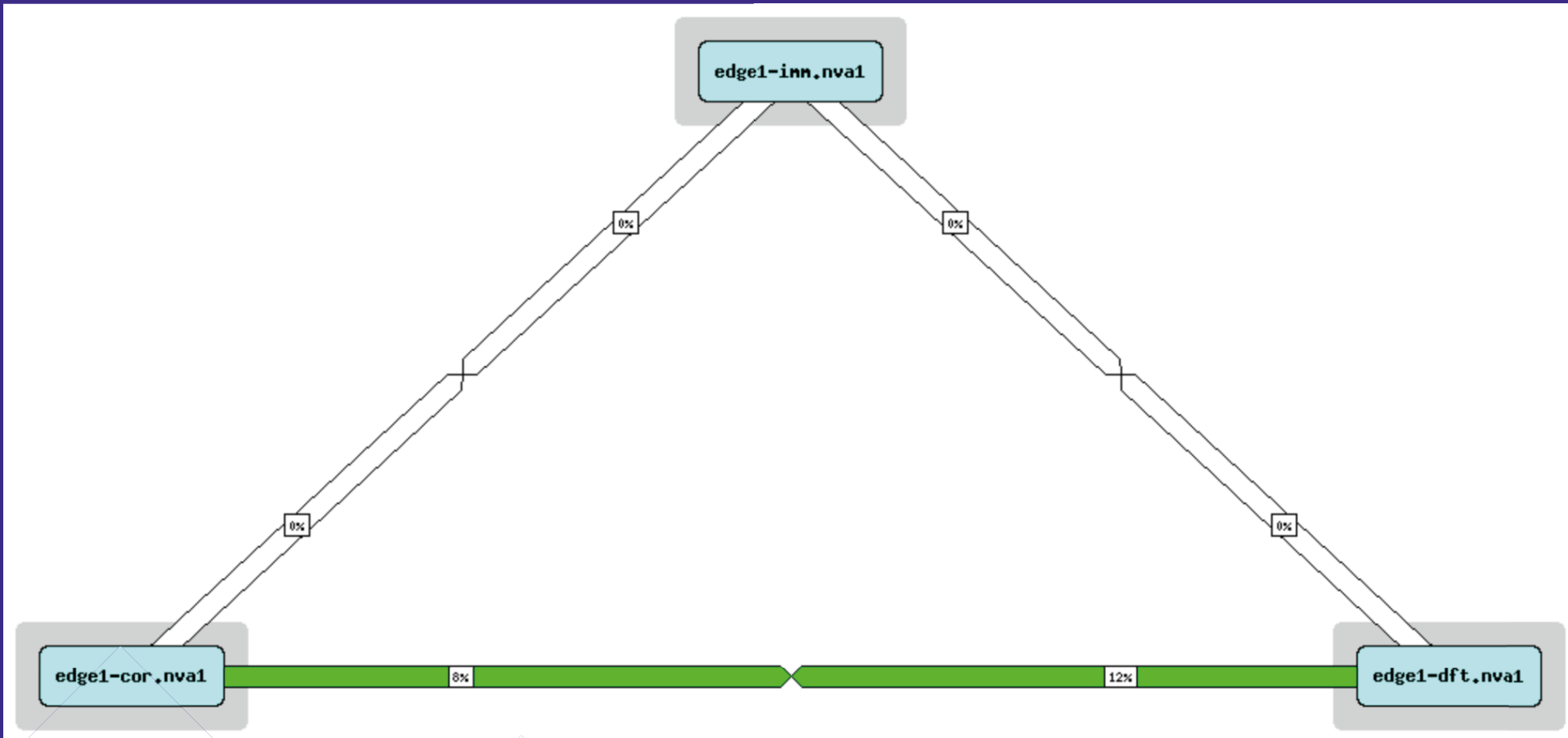
LON1 EVPN Migration

- All PE devices will be migrated during February/March.
- Once all devices are migrated, a clean up maintenance will be performed removing all no longer needed VPLS configs.
- Proxy Arp/ND enabled by default, so as with LON2/LINX Manchester will result in reduction of flooded traffic on exchange.

LINX NoVA – Iron Mountain

- New NoVA site at Iron Mountain, Manassas (VA-1)
- This replaces the EvoSwitch, Manassas location that has now been vacated.
- New devices deployed in Iron Mountain making migration easier.
- Site is now live, and members migrated to new site.
- 16x10G ISLs run between all 3 sites in ring.

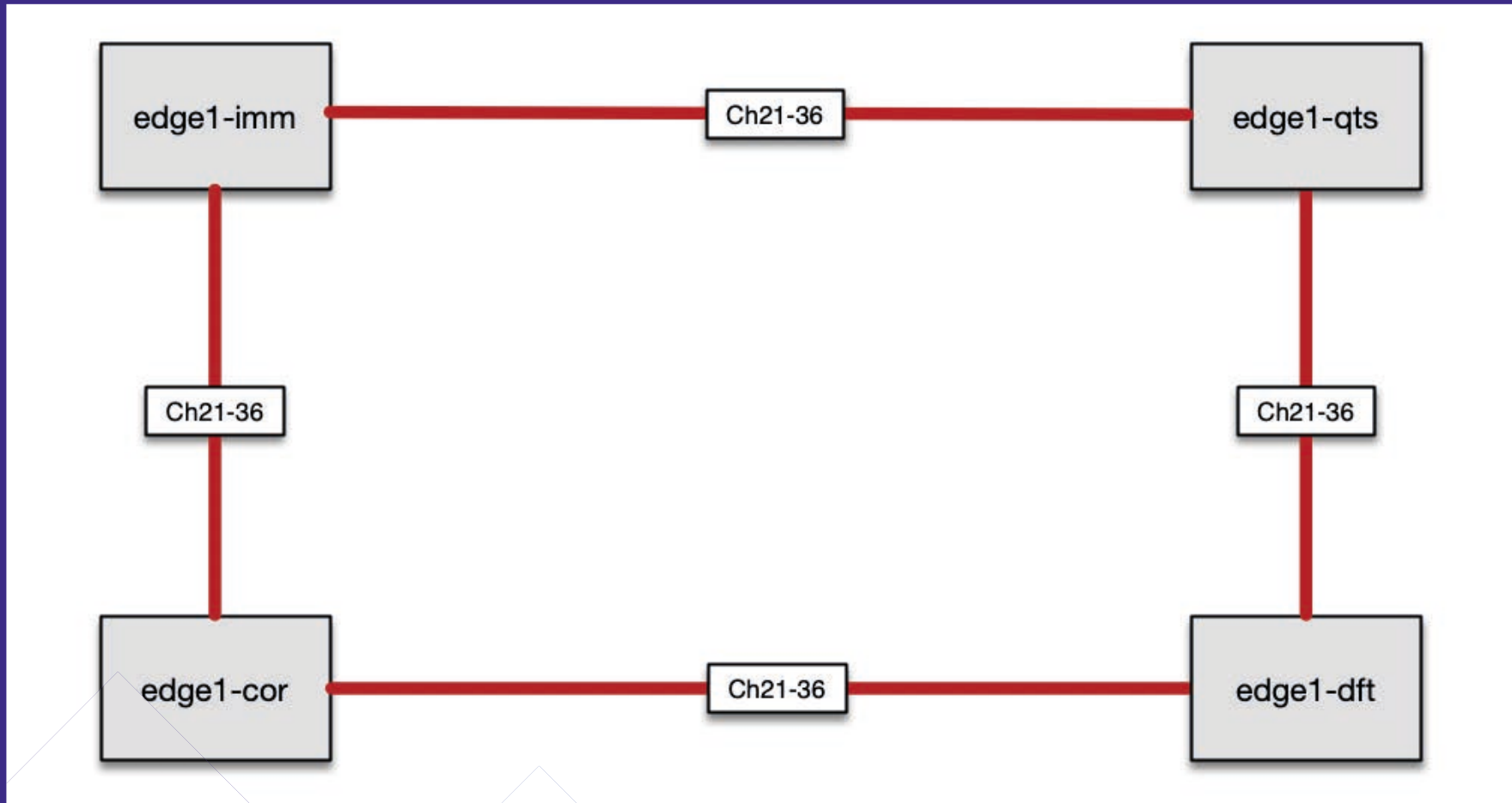
LINX NoVA – Iron Mountain



LINX NoVA - QTS

- Work ongoing on a 4th NoVA site at QTS Ashburn-Moran (IAD2)
- Work expected to be completed, and site go live in Q1.
- Kit migrated from EvoSwitch.
- Site will be inserted into existing ring between Iron Mountain and Digital Realty, Ashburn.

LINX NoVA - QTS



LINX NoVA – Software upgrades and NCA

- NoVA currently runs on Juniper MX960s with RE-2000 Routing Engines.
- Both RE's and current software are becoming end of support.
- RE's will be replaced with RE-1800's and SW upgraded to 18.2R3.
- Iron Mountain & QTS Sites upgraded prior to going live.
- All NoVA devices now under NCA, enabling all provisioning work, mac changes, and network topology changes to be performed through automation platform.

Route-Servers

- All LINX Route-Servers now support Large Communities
 - Members can now use Large Communities for policy control
 - Standard and Extended communities still supported
 - Further information on <https://portal.linx.net/tech-info-help/route-servers>



Thank you

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