



INEX Operations Update December 2018

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Internet Neutral Exchange Association
Company Limited by Guarantee



INEX Operations Update

2018 Projects

DONE * DWDM transmission network (and resiliency)

DONE 100G core build and automation on LAN2

DONE Edge access rebuild on LAN2

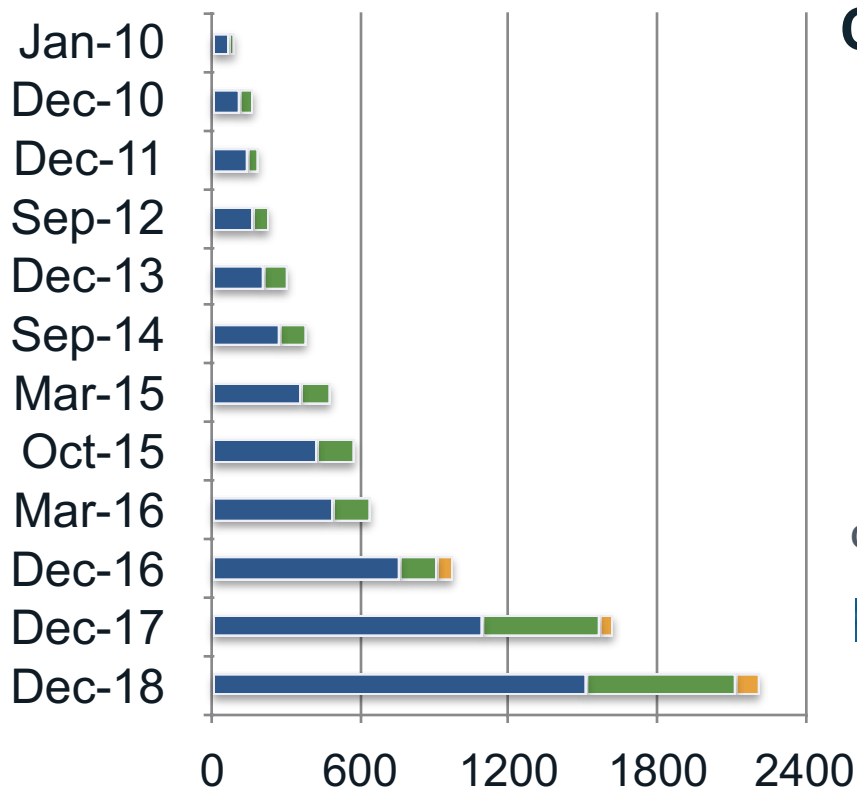
DONE 100G augmentation on INEX LAN1

DONE Retirement of 1G access switches on LAN1

DEFERRED Rebuild of INEX Cork

DEFERRED Tackling Kilcarbery PoP

DONE New PoP in BT Citywest *** NEW**



Connected Edge Capacity (Gb)

Chart Descriptions

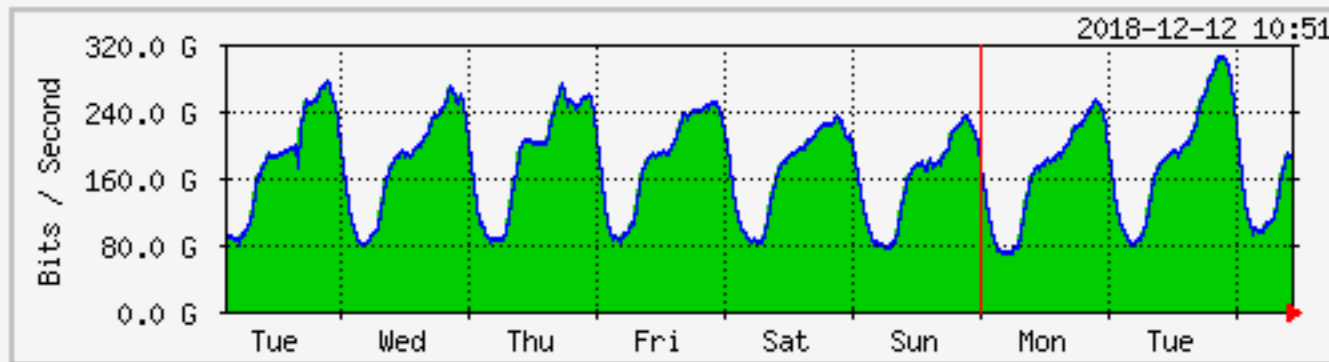
INEX LAN1

INEX LAN2

INEX Cork

Obligatory “Up and to the Right” Graph

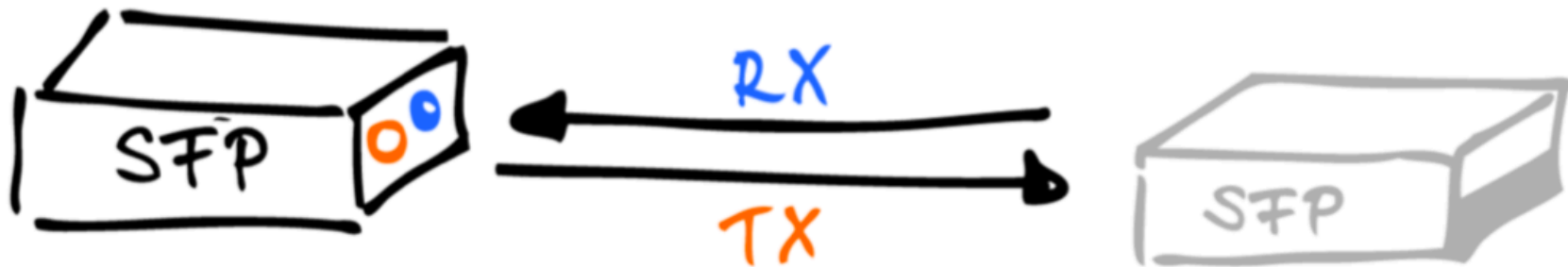
Week Graph



	Max	Average	Current
In	309.526 Gbits	172.840 Gbits	192.738 Gbits
Out	309.656 Gbits	172.888 Gbits	192.672 Gbits

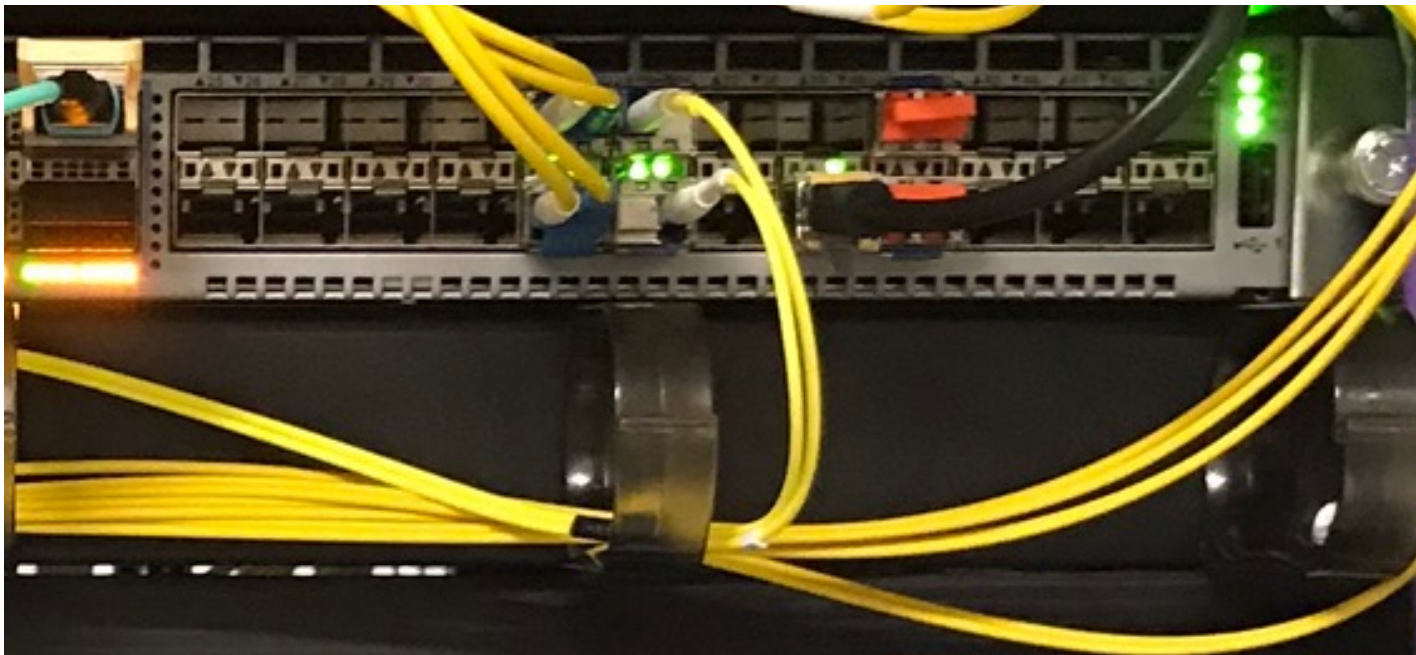
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INEX BiDi Option



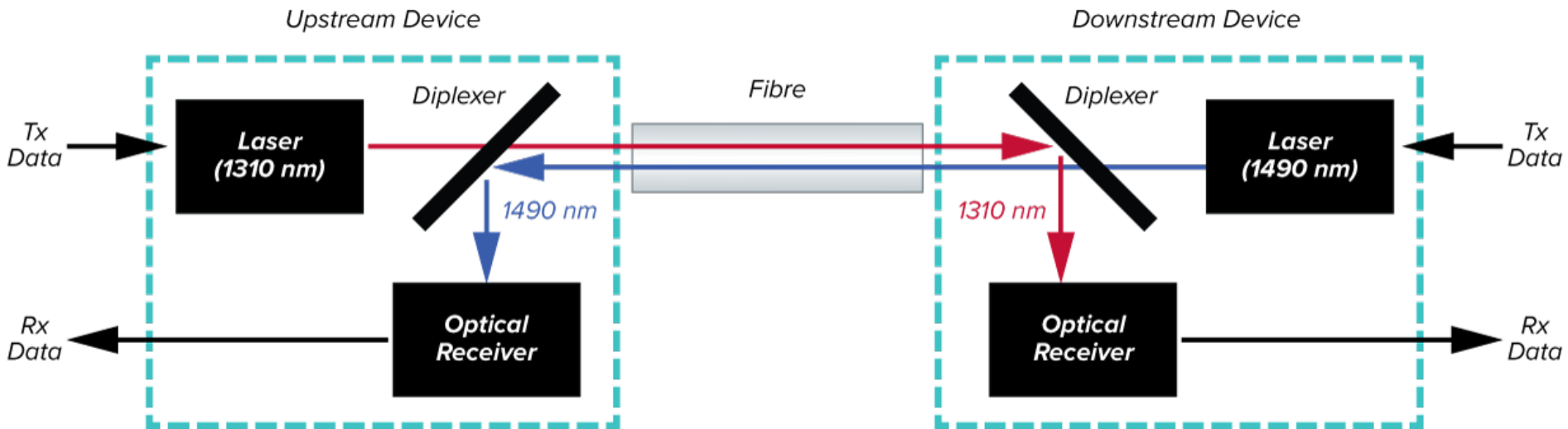
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INEX BiDi Option



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INEX BiDi Option



- Allows for a standard single-mode duplex x-connect to support upgrade path from:
 - 1 x 1Gb LX
 - 2 x 1Gb BiDi LX
 - 1 x 10Gb LR
 - 2 x 10Gb BiDi LR
- Each change typically requires a data centre call out
- INEX provides the optics for both ends
- INEX Operations offers remote hands for upgrades during standard working hours

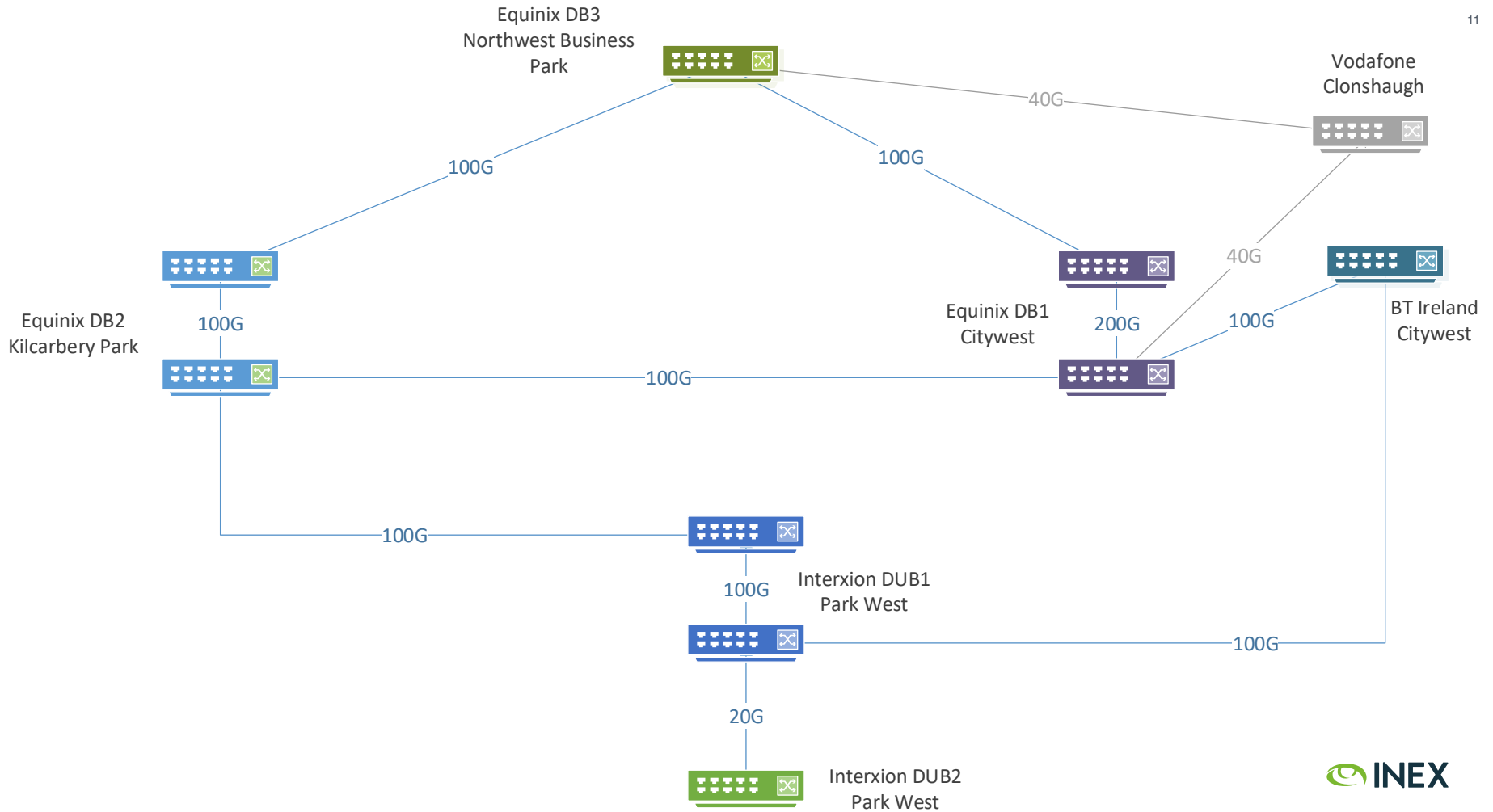
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BT Citywest Point of Presence

- Rationale
 - Analysis of network connectivity showed large capacity
 - Connectivity between Equinix DB1 and BT Citywest is difficult
 - Cost savings + easier for members
- PoP build completed in October
 - First member live October 3rd (Blacknight)
 - Expect two new 100Gb connections in the next ~6 weeks

Vodafone Clonshaugh PoP Closing

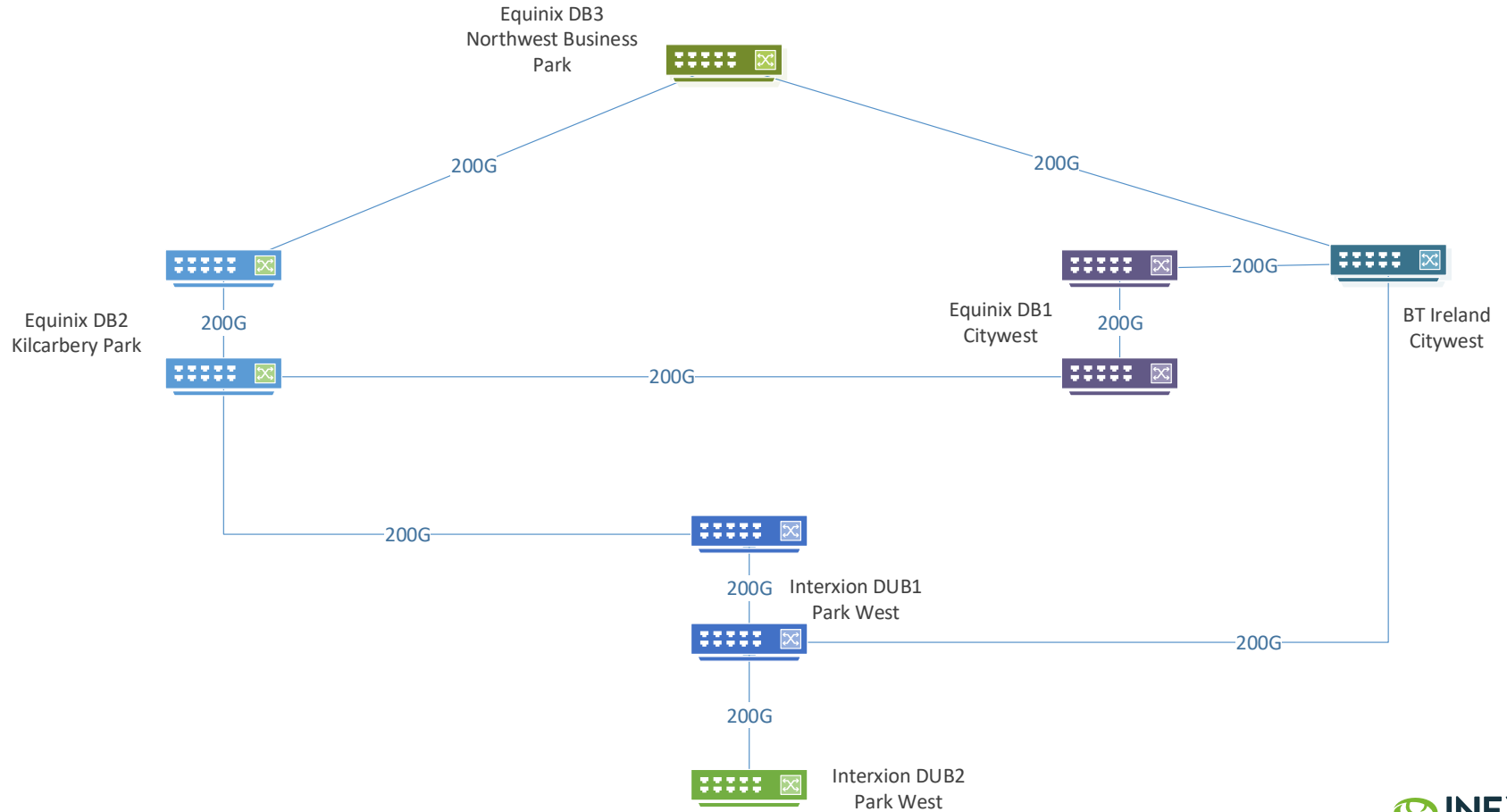
- Rationale
 - Only two connected members (one on each of LAN1/2)
 - Both plan to migrate to other PoPs in early 2019
 - No prospects
 - LAN2 member is long-lined to Equinix DB3
- Equipment can be recycled for existing/new PoPs / lab / spares



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Network Plans for 2019

- WDM Chassis Redundancy - only Equinix DB3 PoP left
- Interxion DUB2 100Gb connectivity
- Upgrade LAN1 core from 100Gb to 200Gb
- High density 100Gb availability in all LAN1 PoPs
- Migrate Equinix DB3 - VF dark fibre span to Equinix DB3 - BT



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Thoughts on Future of 1Gb Links

- LAN1 - all edge ports are SFP+ or better
- LAN2 - bar one switch, all edge ports are SFP+ or better
- Constitutes ~5% of 2019 revenue
- Still strategically useful for smaller members
- Considering:
 - End of Sale of 1Gb LAGs in 2020
 - End of Sale of 1Gb ports by end of 2022

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INEX LAN2

- In good shape:
 - High density 100Gb core and access in all PoPs via Mellanox SN2100's
 - Full automated
 - Repurposed LAN1's Extreme x670's for 1/10Gb access (40Gb uplinks)
 - Single Brocade Netiron left in Equinix DB1 - to be removed
- Switch bugs - fixed by upgrade planned for ~~October~~ last night:
 - Issues relating to ghost routes (eVPN/VXLAN)
 - Sflow data missing VLAN ID on Mellanox platform

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INEX Cork

- Brocade Turboiron's still in production
- Deprioritised as the platform is stable
- Will be handled in 2019H1
 - 2 x EdgeCore AS-5812X
 - Cumulus Linux / VXLAN
 - Fully automated
- Management network rebuild

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IXP Manager - Development Update

- Next release is v4.9 - a milestone for a number of reasons:
 - Zend Framework 100% removed
 - All member facing elements rewritten
 - Last minor release of v4
 - Support: bugs - Aug 2019, security Aug 2020 (aligned with Laravel 5.5 LTS)
- Will release v5.0 in early 2019
 - Latest Laravel, PHP ≥ 7.2 , recommend Ubuntu 2018.04 + PHP PPA
 - Frontend packaging: migrate from bower to yarn
 - New features happen here

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IXP Manager - Features Planned in 2019

- 2019-Q1
 - Peering DB OAuth (and general auth shake up)
 - RPKI route server support
 - Vastly improved route server prefix analysis
- Later in 2019
 - Billing information
 - Upgrade request forms
 - Better sflow visualisations

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ROAs - Route Origin Authorisations

- A cryptographically secure replacement for route[6] objects
- Adds maximum prefix length
- Yields route origin triplets that have been validated

```
( Origin AS, Prefix           , Max Length )
( AS65500,   2001:db8::/32,   /48           )
```

```
route6:           2001:db8::/32
descr:            Example IPv6 route object
origin:           AS65500
created:          2006-07-12T16:11:58Z
last-modified:   2011-02-22T15:58:03Z
source:           SOME-IRRDB
```

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Operations Availability for 2018 Holiday Period

- Normal cover until Fri Dec 21st 2018 at 1800 UTC
- Normal cover resumes Mon Jan 7th 2019 at 0900 UTC
- During the holiday period:
 - No changes to critical production services
 - Technical support provided via normal channels:

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



THANK YOU

Any Questions?