

BSN Hub Router Replacement - 2020 70 Inner Belt Road

May 4, 2020



Quick overview

Rather than concentrating our network infrastructure in a single facility or a carrier hotel, TWDX operates two redundant gateways in Boston to maximize diversity:



- Dark fiber is extensively used to integrate two separate facilities:
 - Two gateways are connected with high count fibers taking diverse routes.
 - TWDX metro fiber is extended to interconnection facilities around Boston to meet up with various peers and transit provider networks, with diversity being the most important design consideration. Peers are encouraged to meet us at alternate facilities where available (e.g. Comcast, Akamai, Telia and CenturyLink) to add diversity from other IP providers serving the Boston region.
- 300 Bent Street (BOS) gateway was completed in August 2018.
- 70 Inner Belt Road (BSN) has been undergoing major expansion and construction since 2019.
 Phase I of the new BSN gateway is now complete and ready to commence operations.

70 Inner Belt Road in 2020: *We're moving!*

- 70 Inner Belt Road (BSN) gateway has been undergoing new expansion since March 2019 and is now ready.
- We are moving from this (existing facility) \rightarrow



70 Inner Belt Road in 2020: *We're moving!*

To this! (NEW facility) \rightarrow

- More information and deep dive about the new facility construction at 70 Inner Belt Road is detailed at the following link:
 - http://twdx.co/pHBp8B



70 Inner Belt Road Move: Hub Router Replacement

- As part of the gateway expansion, Cisco ASR 9922 was chosen for the new aggregation router (called "dcr03.bsn04") that will admit customer connections terminating at the 70 Inner Belt Road gateway.
- Existing/legacy ASR 9010 router at our old POP (dcr01.bsn05) will be decommissioned.
- The migration was originally scheduled to commence in March 2020, and conclude by May. However, due to the ongoing COVID-19 pandemic, decision was made in March to delay the planned migration out to June, and stretch out the timeframe to accommodate personnel and site safety requirements.
- The new dates for hub router migration are now as follows: Project Start: June 16, 2020 Project End: January 16, 2021



Will I be affected by this migration?

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- Not all customers are affected by this migration. It depends on where your circuit is landing on our network.
- The surest way to find out, is to run a traceroute (tracert from Windows command prompt) from your location that has TWDX circuit, and check the first "twdx.net" hop that shows up. If your first "twdx.net" hop says "dcr01-XXX.bsn05", then you are affected by the migration and we will be moving over your connection:

This connection lands on the legacy ASR 9010 (dcr01.bsn05) and thus is affected - this circuit will be migrated to the new router.

C:\Users\mc>tracert fb.com				
Tracing route to fb.com [157.240.220.35] over a maximum of 30 hops:				
1	2 ms	3 ms	1 ms	dcr01-te-0-2-0-4-2.bsn05.twdx.net [208.118.234.33]
2	2 ms	2 ms	1 ms	bbr01-be-10100.bsn05.twdx.net [198.160.62.188]
3	2 ms	1 ms	3 ms	ibr01-hu-0-0-0-21.bsn05.twdx.net [198.160.62.13]
4	2 ms	1 ms	2 ms	FACEBOOK-IN.ibr01.bsn05.twdx.net [185.134.180.234]
5	2 ms	1 ms	1 ms	po102.psw04.bos3.tfbnw.net [204.15.23.203]
6	1 ms	1 ms	2 ms	173.252.67.163
7	1 ms	2 ms	2 ms	<pre>edge-star-mini-shv-01-bos3.facebook.com [157.240.220.35]</pre>
Trace	complete.			

- Between June 2020 and November 2020, affected customers will receive a maintenance notification, letting them know that their circuit will be migrated to the new router.
- If you are unsure and would like to find out before you receive a maintenance communication, please reach out to us at <u>support@towardex.com</u> and we will confirm this for you.

I'm not receiving your service at 70 Inner Belt Road, why am I affected?

Using both dark fiber and transport rings, we aggregate connections from customer premises to one of our two
gateway hub sites as noted earlier, at either 300 Bent Street or 70 Inner Belt Road.

This allows us to reduce operational complexity in our access infrastructure, enabling us to deploy high speed 10G and 100G interfaces to customer locations cheaper and faster.

 If your circuit is backhauled to 70 Inner Belt hub gateway, your connection will need to be migrated, even if you are receiving service at a different location.



What is the impact and do I need to do anything?

Impact:

During migration, we anticipate up to 20 minutes of downtime for the affected customer circuit that is being cut over to the new device.

 No actions are required from affected customers (besides planning for 20 minutes of circuit downtime), and no configuration changes will be required.

To make things go faster, we do ask customers to not block ICMP ping (echo) on their border routers that terminate our circuits, if possible. If it is not possible, and you have to block ICMP ping on your router for whatever reason, no worries - we will accommodate either way.

Other questions..

 Q: I am receiving service from you at 70 Inner Belt Road. Do I need to work with CoreSite to move the cross connect to your new POP?

No. We will take care of the cross connect migrations with CoreSite. If we need anything from you, our project manager will reach out to you in advance of the maintenance.

• Q: Your proposed cut-over time is not acceptable for me, as I have production window during that timeframe. Can we reschedule?

Absolutely! We will work with you to find the best time that minimizes impact to your business. Please reach out to us at support@towardex.com once you've received a maintenance notification, and we will re-schedule the cut-over for you.

• Q: What actually happens during the cut-over?

To maximize social distancing and enhance crew safety, circuit cutover activities are heavily automated and new replacement facilities are pre-wired and pre-tested.

For customers that are running BGP, our mission script will first execute "administrative shutdown" on your BGP session and leave your old interface up for 60 seconds, to allow BGP to withdraw routes and shift traffic to your alternate circuits, before bringing down the interface.

60 seconds after the traffic drain, script will confirm interface traffic levels are <10 Kbps then raise operator, to allow technician on-site to physically re-patch your connection over to the new replacement facility.

Once the new replacement interface is UP, script will first wait 60 seconds for link state to settle (no more link bounces from technician plugging in fiber) and send quick ping floods to the far-end peer and check for CRC errors and light levels. Packet loss in ping flood is permitted as long as there are no CRC errors (to accommodate control plane rate-limits at customer end equipment).

If the customer is blocking ICMP ping on their BGP router, script will raise CheckListException error and wait for operator intervention to manually restore the connection. If no errors are present and light levels are within the allowed margins, BGP session will be automatically brought back up on the new router, and customer's BGP prefix advertisements will be compared against the old circuit. Any changes in BGP prefixes accepted will also raise CheckListException and operator will be alerted to verify configuration.



Additional Activities IP Network - AS27552

May 4, 2020



Heads up! RPKI ROV deployment is now underway at TWDX IP

As of June 1, 2020, TWDX IP will begin implementation of RPKI Route Origin Validation (ROV) on our network.

- dcr03.bsn04 will begin rejecting RPKI INVALID prefixes as of June 1, 2020.
- dcr02.bos01 will also implement ROV by December 31, 2020.
- Peering routers (IBRs) and NYC market routers will implement ROV by first quarter of 2021.

The implementation of RPKI ROV will improve BGP routing security and help mitigate customer impacts from accidental route leaks occurring over the internet.

How this impacts you:

- If you are NOT currently publishing RPKI Route Origin Authorization (ROA) for your BGP prefixes being advertised: you're not protected by origin validation, but nothing needs changing. Your routes will continue to be accepted by TWDX without any problems, and you do not need to take any action.
- If you are publishing RPKI ROAs for your BGP prefixes today:

Customers that issue RPKI ROAs for their netblocks should ensure that their actual BGP advertisements to TWDX are matching constraints EXACTLY as specified on the ROA. For example: a /22 ROA will NOT permit more specific /24s unless "Max Prefix /24" option is specified on your ROA!

- Prior to implementation of RPKI ROV at TWDX IP, we will check all customer BGP advertisements in advance. Customers that are incorrectly publishing ROA will be contacted to correct problems before ROV will be implemented on their circuit.
- If you have any questions or concerns about ROV implementation, please reach out to us at support@towardex.com.

400GbE deployment is now under way at TWDX IP

As more and more of our transit and peering interfaces are moving to 100GE links, migration of our backbone links to 400GE is becoming more critical.

TWDX IP is now beginning deployment of the new Lightspeed+ line cards for Cisco ASR 9900 series routers:

- dcr03.bsn04 will begin migrating to A9K-20HG-FLEX (5x 400GE/20x 100GE) combo cards by end of 2020.
- New peering router ibr01.bsn04 (ASR 9906) will be installed at 70 Inner Belt gateway using A9K-8HG-FLEX-TR (2x 400GE/8x 100GE) combo cards.
- ASR 9903 will replace existing Juniper MX480 (dcr02.jfk01) at NYC (111 8th Avenue) in 2021.





Additional Activities 70 Inner Belt Road

May 4, 2020



Phase II construction at 70 Inner Belt Road

Due to COVID-19, phase 2 construction activities at 70 Inner Belt Road were halted back in March 2020. On April 30, 2020, the moratorium on activities was then extended to May 31, 2020.

Unless additional governmental restrictions or public health directives arise, backbone construction activities, including phase 2 at Inner Belt Road are expected to slowly resume during Q3 of 2020, in consultation with our project management team and public health guidelines.

The phase II backbone construction at Inner Belt Road consists of the following contract packages:

- C19BA: Inner Belt Road Duct Bank to New Washington Street
- C09B1: 70 Inner Belt Road South Gate Entrance Facility Construction
- C09B2: 70 Inner Belt Road Common Areas Conduit Installation

Work on C19BA is expected to resume first, after issuance of excavation permits and completing traffic management plan (TMP) as required per state law. Consultation with CoreSite is under way regarding the placement of new TWDX entrance facility and manhole at the South Gate driveway. Purchase Order for in-building conduit installation at 70 Inner Belt is expected to be issued to CoreSite in January 2021, for T&T Electrical to perform the work.

How this impacts you:

- The Phase II construction work is entirely passive and is not expected to impact any existing circuits.
- However, during the installation of cable plant after construction, crews may need to access splice cases at existing manholes to join fiber optic segments onto the newly constructed duct bank. During this work, dark fiber customers that have circuits riding through affected splice enclosures will be notified in advance.

C19BA Proposed Trench (Inner Belt Road)



Questions?

If you have any questions or concerns about our maintenance programs and change activities, please contact us at <u>ip-admin@twdx.net</u>