



TOWARDEX
Your network success story.

Wholesale IP Solutions for Service Providers

BOSTON | JANUARY 29, 2025

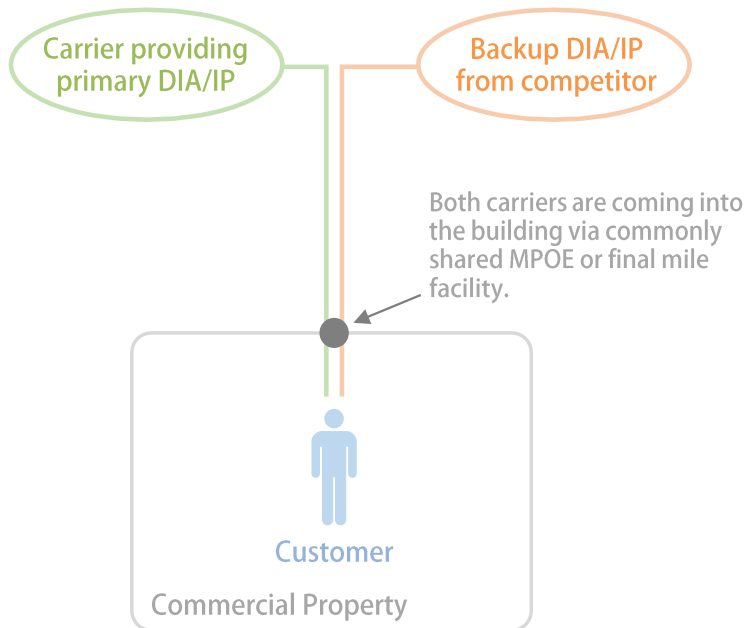


Your Network Success Story.

WE'RE A TEAM OF EXPERIENCED NETWORK ENGINEERS ON
A MISSION TO CREATE A MORE CONNECTED NEW ENGLAND.

CAPTURE ADDITIONAL DIA/IP REVENUE FROM ENTERPRISE CUSTOMERS

For backup, enterprises often seek two ISPs, even if the property's shared last-mile facilities (such as collapsed lateral, common MPOE, etc.) aren't physically diverse.



Min. 2 IP Providers

Realizing that the No. 1 cause of outages and business interruptions is human errors and maintenance activities, enterprises often require two ISPs, even if both providers are coming in through the same entrance.

Lost Revenue Opportunity

Because of the customer's requirement for a different IP bandwidth provider, carriers often forgo the customer's second ISP needs, even when the carrier's metro fiber assets could be leveraged to offer a second ISP solution.



CAPTURING THE SECOND ISP OPPORTUNITY

Instead of ignoring the customer's second ISP requirement, fiber carriers can form partnerships to rebrand (white label) or otherwise bundle another provider's IP bandwidth into their service offering. This leverages the carrier's existing investments in their fiber footprint, driving more revenue.

For years, TOWARDEX provided a second ISP solution for fiber carriers to resell to enterprises, offering low-cost wholesale access to the TWDX IP network, our heavily peered blended bandwidth service.

NO MORE MIDDLE MAN: ELIMINATE 3RD PARTY LOOPS AND CROSS CONNECTS

Instead of connecting via carrier hotels, carriers can now connect to TWDX IP at the Hub Express System (HEX), America's first interconnection utility, with zero cross connect fees.

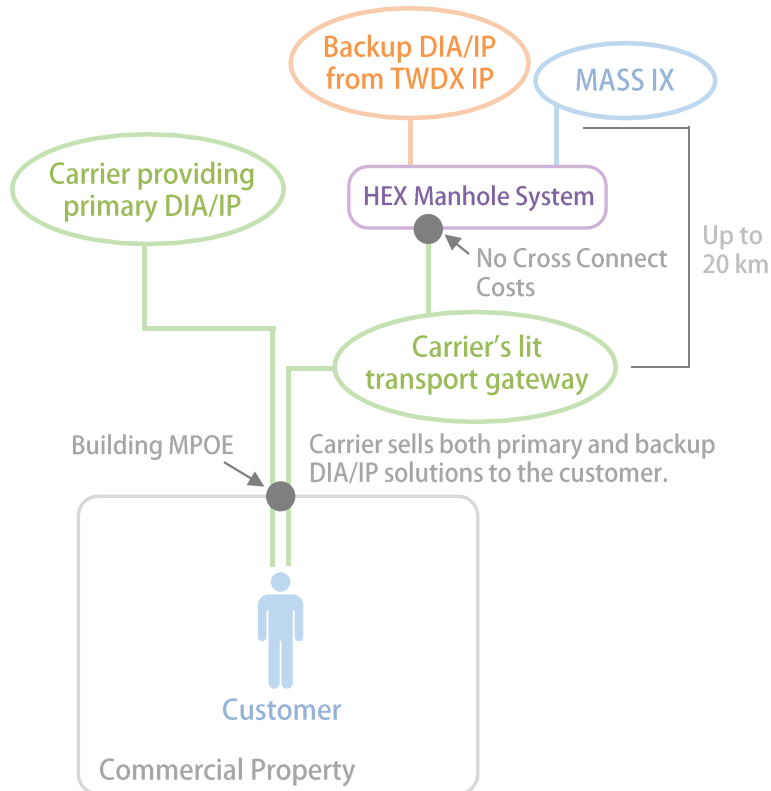
In Boston, we built America's first interconnection utility.

THE HUB EXPRESS SYSTEM DEMOCRATIZES ACCESS TO UNDERGROUND UTILITIES FOR INTERNET NETWORKS OF ALL SIZES.



HOW IT WORKS

Instead of ordering expensive local loops or cross connects through carrier hotels, carriers can now interconnect fibers directly into TWDX IP at the HEX system.



Outside Plant (OSP) Meet

Install NNIs or ports with TWDX IP by splicing fibers at the HEX system. The connecting carrier will bring the fibers back to its nearest lit transport gateway from the splice point and then extend the lit service to its end customer.

Easy-Peasy.

No special optics or optical transmission equipment is required (for up to 20 km) from the manhole splice to the carrier's nearest network gateway. Carrier will use standard SMF (e.g., 1310 nm/LR 10 km) optics on their side of the connection.

DISCOUNTED IP BANDWIDTH PRICING FOR MEMBERS OF THE HUB EXPRESS SYSTEM

DIA and IP Transit services from TWDX IP are provided at heavily discounted rates for tenants of the HEX manhole system, valid through to the end of 2025.

IP BANDWIDTH	MRC	NRC	HAND-OFF INTERFACE
1 Gbps	\$100.00	\$500.00	GigE (1000BASE-LX)
5 Gbps	\$300.00	\$500.00	10GbE (10GBASE-LR)
10 Gbps	\$350.00		
20 Gbps	\$650.00	\$900.00	100GbE (100GBASE-LR4)
40 Gbps	\$1,100.00		
100 Gbps	\$2,750.00		
<ol style="list-style-type: none"> Prices herein are for dedicated IP transit or DIA ports, not NNI ports for trunking multiple customers. For NNI, please contact sales for ICB quote. BGP routing is supported. End customers running BGP receive /30 IPv4 (/126 IPv6) for hand-off. Non-BGP customers can receive up to /29 (IPv4) at no additional charge. More IPv4 addresses larger than /29 block can be provided at additional monthly charge. Prices herein are valid until December 31, 2025. 			

DISCOUNTED MASS IX RATES FOR MEMBERS OF THE HUB EXPRESS SYSTEM

Connect your customer to New England’s carrier and data center neutral internet exchange (IX) at the HEX manhole system. Prices are valid through end of 2025.

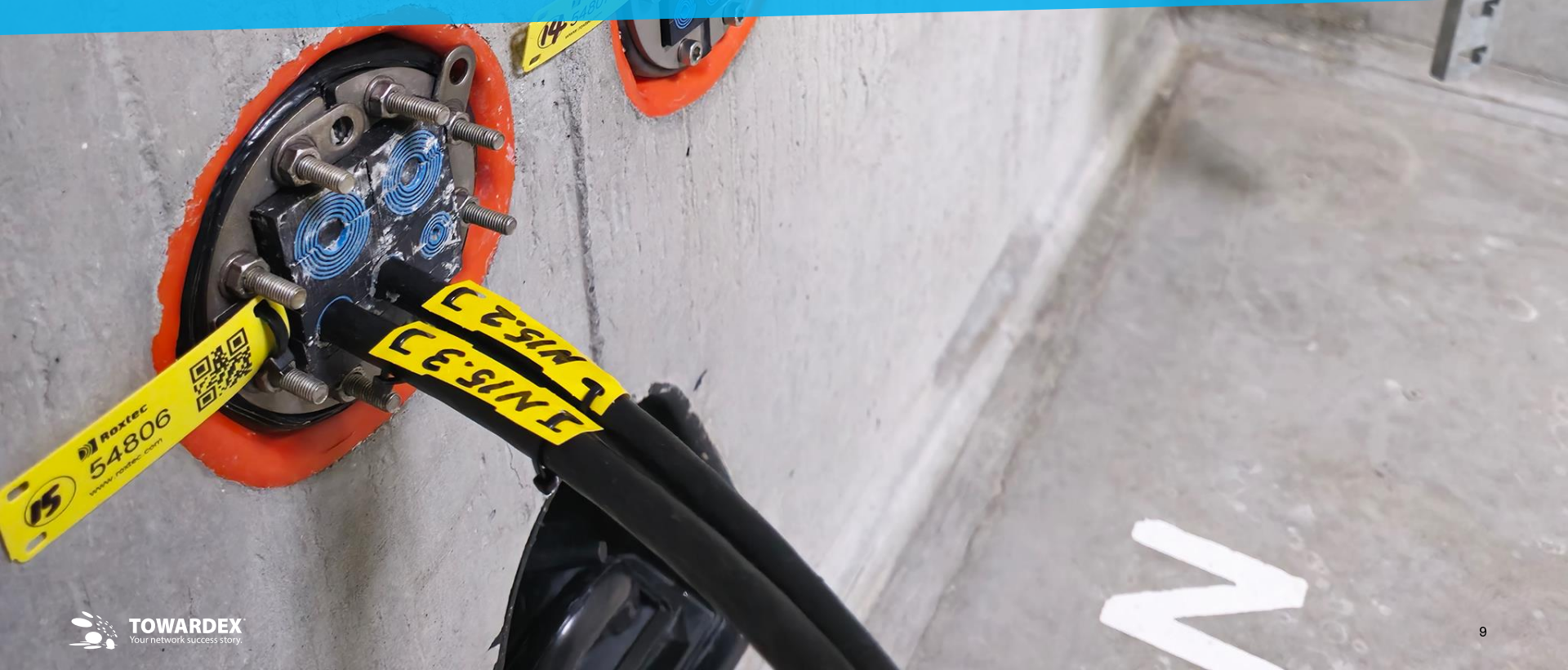
IX PORT SPEED	MRC	NRC	HAND-OFF INTERFACE
10 Gbps	\$250.00	\$500.00	10GbE (10GBASE-LR)
100 Gbps	\$250.00	\$500.00	100GbE (100GBASE-LR4)

1. End customer requesting MASS IX service must meet IX Connection Guidelines located at the following link:
https://www.mass-ix.net/IX_Connection_Guidelines.pdf



Frequently Asked Questions

EXPANDING HIGH-SPEED BROADBAND THROUGH THE NATION'S FIRST UNDERGROUND "MEET-ME STREET" NETWORK



ELIGIBILITY

The pricing is aggressive. Can you offer me this price at a colocation facility that both of us are in?

No. The promotional pricing is only available to members (i.e., tenant carriers) of the Hub Express System.

Standard TWDX IP and MASS IX rates apply for non-HEX members, and if connecting from outside the HEX system, cross connects and third party local loops may also need to be quoted where required.

I am not a member of the HEX system, but my carrier is. Can I order the service with you?

Please contact your carrier to submit the order on your behalf. The discounted rates are only available to members of the HEX system. Non-members will need to contract for service through a carrier who is participating in the HEX system.





BECOMING A HEX MEMBER

I am a carrier who is currently not a member of the HEX system. How can I become a member and what are the costs?

New carriers can request conduit attachment at \$1.54/ft per year, subject to conduit system rules and regulations. For complete details and instructions on how to request a license, please visit TWDX Infrastructure at infrastructure.twdx.net.

Does the Joint Trench Partners (JTP) system connect to the HEX system? I need to extend my existing backbone from the JTP manhole to get to HEX.

Yes. Multiple HEX-owned interconnection facilities to JTP exist at the Inner Belt fiber corridor in Somerville, MA.

Note that you must be a JTP member and obtain permission from both Zayo and TWDX Infrastructure prior to running any connecting lines from JTP to HEX.

CONNECTING TO TWDX IP

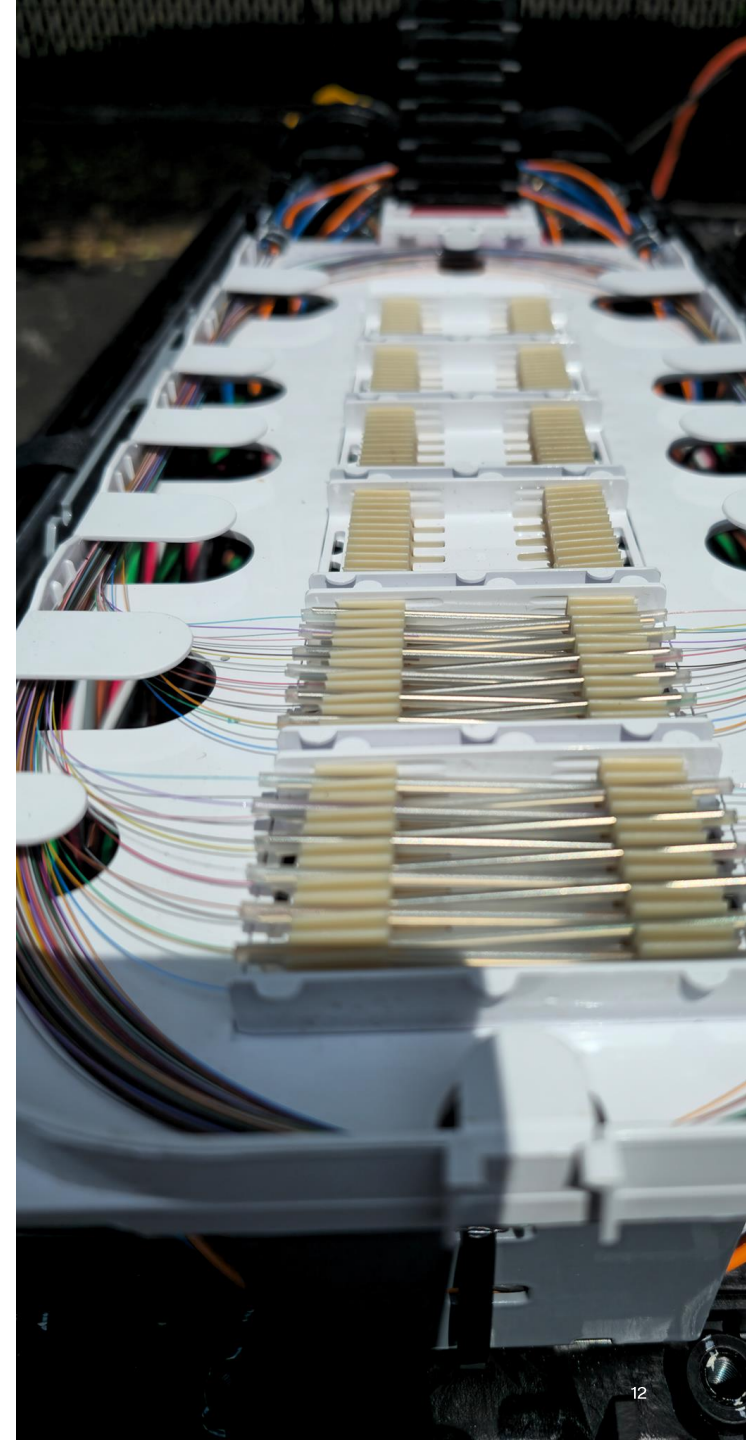
Who is responsible for running the interconnection jumper cable from TWDX IP to my network's splice case?

Upon accepting your order, TWDX IP will dispatch line crews to pull 144F cable to your designated location within the HEX system. It is then your responsibility to pick up, prepare, and connect that cable to your splice case.

For new installs, we now require ribbon fiber cables in order to minimize splice tray congestion. The minimum splice on our side will be 12 strands (1 ribbon) or 6 pre-wired customer connections.

Who is going to test the fibers after splicing?

TWDX IP will shoot fibers using OTDR from its gateway to verify the interconnection splices. You're welcome to do the same on your side. If bidirectional OLTS testing is requested, TWDX IP will coordinate with your OSP crew to provide a test point at our side of the interconnection.





TWDX IP INFORMATION

What is your AS number and who are your upstream providers?

TWDX IP is under AS 27552 and only uses Tier-1 internet backbones for its upstream providers. We maintain multiple private peering links (PNIs) with major content and access networks with terabits of interconnection capacity in Boston. We also own and operate the MASS IX peering exchange, the largest carrier and data center-neutral peering point in New England.

To learn more about the TWDX IP blend, visit towardex.com/go/ip.

Our end-customer requires BGP. Can you support this?

Yes. We can easily accommodate BGP configuration, and we also support extensive traffic engineering communities for customers to use. For complete details, see www.twdx.net.

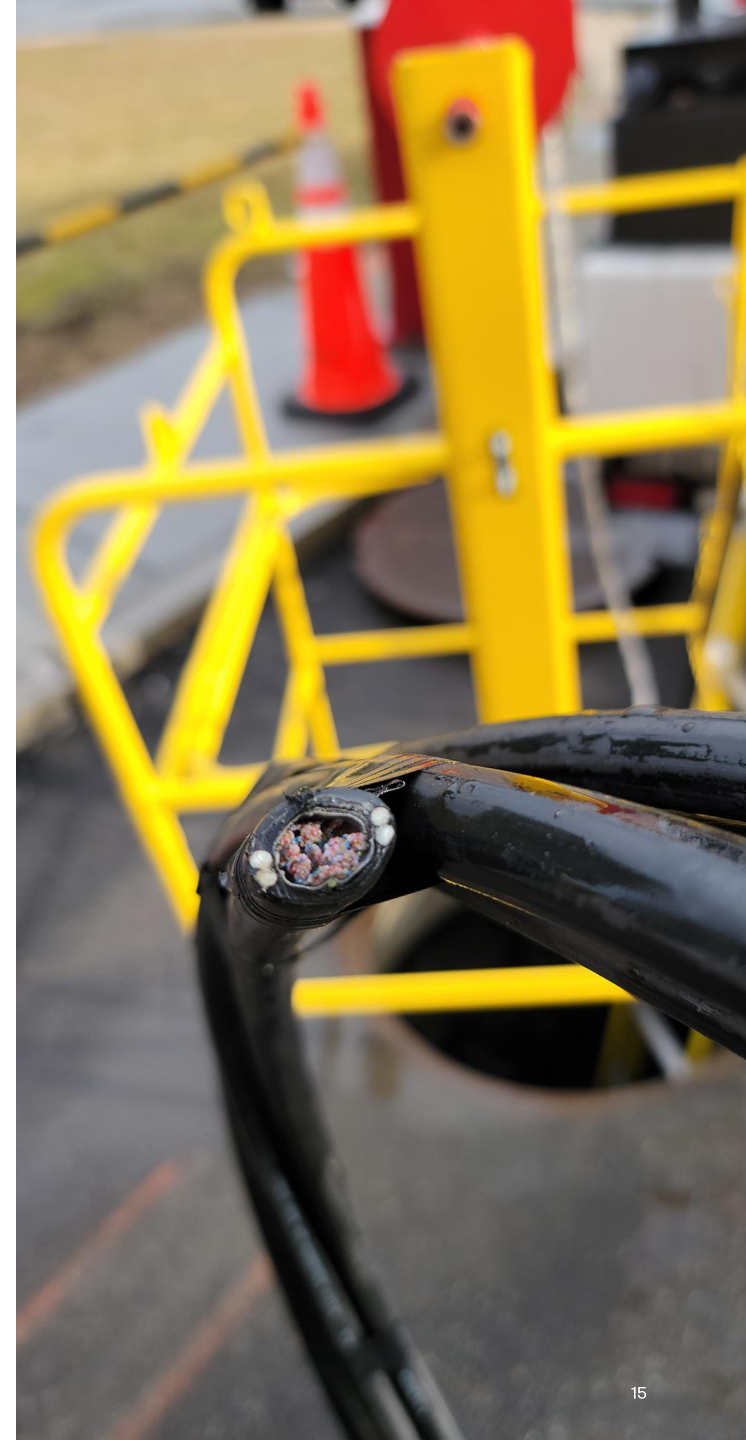


MAKE EXCESS FIBERS WORK FOR YOU!

With increasing fiber densities, OSP meets in the metro are now becoming easier and cheaper than the alternatives.

Benefits of delivering high-speed IP services through the HEX system:

- **End-to-end security and control of the pathway between two connecting carriers, simplifying troubleshooting.** Minimizes finger-pointing and accelerates fault resolution by eliminating a third party in the middle.
- **Capture more revenue from excess fibers.** Modern carriers are now deploying high-density fiber cables (1728-6912F). Because conduits in the HEX system are easy to get to and are cheap to use, more fibers can now be pulled to optimize costs, for example, by offloading interconnections between networks.
- **Interconnection mobility.** Using the HEX system, carriers can move their customer links from one facility to another more easily because the physical connection points aren't tied to a single building. This increases flexibility for network planning.





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