

# Internet Exchange Overview

Megaport owns and operates a series of Internet peering exchanges (IXs) in the majority of our global networks. IXs provide greater efficiency between networks and allow traffic to be exchanged directly, reducing latency and bandwidth usage on client Internet connections.

There are two main types of IX peering arrangements: multilateral and bilateral. Multilateral peering is the default when you connect to MegalX. With multilateral peering, you use BGP to peer with both route servers (RS1 and RS2) for an IX market, you advertise your routes to the route servers, and all routes available from all other multilaterally peered connections are advertised to your peer from the route servers. The second type of peering is bilateral peering. This method is required for peers that do not participate in multilateral peering through the route servers and establishes a direct peering relationship with another entity on the exchange. You can participate in both multilateral and bilateral peering across the Megaport IX infrastructure.

If you are connecting to an AMS-IX location, see [AMS-IX Connectivity](#).

## To join an Internet exchange for Megaport and MegalX locations

1. In the [Megaport Portal](#), go to the **Services** page and select the Port you want to use.  
If you haven't already created a Port, see [Creating a Port](#).

2. Add an IX connection for the Port.

Click **+Connection**, click Internet Exchange, and click **Next**.

**New Connection**

① Select Type    ② Select Port    ③ Connection Details    ④ Configure IX    ⑤ Summary

IX Demo Port  
10 Gbps  
Montreal, Canada

↔

Toronto MegalX

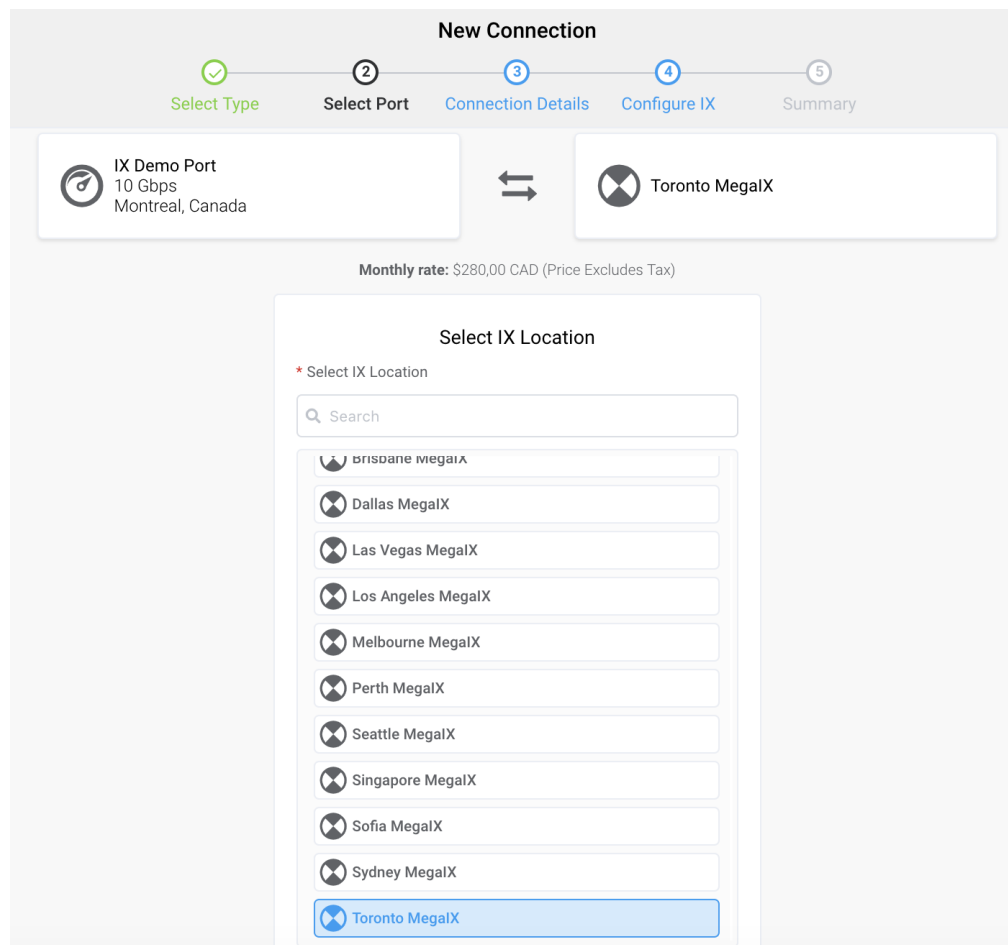
Monthly rate: \$280,00 CAD (Price Excludes Tax)

**Choose Destination Type**

Cloud    Private VXC    **Internet Exchange**    Megaport Marketplace    Enter Service Key

Cancel    **Next** ➔

3. Select the IX location and click **Next**.



The screenshot shows the 'New Connection' wizard in the Megaport portal. The progress bar at the top indicates five steps: 1. Select Type (completed), 2. Select Port (current step), 3. Connection Details, 4. Configure IX, and 5. Summary. Below the progress bar, two boxes represent the selected port and IX: 'IX Demo Port' (10 Gbps, Montreal, Canada) and 'Toronto MegalX'. A double-headed arrow connects them. Below this, the monthly rate is listed as '\$280.00 CAD (Price Excludes Tax)'. The main section is titled 'Select IX Location' and contains a search bar and a list of IX locations. The 'Toronto MegalX' option is highlighted in blue.

**New Connection**

1 Select Type 2 Select Port 3 Connection Details 4 Configure IX 5 Summary

IX Demo Port  
10 Gbps  
Montreal, Canada

Toronto MegalX

Monthly rate: \$280.00 CAD (Price Excludes Tax)

**Select IX Location**

\* Select IX Location

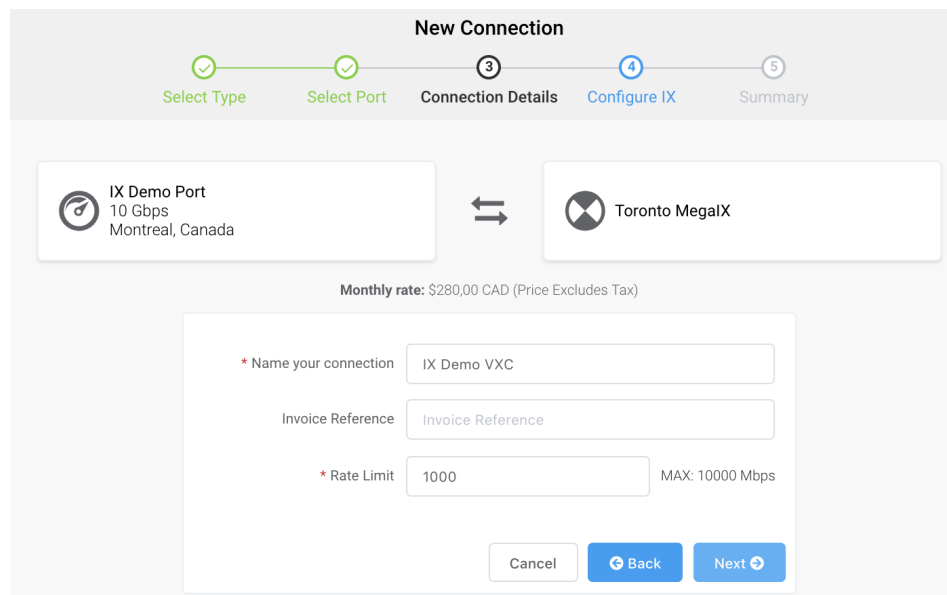
Search

- Brisbane MegalX
- Dallas MegalX
- Las Vegas MegalX
- Los Angeles MegalX
- Melbourne MegalX
- Perth MegalX
- Seattle MegalX
- Singapore MegalX
- Sofia MegalX
- Sydney MegalX
- Toronto MegalX**

4. Specify these connection details:

- **Name your connection** – The name of your VXC to be shown in the Megaport Portal.
- **Invoice Reference** – This is an optional field. It can be any text, such as a PO number or billing reference number.
- **Rate Limit** – This is the speed of your connection in Mbps. The rate limit for an IX cannot exceed the aggregate port speed for

metro connections, and 10 Gbps for non-metro connections.



5. Click **Next**.

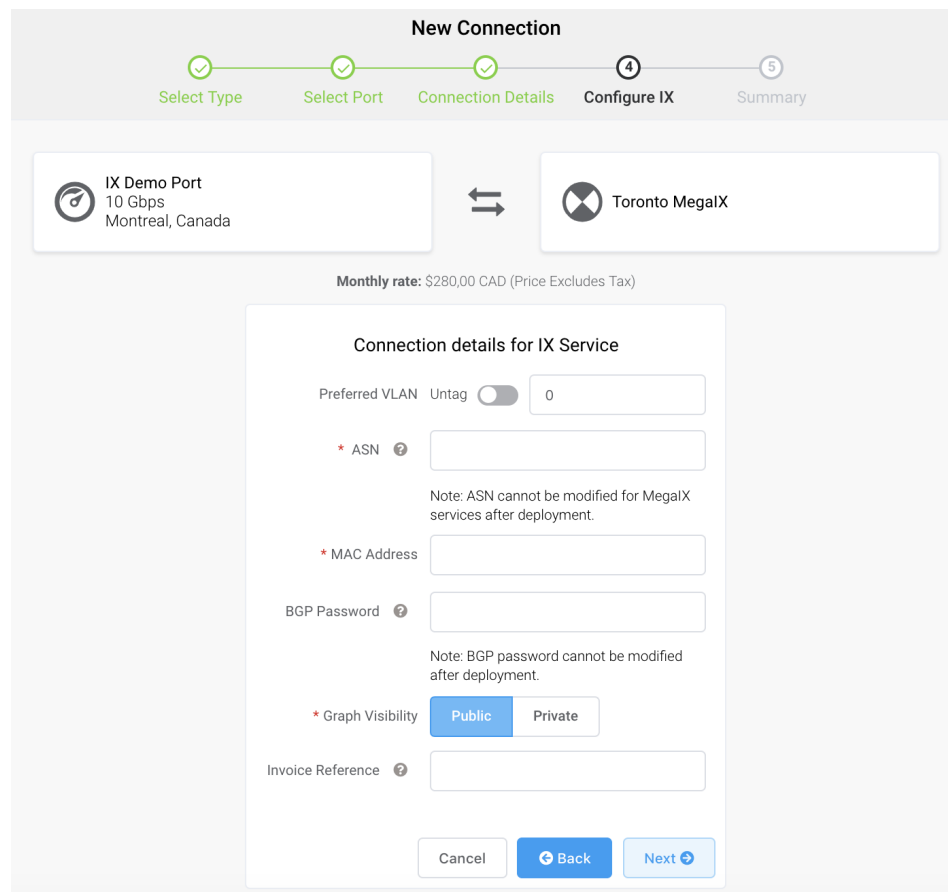
6. Specify these IX details:

- **Preferred VLAN** – Optionally, specify an unused VLAN ID for this connection. The VLAN ID must be unique on this Port and can range from 2 to 4093. If you specify a VLAN ID that is already in use, the system displays the next available VLAN ID. Megaport validates the VLAN ID before proceeding with the order. If you don't specify a value, Megaport will assign one. You can also select the toggle to **Untag** this connection. This selection removes the VLAN tagging for this connection but limits you to only one IX (or VXC) on this Port.
- **ASN** – The Autonomous System Number (ASN) of your network. The ASN may be either a 16-bit or 32-bit ASN (2 or 4 byte) but must be a public AS. You cannot change the ASN after deployment.
- **MAC Address** – The MAC Address of the Layer 3 device that will establish the BGP peering session with the IX. Connections

to the IX on this VXC will be locked to this address for security purposes. If you do not have the correct MAC available at the time of ordering, enter a placeholder MAC (such as 00:01:00:01:12:34) as this field remains editable after deployment.

- **BGP Password** – Optionally, add a BGP password to the VXC. This field may be left blank. You cannot change the BGP password after deployment.
- **Graph Visibility** – Specify how to display your traffic graphs in the MegalX Looking Glass tool within the [Megaport Portal](#). Public lets other clients see your IX throughput; Private hides this information from other clients.
- **Peer Macro** – An optional field that only appears for ECIX connections. The peer macro value defines the AS macro filter for the peer. Megaport uses this value to generate a list of prefixes this AS can originate, and this list filters announcements through the route server. Another name for this field is AS-MACRO (or AS-SET) as it contains a list of AS numbers belonging to this peer. If you don't have a Peer Macro, you can enter your ASN in this field. (You can only send routes that originate from your own AS.) Invalid prefixes won't be announced by the route server and an incorrect configuration results in the route server rejecting all your prefixes. If not specified, your own ASN will be used in the filter and you can only send routes that originate from your own AS and prefixes registered to that AS.

- **Invoice Reference** – This is an optional field. It can be any text, such as a PO number or billing reference number.



**New Connection**

Select Type Select Port Connection Details **Configure IX** Summary

IX Demo Port  
10 Gbps  
Montreal, Canada

Toronto MegalX

Monthly rate: \$280,00 CAD (Price Excludes Tax)

**Connection details for IX Service**

Preferred VLAN Untag  0

\* ASN ⓘ

Note: ASN cannot be modified for MegalX services after deployment.

\* MAC Address

BGP Password ⓘ

Note: BGP password cannot be modified after deployment.

\* Graph Visibility  Public  Private

Invoice Reference ⓘ

Cancel Back Next

## 7. Click **Next**.

A summary page appears that includes the monthly cost. Click **Back** to make changes or click **Add IX** to move this configuration to your cart and proceed through the checkout process. After deployment, Megaport sends an email to your registered email address with additional information on how to finish the BGP configuration.

## Technical detail and troubleshooting

Standard BGP implementations require the first ASN in the path to match the ASN of the peer, however, when engaged in multi-lateral peering the first ASN will not be that of the peer (RS) but that of the downstream peer providing the routes. This is expected behavior and is required to reduce AS path lengths for correct routing decisions. To allow multi-lateral peering, configure your devices to not enforce the first AS requirement. For example, on a Cisco router the command is **no bgp enforce-first-as**.

To prevent customers sending all the internet routes to Megaport, we limit the number of maximum prefixes (MaxPFX) that can be sent to us. The default limit is 1000 IPv4 routes and 100 IPv6 routes. Exceeding this value results in ending the session; however, this can be reset by contacting the Megaport support team through online chat.

All frames forwarded to the Internet Exchange must:

- Have the same source MAC address
- Be Ethernet II (DIX) frames, with Ethertypes matching either ARP, IPv4, or IPv6

The following frames are not permitted on the Internet Exchange:

- Multicast and broadcast, with the exception of ARP and IPv6 neighbor discovery
- Frames resulting from Proxy ARP
- 802.2 LLC/SNAP frames
- Layer 2 control and link local protocols such as:
  - All forms of spanning tree
  - Vendor discovery protocols (CDP, EDP, FDP, MNDP)
  - UDLD

- DHCP
- PIM
- Layer 2 keepalives
- Internal routing protocols (such as OSPF and ISIS)
- IPv6 router advertisements
- ICMP redirects

MegaIX route servers do not obey the well-known BGP community attribute **no-export**. This community attribute is passed transparently to the other peers connected to the route server.

Multiple Exit Discriminator (MED) values are considered in the route selection rules only when the advertising ASN is the same for candidate routes. MED values are not modified by the route servers. Values advertised to the route servers are passed unaltered to other peers.

All routes on the IX are given equal local preference by the route servers. The route servers do not compare the BGP router ID for best route selection, instead preferring the oldest route when all other attributes are equal.

## BGP communities

MegaIX route servers support a number of traffic engineering communities to assist peers in controlling route preference and distribution. BGP communities in the range

```
64990-65512:*
```

are stripped while all others are passed on to peers.

You can use following BGP communities to define export policy to peers with 2-byte autonomous system numbers:



Community	Action
64990:ASN	Do not advertise to ASN
64991:ASN	Prepend once to ASN
64992:ASN	Prepend twice to ASN

You can use extended BGP communities to define export policy for both 2-byte and 4-byte ASN peers:

Extended Community	Action
RT 64990:ASN	Do not advertise to ASN
RT 64991:ASN	Prepend once to ASN
RT 64992:ASN	Prepend twice to ASN
RT 64999:0	Do not advertise this prefix unless explicitly permitted
RT 64999:ASN	Permit this prefix to be advertised to ASN

## Looking glass

Megaport operates a public, web accessible MegaIX Looking Glass for peers and network operators to investigate the current routing state. You can query both the primary and redundant route servers for live BGP data. The MegaIX Looking Glass is available at <https://lg.megaport.com>.

## More information

- [Fine tuning route advertisements](#)
  - [Wikipedia: Internet exchange point](#)
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Last update: