consoleconnect

Connect to **Azure**

Purpose

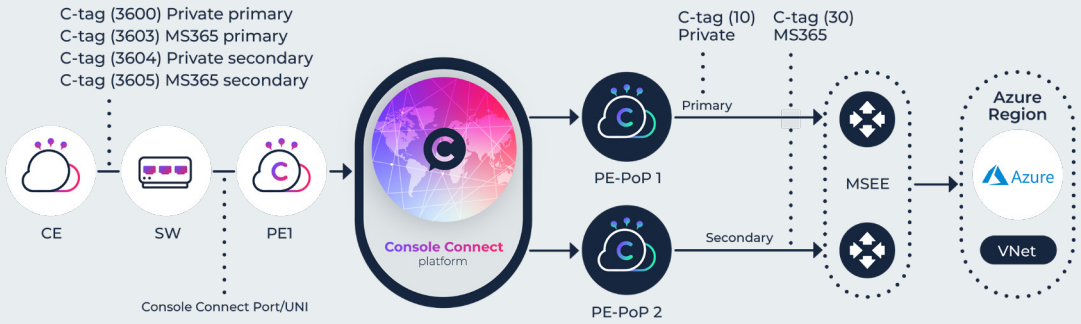
This document describes the prerequisites and procedure needed to create an L2 connection to Azure ExpressRoute through the Console Connect web portal.

Who is it for

- Network Admins
- Network Engineers
- System Admins
- IT Managers

Introduction

The following diagram shows the network architecture that we will create using Console Connect and Microsoft Azure:



CE: customer edge device

SW: access layer switch on the Console Connect network. The CE has a physical port onto this device. Once Azure ExpressRoute is created, four ctags will be presented on this port that define the ExpressRoute primary and secondary circuits

PE1: provider edge device. This is the entry point into the PCCW Global MPLS network

PE-Azure PoP 1 and 2: redundant edge routers in diverse locations facing Microsoft Enterprise Edge (MSEE)

Azure Region & VNet: a basic example of connecting a VNet within an Azure Region to an ExpressRoute

This document will guide you step-by-step to:

1. Create an ExpressRoute circuit and get the service key at **https://portal.azure.com**

2. Provision redundant L2 Connections on Console Connect **https://app.consoleconnect.com/**

3. Configure BGP from your router to the MSEE

4. Connect your ExpressRoute to one or more vNets with a gateway and connection on **https://portal.azure.com**

The main focus will be on steps 1 and 2. This document will also provide references to completing steps 3 and 4.

Prerequisites

A Microsoft Azure account. If you do not have one, apply here: **https://portal.azure.com**

A Console Connect account. If you do not have one, apply here: **https://app.consoleconnect.com/home**

At least one active Console Connect port

Procedure

Step 1

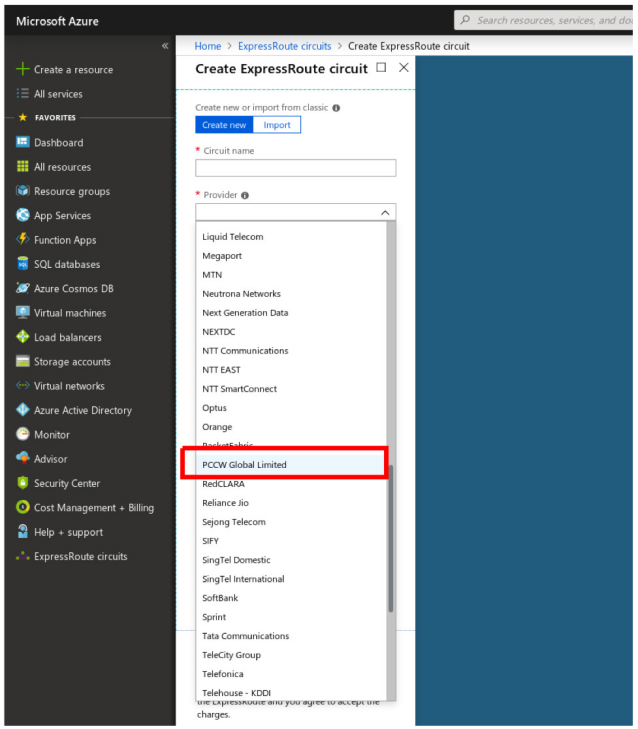
Create an ExpressRoute circuit and get the Service Key on the Azure Portal

1. This workflow requires you to start on the Microsoft Azure Portal at https://portal.azure.com. Once logged in, navigate to the service '**ExpressRoute circuits**'. You may discover this service by clicking on '**All services**' and then search for '**ExpressRoute**'. Click into it.

2. Once in, click '**Add**' to create an ExpressRoute circuit and start to complete the inputs. We'll cover the essential inputs required to configure an ExpressRoute for Console Connect by PCCW Global. For the other ExpressRoute inputs, please consult the rich documentation at **https://docs.microsoft.com/en-us/azure/expressroute/**.

   Circuit Name: name the ExpressRoute circuit.

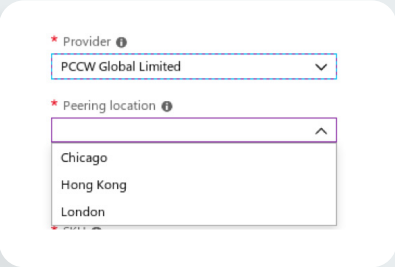
   Provider: choose '**PCCW Global Limited**'. This input is the most important as it selects PCCW Global Limited as the network service provider. Console Connect is wholly owned by PCCW Global and you can only use this provider with Console Connect.



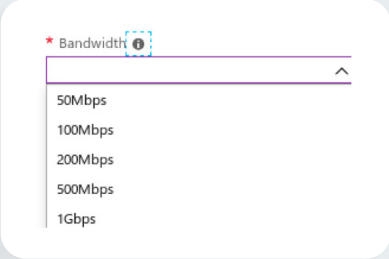
3 **Peering location**: select your desired peering location from the list. Currently we offer Chicago, Hong Kong and London. More on the way!

Note, these '**Peering locations**' are a subset of the '**ExpressRoute locations**' listed at **https:// docs.microsoft.com/en-us/azure/expressroute/ expressroute-locations**.

These ExpressRoute locations map to geopolitical regions and Azure regions.



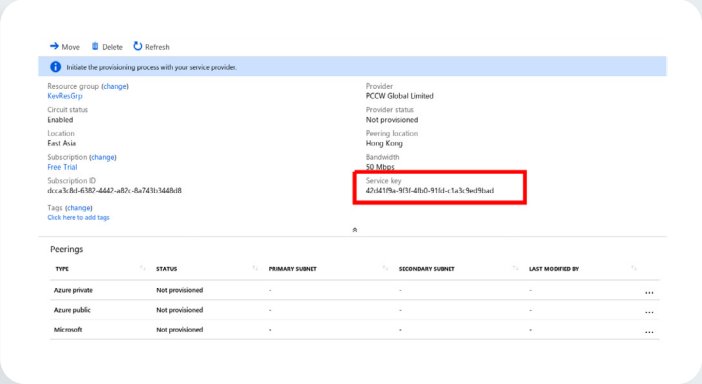
4 **Bandwidth**: From the dropdown, select your desired ExpressRoute bandwidth tier.



For the remaining fields, consult the ExpressRoute documentation at **https://docs.microsoft.com/en-us/azure/expressroute/**.

5 Click '**Create**'.

6 **Note**: Microsoft Azure will begin billing immediately upon creation. This bill is between you and Microsoft, apart from Console Connect. The ExpressRoute will be validated and deployed. This may take seconds to minutes. Once deployed, view the ExpressRoute circuit and grab the '**Service key**'. This key is required as an input to Console Connect. Also ensure that the ExpressRoute circuit is '**Enabled**' and the provider status is '**Not provisioned**'. Step 2 will work on provisioning the provider and update this status.

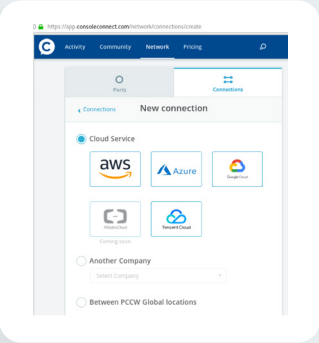


Step 2

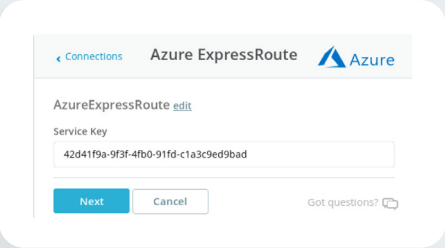
Provision connection on Console Connect.

Log on to **https://app.consoleconnect.com/**.

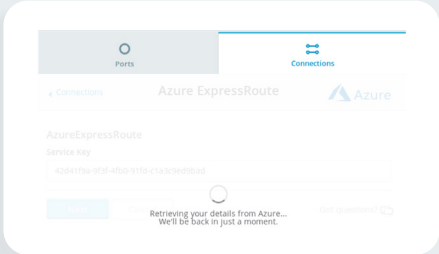
1. Go to Connections tab by '**Network**' -> '**Connections**'.
2. Click the large '**+**' sign to begin the connection creation flow.
3. Click on '**Azure**' from the 'Cloud Service' group.



4. Enter the ExpressRoute Service Key (aka '**S-Key**') here and click '**Next**'.

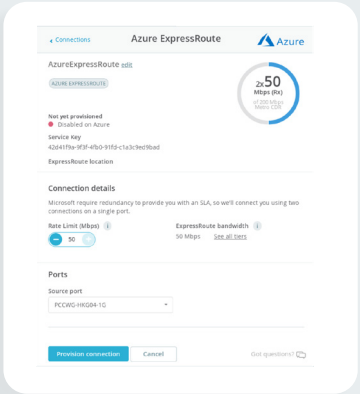


5. Console will call APIs on Azure to retrieve S-Key details.

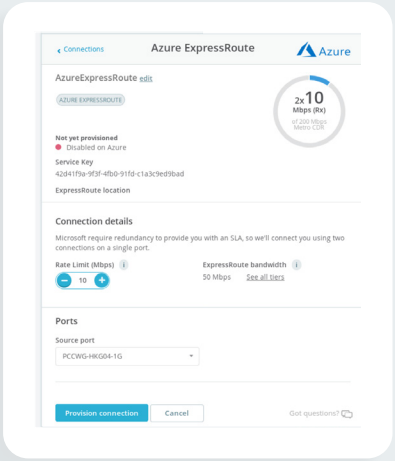


6. Once details are retrieved, you'll be presented with this view.

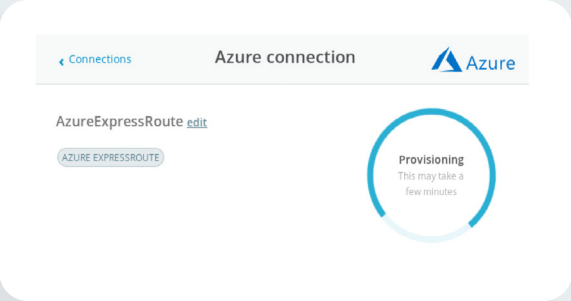
Note that an Azure ExpressRoute is composed of two circuits for redundancy. On this screen, choose the rate limit of the connections from your source port to the ExpressRoute location. This can be less than or equal to the bandwidth tier configured for the ExpressRoute.



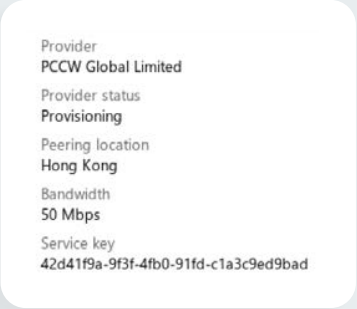
7 Here for example, we are selecting 10 Mbps for the Connection Rate Limit; this will create two connections, one each for the ExpressRoute primary and secondary circuits, each provisioned with 10 Mbps rate limit.



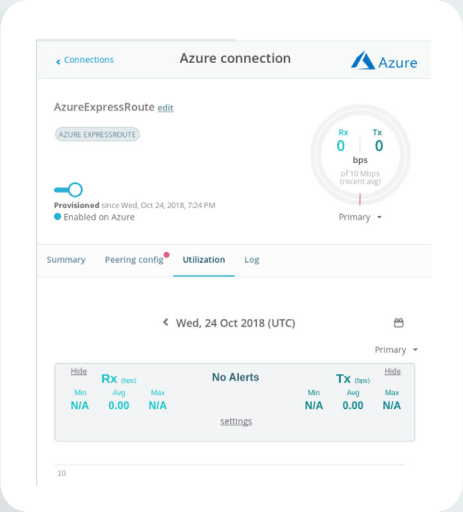
8 Click '**Provision connection**'. Console Connect will start provisioning the primary and secondary circuits from the source port to the select ExpressRoute location. This may take a few minutes.



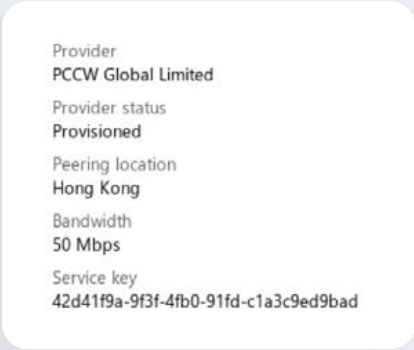
9 If you look over at the Azure portal and look at the ExpressRoute, you will note that the '**Provider status**' has moved from '**Not provisioned**' to '**Provisioning**'.



10 Once provisioned, you will be presented with this view. You will see the '**Provisioned since DATE-TIME-STAMP**' and '**Utilization**' tab.



11 If you check the ExpressRoute status on **https://portal. azure.com**, you'll see that the '**Provider status**' is now showing as '**Provisioned**'.

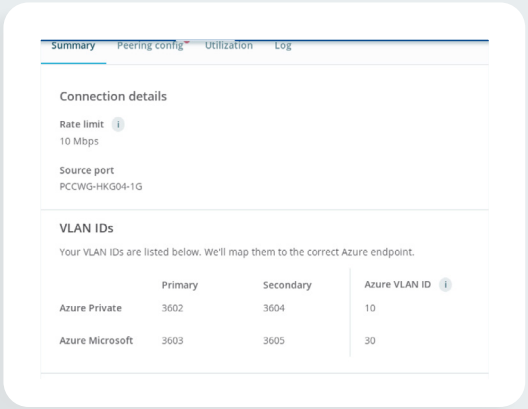


Now we move on to configuring the L2 connections:

12 Click on the '**Summary**' tab to view the VLANs allocated to the ExpressRoute primary and secondary circuits.

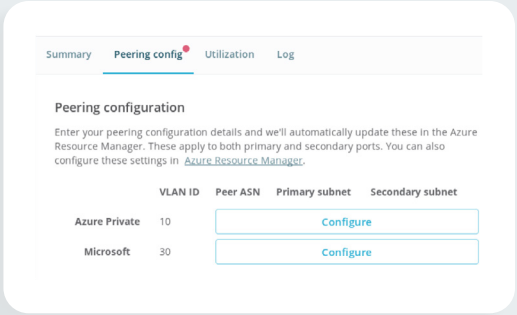
In this example, VLANs 3602 and 3603 are for the ExpressRoute primary circuit. VLANs 3604 and 3605 are for the secondary circuit. 3602 and 3604 map to the Azure Private Peering connection. 3603 and 3605 map to the Azure Microsoft Peering connection. These are the VLANs you need to configure on your customer equipment to establish L2 link state.

Note the '**Azure VLAN ID**' of 10 and 30 on the right. These are the VLANs that will appear in the **https://portal.azure.com** for Azure Private and Azure Microsoft peering. They are largely informational, you will not need to touch these.



13 Once L2 VLANs are configured setup peering for primary and secondary, please refer to **https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-routing-portal-resource-manager**.

At the completion of step 2, there are two ExpressRoute circuits (comprised of two VLANs each) created from the source port to the ExpressRoute location. To complete L3 configuration, follow the steps 3 and 4:



Step 3

Configure BGP from your router to the MSEE (Microsoft Enterprise Edge).

See: **https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-routing-portal-resource-manager**.

NOTE: you may configure your primary and secondary to be active/active or active/passive.

Step 4

Connect your ExpressRoute to one or more vNets with a gateway and connection on https://portal.azure.com.

See: **https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-linkvnet-portal-resource-manager**.

FAQ

How does Console Connect integrate with Microsoft Azure ExpressRoute? Console Connect utilises Application Programming Interfaces (APIs) with Microsoft Azure ExpressRoute, in order to provision the L2 connections to Microsoft Azure.

Does the bandwidth (rate limit) of the L2 connections need to match the ExpressRoute Bandwidth tier? No, they may differ. The Console Connect platform gives you the option to use the same bandwidth as the Microsoft Azure ExpressRoute or lower.

If I select a rate limit of 10 Mbps to Azure ExpressRoute, how is it provisioned? If 10 Mbps was input as the rate limit then Console Connect will provision two 10 Mbps circuits from the source port; one 10 Mbps connection for the Azure ExpressRoute primary circuit and another 10 Mbps connection for the Azure ExpressRoute secondary circuit.

What is the MSEE (Microsoft Enterprise Edge)? This is the edge of Microsoft's network where the ExpressRoute component is created and houses the MSEE edge routers. It is not actually part of Microsoft Azure. To learn more refer to these sections: under '**Redundancy**' on **https://docs.microsoft.com/en-us/azure/expressroute/expressroute-introduction** and also the section '**Advanced Express Route troubleshooting**' here **https://docs.microsoft.com/en-us/azure/expressroute/expressroute-troubleshooting-network-performance#advanced-expressroute-troubleshooting**

What charges can I expect? In addition to the Console Connect charges for the redundant L2 Connections, you will also be charged by Microsoft Azure for the ExpressRoute. Please refer to **https://azure.microsoft.com/en-us/pricing/details/expressroute/** for details.

Can I use both primary and secondary Azure ExpressRoute circuits in active/active? Yes, you can configure the circuits either as active/active or active/passive. The primary and secondary circuits are separately rate limited across PCCW Global's network. For example, a 50 Mbps Azure ExpressRoute can be used in active/active for a combined total of 100 Mbps.

References

1. **ExpressRoute overview**: https://docs.microsoft.com/en-us/azure/expressroute/expressroute-introduction
2. **ExpressRoute circuit provisioning states**: https://docs.microsoft.com/en-us/azure/expressroute/expressroute-workflows
3. **Create and modify peering for an ExpressRoute circuit**: https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-routing-portal-resource-manager
4. **Link a virtual network to an ExpressRoute circuit**: https://learn.microsoft.com/en-us/azure/expressroute/expressroute-howto-linkvnet-portal-resource-manager
5. **Troubleshooting network performance – Advanced ExpressRoute troubleshooting**: https://learn.microsoft.com/en-us/azure/expressroute/expressroute-troubleshooting-network-performance#advanced-expressroute-troubleshooting

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