Azure ExpressRoute Cheat Sheet

by Ilham (ilperdan0) via cheatography.com/126607/cs/26239/

Create an ExpressRoute circuit and peering

Where is the menu to config ExpressRoute circuit in Azure portal?	Create a resource > Networking > ExpressRoute.
What we do after we create a circuit on Azure Portal?	Send the provider the value in the Service key field to enable them to configure the connection.
What we do after the provider status is reported as Provisioned?	For Layer 2 connectivity, configure the routing for the peerings. For L3, the provider will configure that.

ExpressRoute Circuit Properties

Circuit name	A meaningful name for your circuit, without any white space or special characters.
Provider	The ExpressRoute provider with which you've registered your subscription.
Peering location	A location enabled by the ExpressRoute provider in which to create your circuit.
Bandwidth	Select your bandwidth, from 50 Mbps up to 10 Gbps. Start with a low value. You can increase it later with no interruption to service. However, you can't reduce the bandwidth if you set it too high initially.
SKU	Select Standard if you have up to 10 virtual networks and only need to connect to resources in the same geopolitical region. Otherwise, select Premium.
Billing model	Select Unlimited to pay a flat fee regardless of usage. Or select Metered to pay according to the volume of traffic that enters and exits the circuit.
Subscr-iption	The subscription you've registered with your Expres-sRoute provider.
Resource group	The Azure resource group in which to create the circuit.
Location	The Azure location in which to create the circuit.

Configure Private Peering

Peer ASN	The autonomous system number for your side of the peering. This ASN can be public or private, and 16 bits or 32 bits.
Primary subnet	This is the address range of the primary /30 subnet that you created in your network. You'll use the first IP address in this subnet for your router. Microsoft uses the second for its router.
Secondary subnet	This is the address range of your secondary /30 subnet. This subnet provides a secondary link to Microsoft. The first two addresses are used to hold the IP address of your router and the Microsoft router.
VLAN ID	This is the VLAN on which to establish the peering. The primary and secondary links will both use this VLAN ID.
Shared key	This is an optional MD5 hash that's used to encode messages passing over the circuit

Use private peering to connect your network to your virtual networks running in Azure.

Configure Microsoft Peering

Advertised public prefixes	This is a list of the address prefixes that you use over the BGP session. These prefixes must be registered to you, and must be prefixes for public address ranges.
Customer ASN	This is optional. It's the client-side autonomous system number to use if you are advertising prefixes that aren't registered to the peer ASN.
Routing registry name	This name identifies the registry in which the customer ASN and public prefixes are registered.

Use Microsoft peering to connect to Office 365 and its associated services.

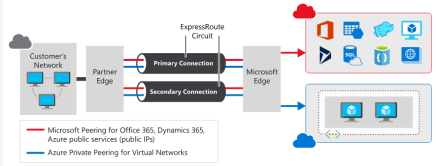
Connect a VNet to an ExpressRoute circuit

What we create before connect to a private circuit?	Must create an Azure virtual network gateway by using a subnet on one of your Azure virtual networks.
What a virtual network gateway provides	Provides the entry point to network traffic that enters from your on-premises network. It directs incoming traffic through the virtual network to your Azure resources.
What we use to control traffic that's routed from on-premises network?	Network security groups and firewall rules
How many virtual networks can be linked to an Expres-sRoute circuit	Up to 10 virtual networks, but these virtual networks must be in the same geopolitical region as the ExpressRoute circuit.
How many ExpressRoute circuit can a single virtual network can connect to?	You can link a single virtual network to four Expres-sRoute circuits if necessary.
What is Connection Weight property?	If there are multiple circuits across different providers to prefer one circuit to another.
What is ExpressRoute Direct option?	An ultra-high-speed option from Microsoft.
How is ExpressRoute Direct different with Expres-sRoute?	It provides dual 100-Gbps connectivity
What is FastPath	When FastPath is enabled, it sends network traffic directly to a virtual machine that's the intended destination. The traffic bypasses the virtual network gateway, improving the performance between Azure virtual networks and on-premises networks.

Connect a VNet to an ExpressRoute circuit (cont)

What FastPath doesn't support?	FastPath doesn't support virtual network peering (where you have virtual network peering. It also doesn't support user-defined routes on the gateway subnet.

Architecture of ExpressRoute



A circuit provides a physical connection for transmitting data through the ExpressRoute provider's edge routers to the Microsoft edge routers.

How Azure ExpressRoute works

Where Expres-sRoute is supported?	across all regions and locations
Why we need to work with an ExpressRoute partner to implement ExpressRoute?	The partner provides the edge service: an authorized and authenticated connection that operates through a partner-controlled router. The edge service is responsible for extending your network to the Microsoft cloud.
What are circuits?	The connections to an endpoint in an Expres-sRoute location that enable customer to peer on-premises networks with the virtual networks available through the endpoint.
What a circuit provides?	provides a physical connection for transmitting data through the ExpressRoute provider's edge routers to the Microsoft edge routers.
Do circuit establ-ishes via public internet?	No, A circuit is established across a private wire rather than the public internet.

How Azure ExpressRoute works (cont)

What are the prerequisites for ExpressRoute	- An **ExpressRoute connectivity partner** or **cloud exchange provider** that can set up a connection from your on-premises networks to the Microsoft cloud. - An **Azure subscription** that is registered with your chosen ExpressRoute connectivity partner. - An **active Microsoft Azure account** to request an ExpressRoute circuit. - An **active Office 365 subscription**

How Azure ExpressRoute works (cont)

ExpressRoute network and routing requirements	- Ensure that BGP sessions for routing domains have been configured. For each ExpressRoute circuit, Microsoft requires redundant BGP sessions between Microsoft's routers and customer peering routers. - Using NAT to IP Public is mandatory to connect through Microsoft peering. Microsoft will reject anything except public IP addresses through Microsoft peering. - Reserve several blocks of IP addresses in your network for routing traffic to the Microsoft cloud. 1 /29 or 2 /30. - One of these subnets is used to configure the primary circuit to the Microsoft cloud, and the other implements a secondary circuit. - Use the first address in these subnets to communicate with services in the Microsoft cloud. Microsoft uses the second address to establish a BGP session.
ExpressRoute supports two peering schemes:	- **private peering** to connect to Azure IaaS and PaaS services deployed inside Azure virtual networks. - **Microsoft peering** to connect to Azure PaaS services, Office 365 services, and Dynamics 365.

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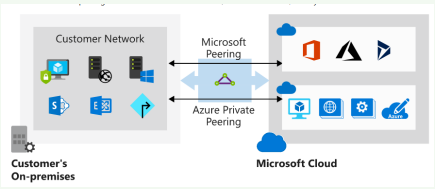
How Azure ExpressRoute works (cont)

What is the constraint of ExpressRoute private peering?	The resources that customer access must all be located in one or more Azure virtual networks with private IP addresses. Customer can't access resources through their public IP address over a private peering.
ExpressRoute availability	Microsoft guarantees a minimum of 99.95 percent availability for an ExpressRoute dedicated circuit.

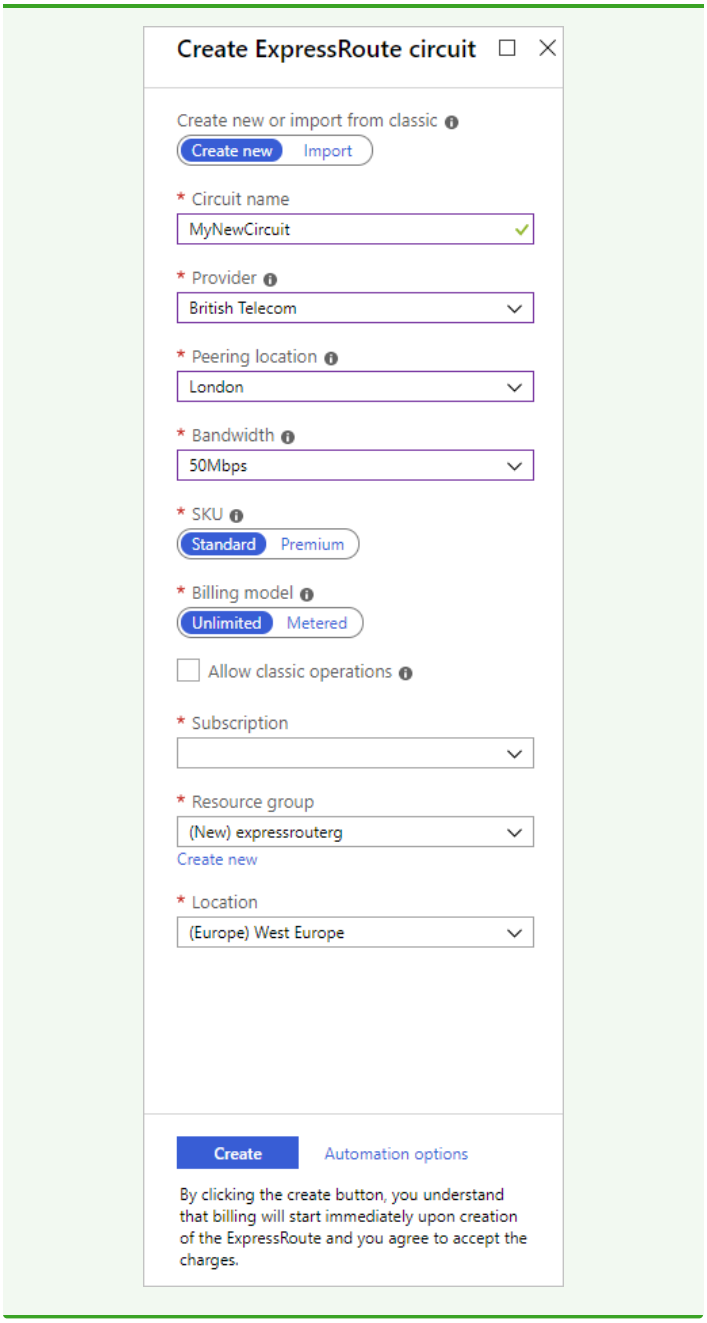
ExpressRoute Peering



- **private peering** to connect to Azure IaaS and PaaS services deployed inside Azure virtual networks.

- **Microsoft peering** to connect to Azure PaaS services, Office 365 services, and Dynamics 365.

Create a New Circuit Connection



By **Ilham** (ilperdan0)
cheatography.com/ilperdan0/
www.packetnotes.com

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