



Microsoft respectfully acknowledges the traditional country of the Whadjuk people of the Noongar nation and pays respect to the Elders past and present.

We recognise and respect their cultural heritage, beliefs and relationship with the land.

We acknowledge the contribution they make to the life of this city and this region.











South West Aboriginal
Land & Sea Council



ExpressRoute, the Perth Edge & Advanced Networking within Azure

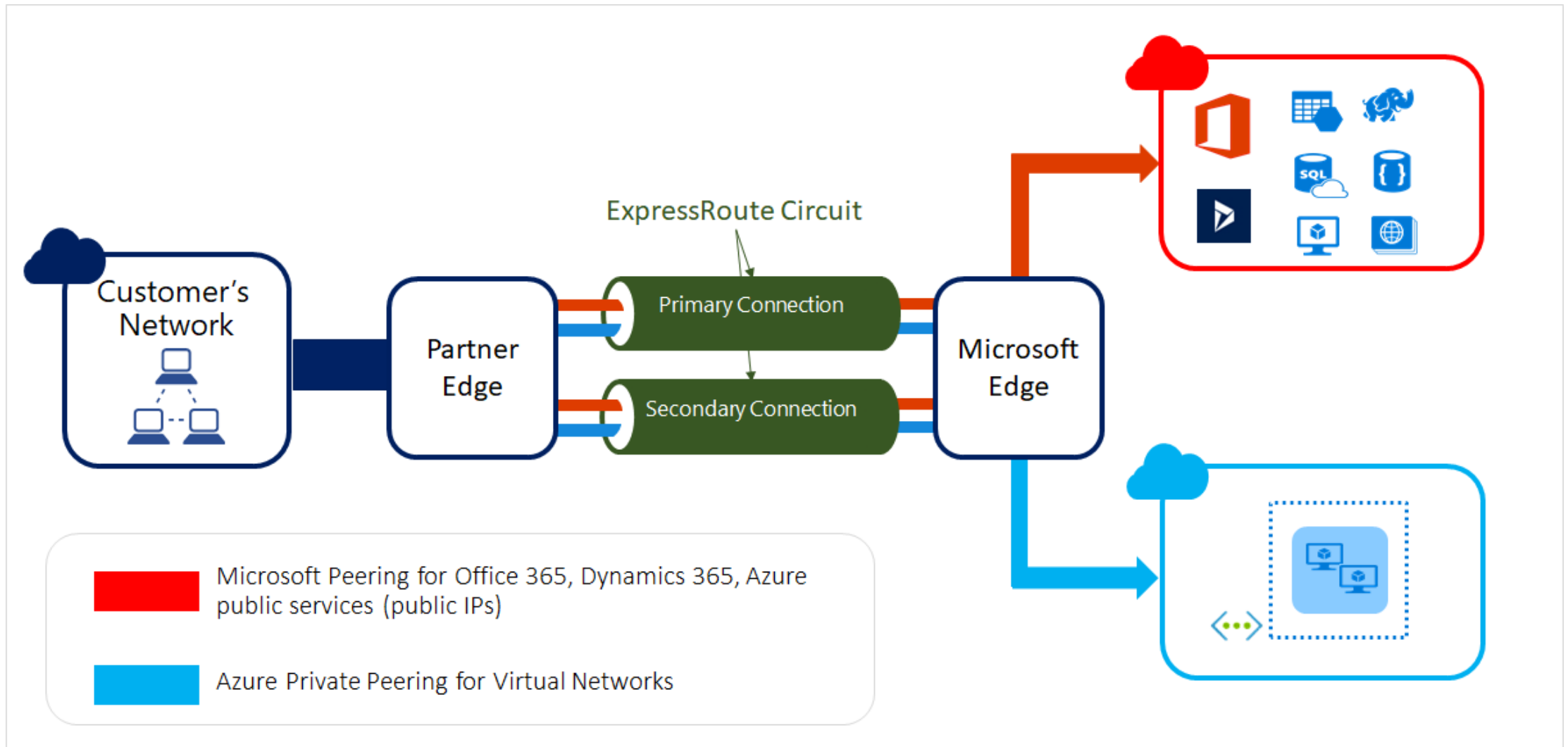
Stephen Tulp: *Cloud & Infrastructure Practice Lead @ Insight*

Network connectivity options Azure

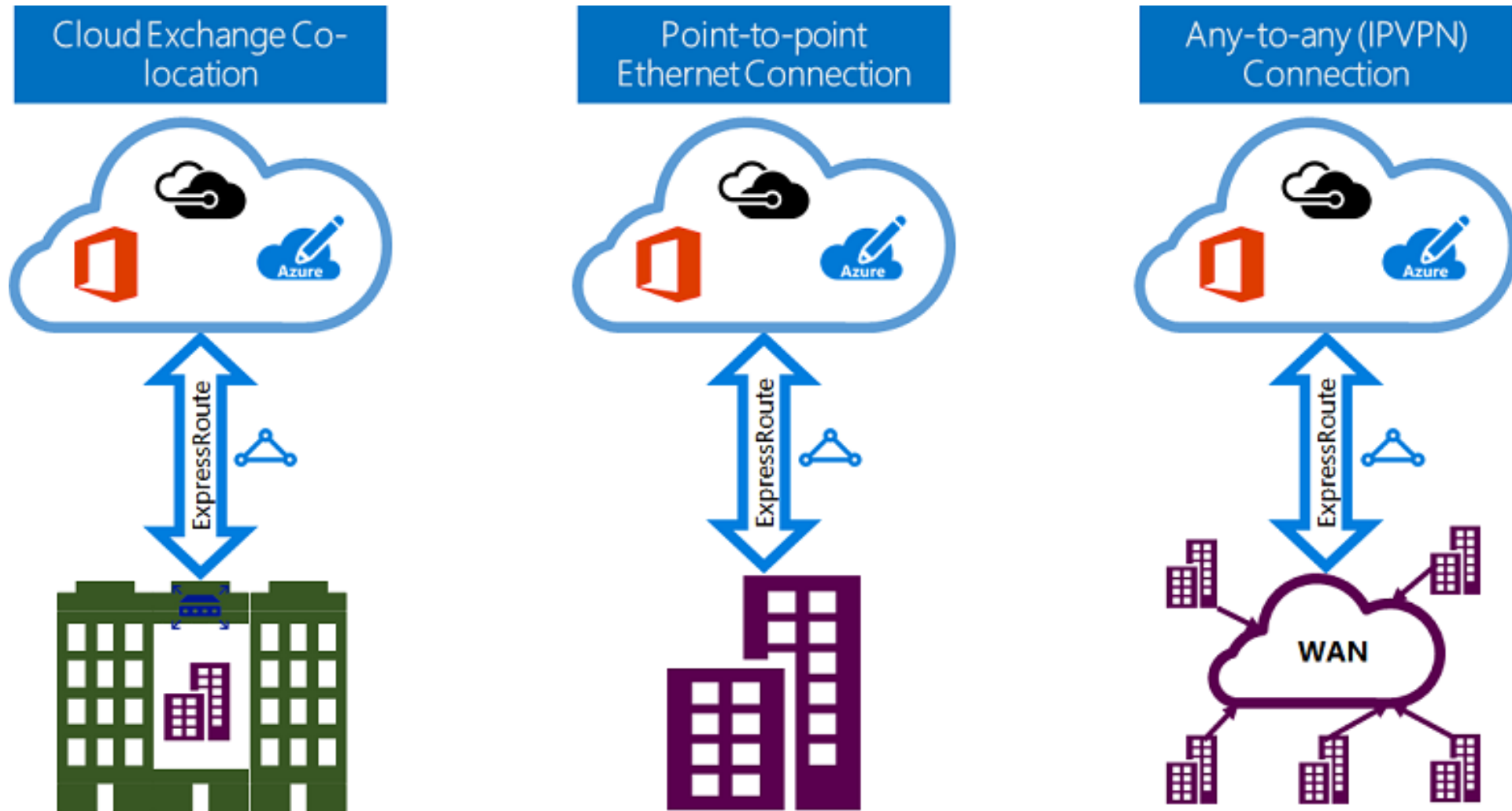
Azure			Workload Usage
	Internet Connectivity		<ul style="list-style-type: none">• Consumers• Access over public IP• DNS resolution• Connect from anywhere
	Secure point-to-site connectivity		<ul style="list-style-type: none">• Developers• POC Efforts• Small scale deployments• Connect from anywhere
	Secure site-to-site VPN connectivity		<ul style="list-style-type: none">• SMB, Enterprises• Connect to Azure compute
	ExpressRoute private connectivity		<ul style="list-style-type: none">• SMB & Enterprises• Mission critical workloads• Backup/DR, media, HPC• Connect to all Azure services



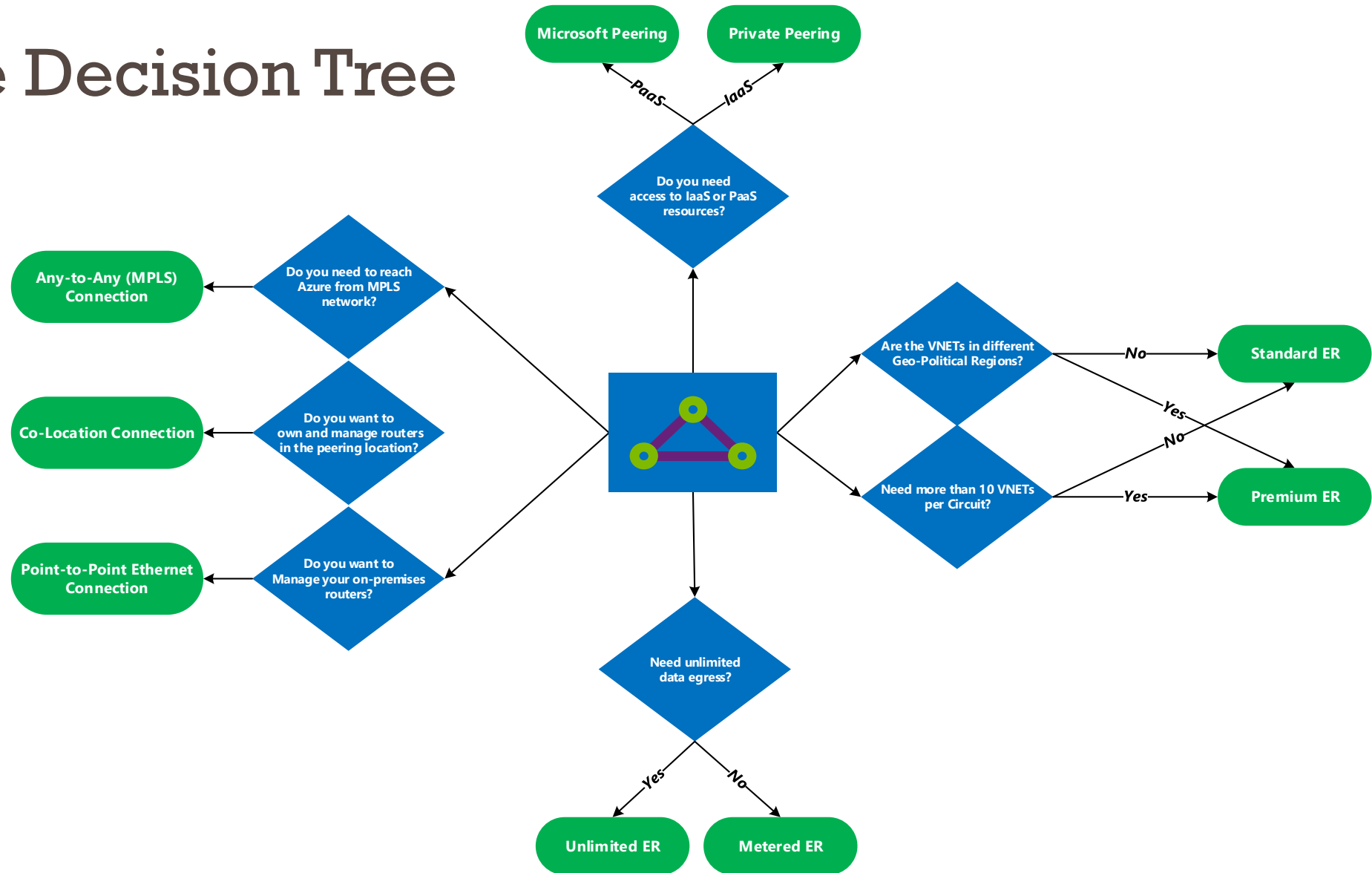
ExpressRoute Overview



ExpressRoute Connectivity Options



ExpressRoute Decision Tree



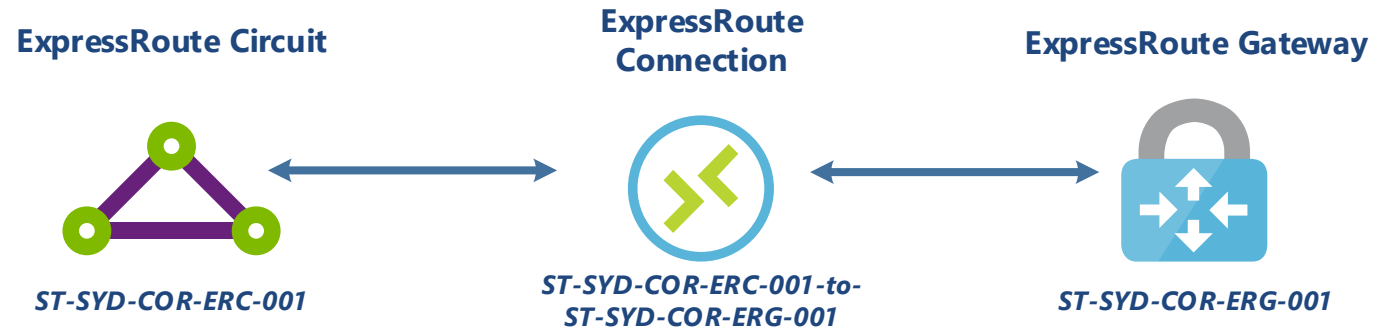
Demystifying the complexity of ExpressRoute

- Many parties involved!
 - *Customer* – The on-premises network configuration
 - *ExpressRoute Provider* – Providing the ExpressRoute circuit
 - *Microsoft Partner* – Creation of the networking objects in Azure
 - *Microsoft* – Escalation if required
 - *Last Mile Provider* – Provides physical cross-connect
- Cost
 - *Microsoft* – Standard/Premium, Metered/Unmetered, ExpressRoute Gateway
 - *ExpressRoute Provider* – Port (1Gbps/10Gbps) and Virtual Cross Connect
 - *Last Mile Provider* – Physical Cross Connect

ExpressRoute Terminology

- ExpressRoute Circuit
 - The ExpressRoute object in the Azure (Provider, Location, Bandwidth, SKU, Billing)
- ExpressRoute Peering location
 - The location in which you enter the Microsoft network
- ExpressRoute Connection
 - Bridges the ExpressRoute Circuit and the ExpressRoute Gateway
- ExpressRoute Gateway
 - Terminates the ExpressRoute connection
- S-Tag
 - The ExpressRoute Service Key that is assigned when a circuit is created (Microsoft)
- C-Tag
 - The VLAN ID that is assigned (Customer)

ExpressRoute Azure Objects

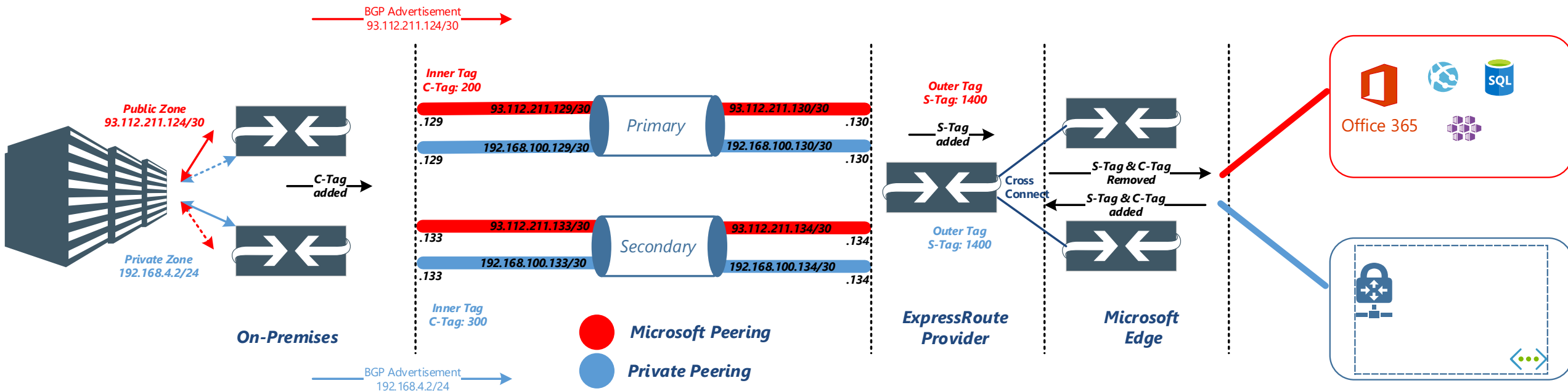


- *Can have multiple ExpressRoute Circuits per region*
- *A single ExpressRoute circuit can support a geo-political region (Sydney and Melbourne)*
- *A single ExpressRoute circuit can have multiple ExpressRoute Connections*
- *You can only have a single ExpressRoute Gateway per virtual network*

Debunking ExpressRoute

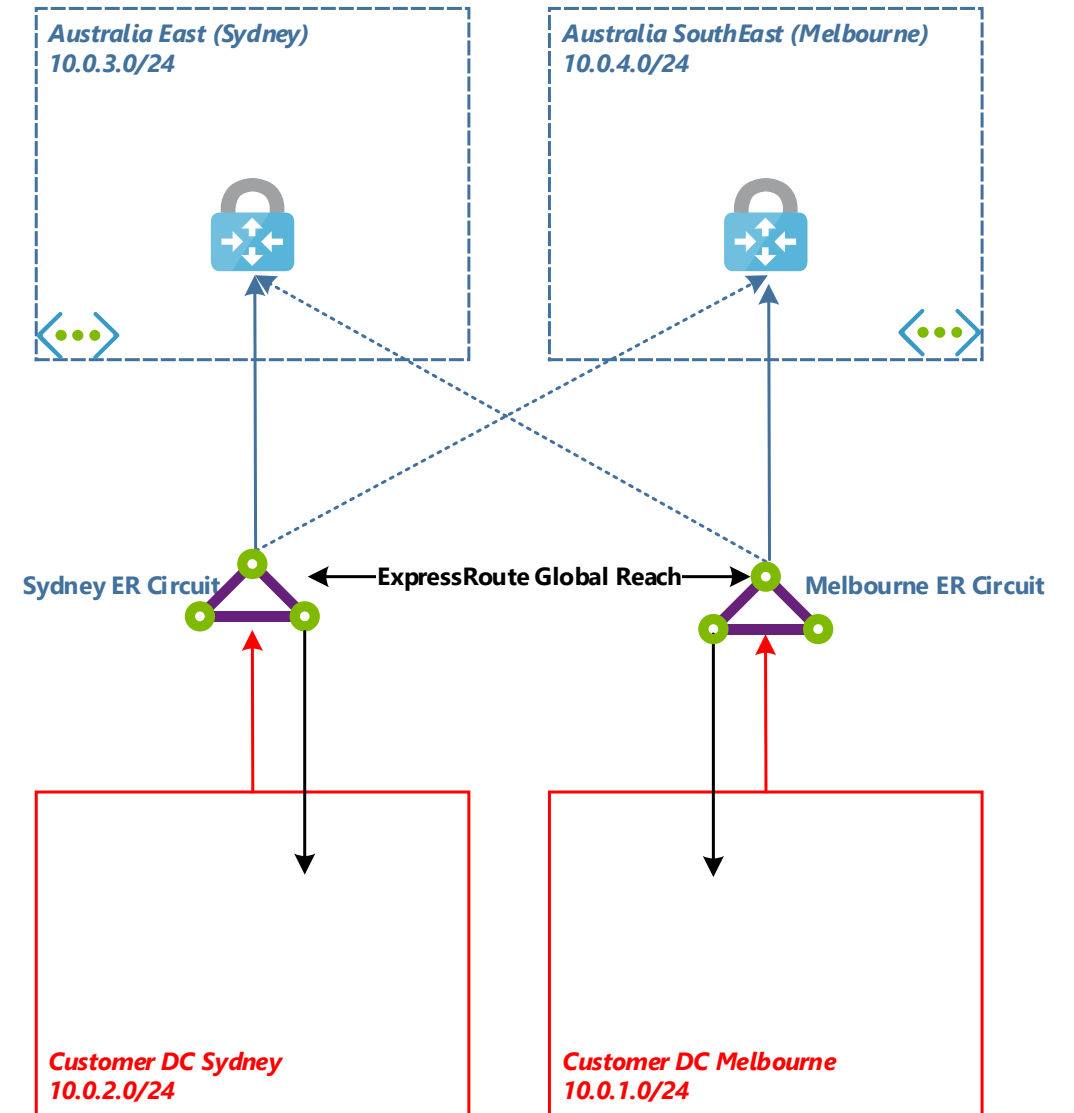
- ExpressRoute improves latency to Azure!
 - It provides a more stable connection
- I need ExpressRoute for Office 365!
 - No you don't, Office 365 is architected to work over the internet
- I want to connect to Sydney and Melbourne, so I need 2 x ExpressRoute circuits.
 - A single circuit supports all geo-political Azure regions
- My data over ExpressRoute is encrypted
 - ExpressRoute is a private connection, but it isn't encrypted by default.
- I need Unlimited bandwidth
 - You probably don't, unless the connection will be above 68% monthly average

Anatomy of an ExpressRoute Circuit

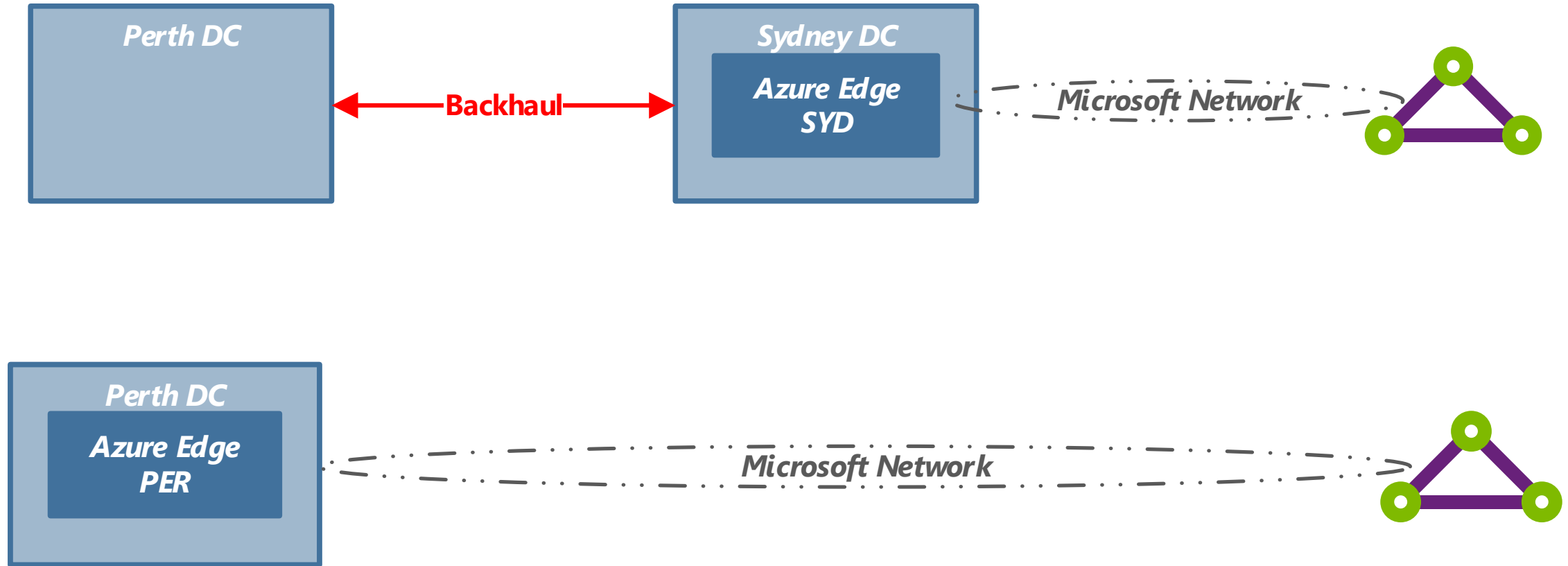


ExpressRoute Global Reach

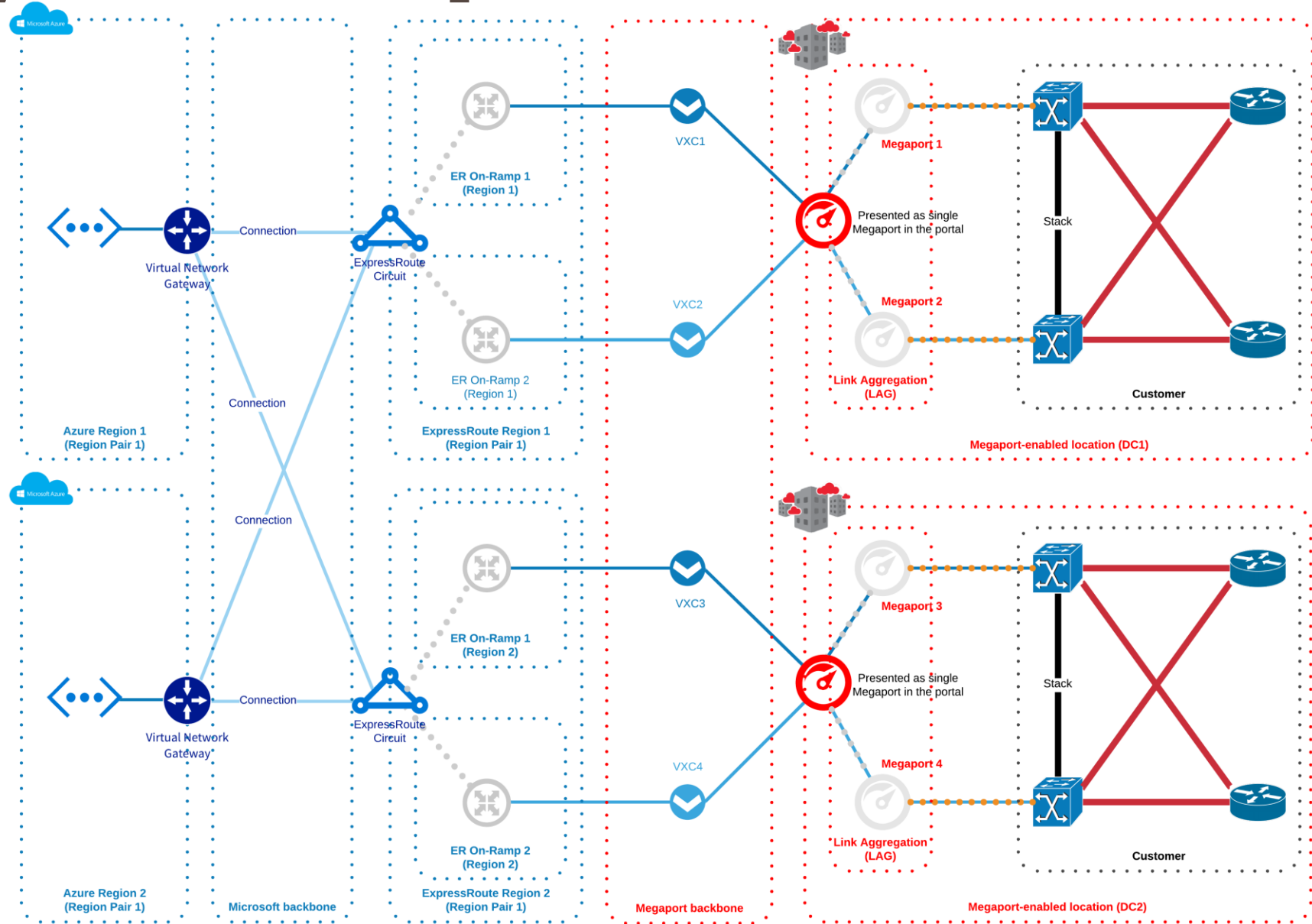
- Connectivity between sites using existing ExpressRoute circuits.
- Complements existing WAN solutions.
- Traffic stays on the Microsoft global network.



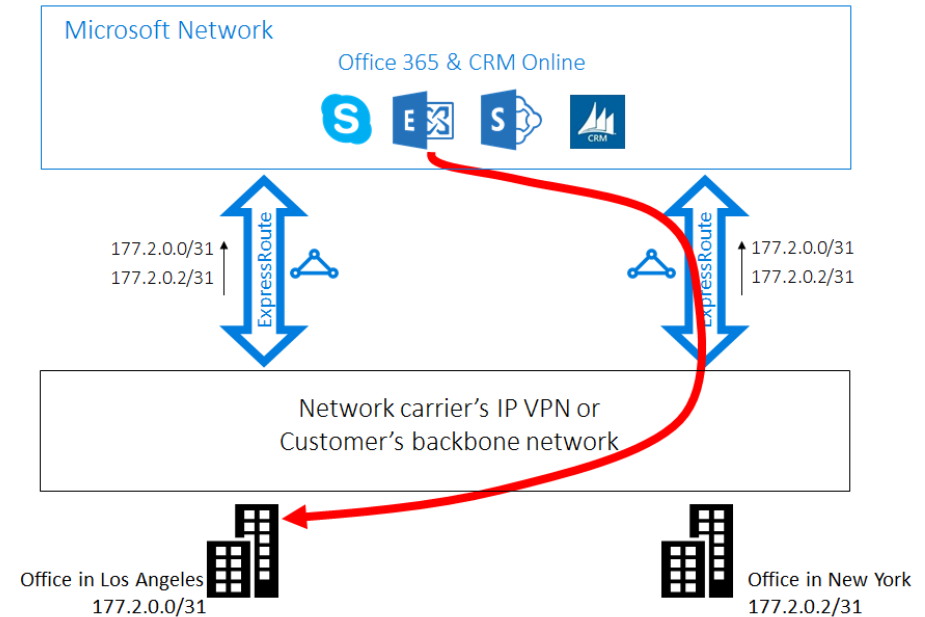
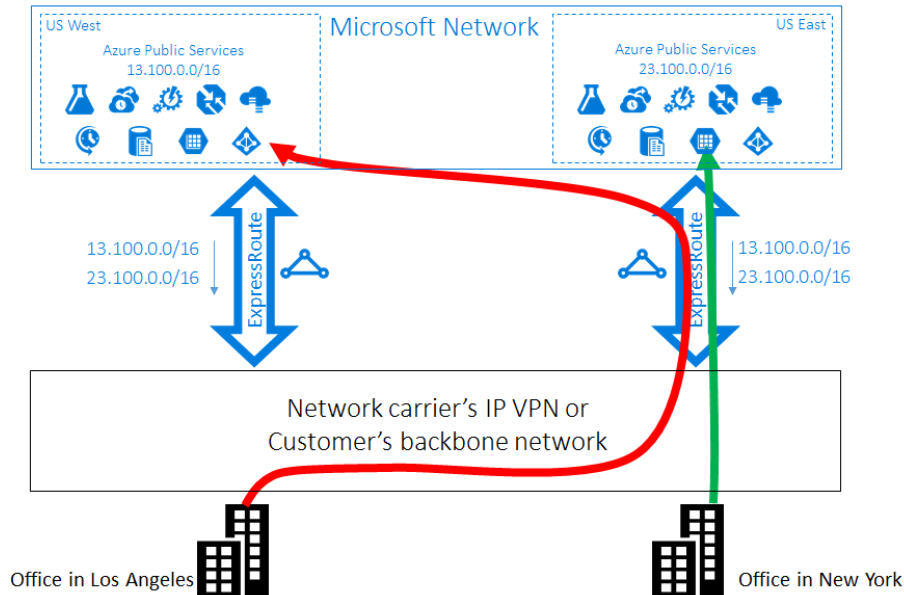
What's so special about the Perth Edge?



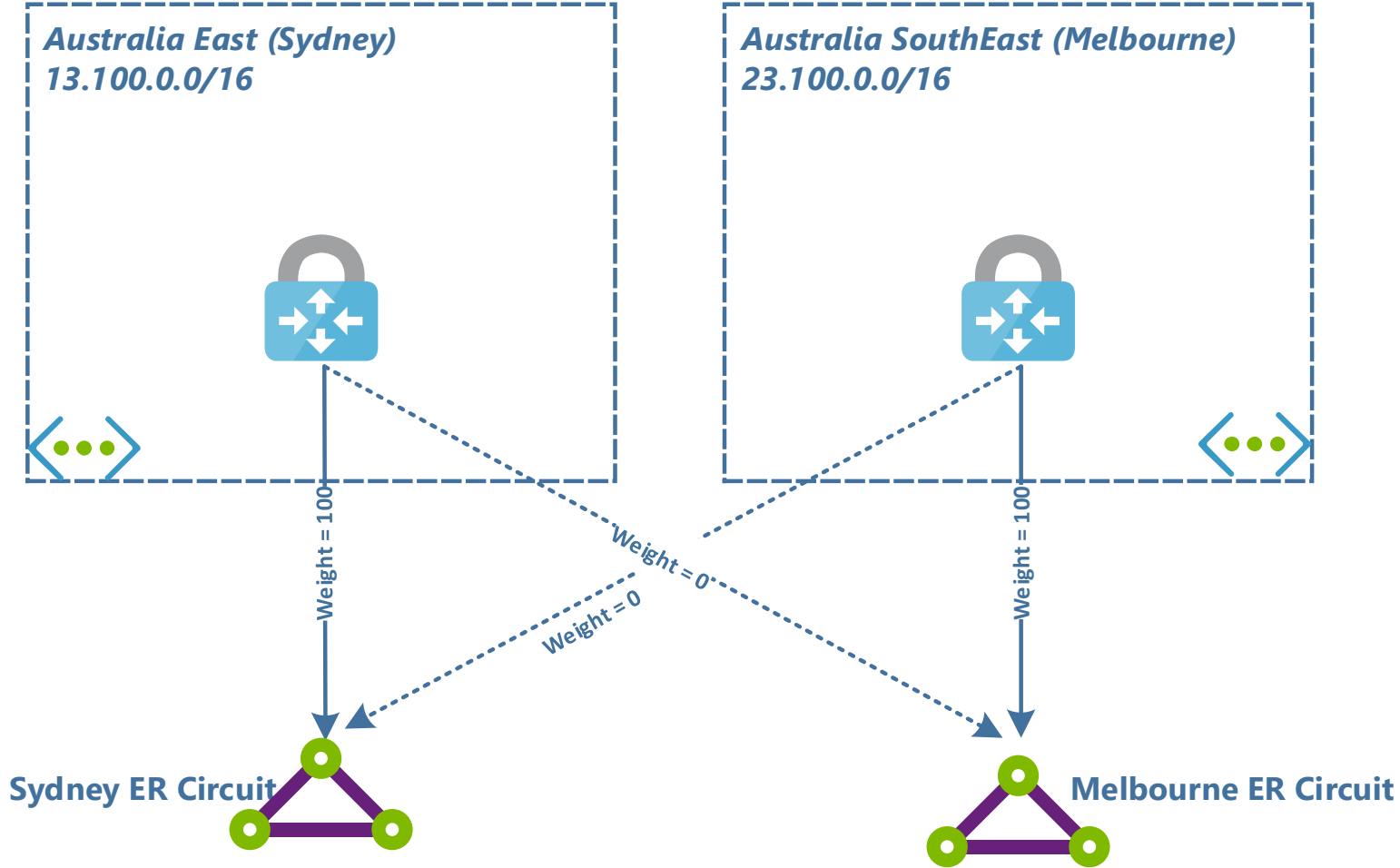
Highly Available ExpressRoute Architecture



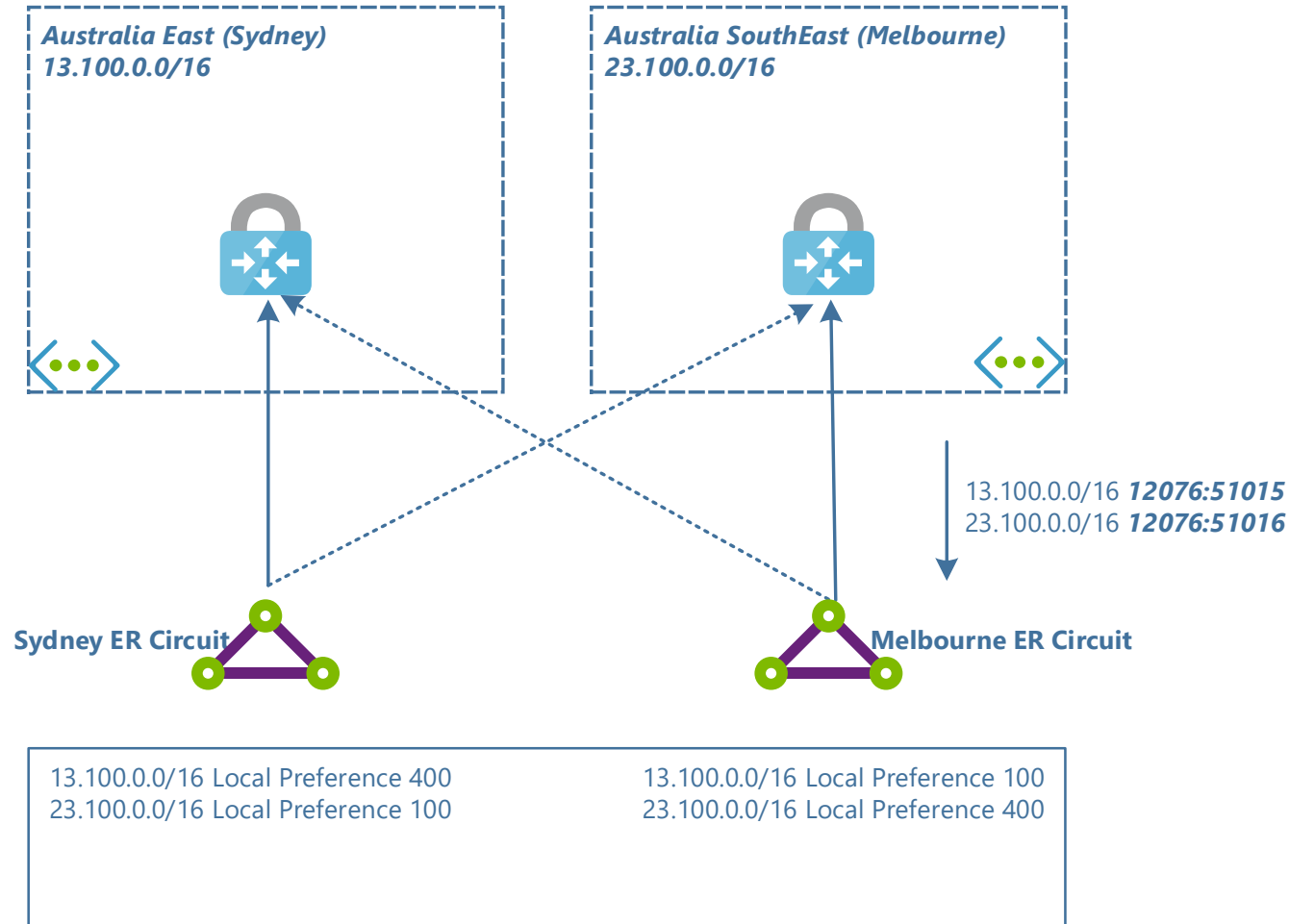
Suboptimal Routing with ExpressRoute



Optimal Routing from Azure to On-premises: ER Weighting



Optimal Routing from On-premises to Azure: *BGP Communities*



- 12076:51015
Azure Australia East
- 12076:51016
Azure Australia SouthEast

Demo

- Publish and deploy ExpressRoute Demo using an Azure Blueprint
- Create Route Filter and allocate BGP communities.
- Pricing the Perth Edge with Megaport