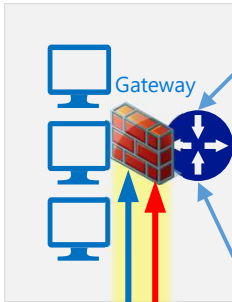
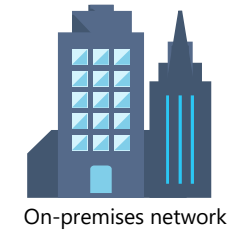


# This diagram portrays 3 ExpressRoute connectivity models.

1. Setup BGP peering handshake using a provider to provide the (Layer 1 & Layer 2) connection

2. Setup BGP advertisements (Layer 3)

- Microsoft peering
- Private peering



## Customer Edge routers

**VRF** (Virtual Routing & Forwarding), works on Layer 2.5 via the **MSEE**. VRF provides isolation within routing which the Exchange Provider is not aware of as they work on Layer 2. **Microsoft peering**, doesn't use a vNet GW, all IP addresses are public & unique, there's no isolation so there's no need for VRF. With **Private peering**, there's a chance that RFC1918 private IP address ranges can overlap, hence the need for VRF on Private peering.

## Provider

If you don't support **QinQ** and only **Dot1Q**, you can leverage providers like **Megaport** or **Equinix** to provide the **QinQ** encapsulation

## Co-Location CloudExchange

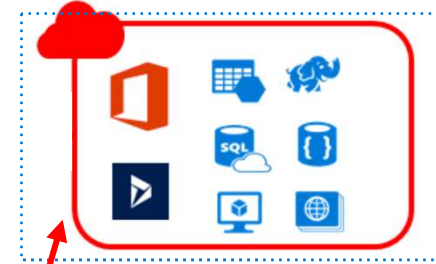
(Optional) A **Co-Location CloudExchange** (e.g. Equinix's Cloud Exchange) is optional in an 'indirect' connection, They can provide **Dot1Q** to **QinQ**.

## Microsoft Edge routers

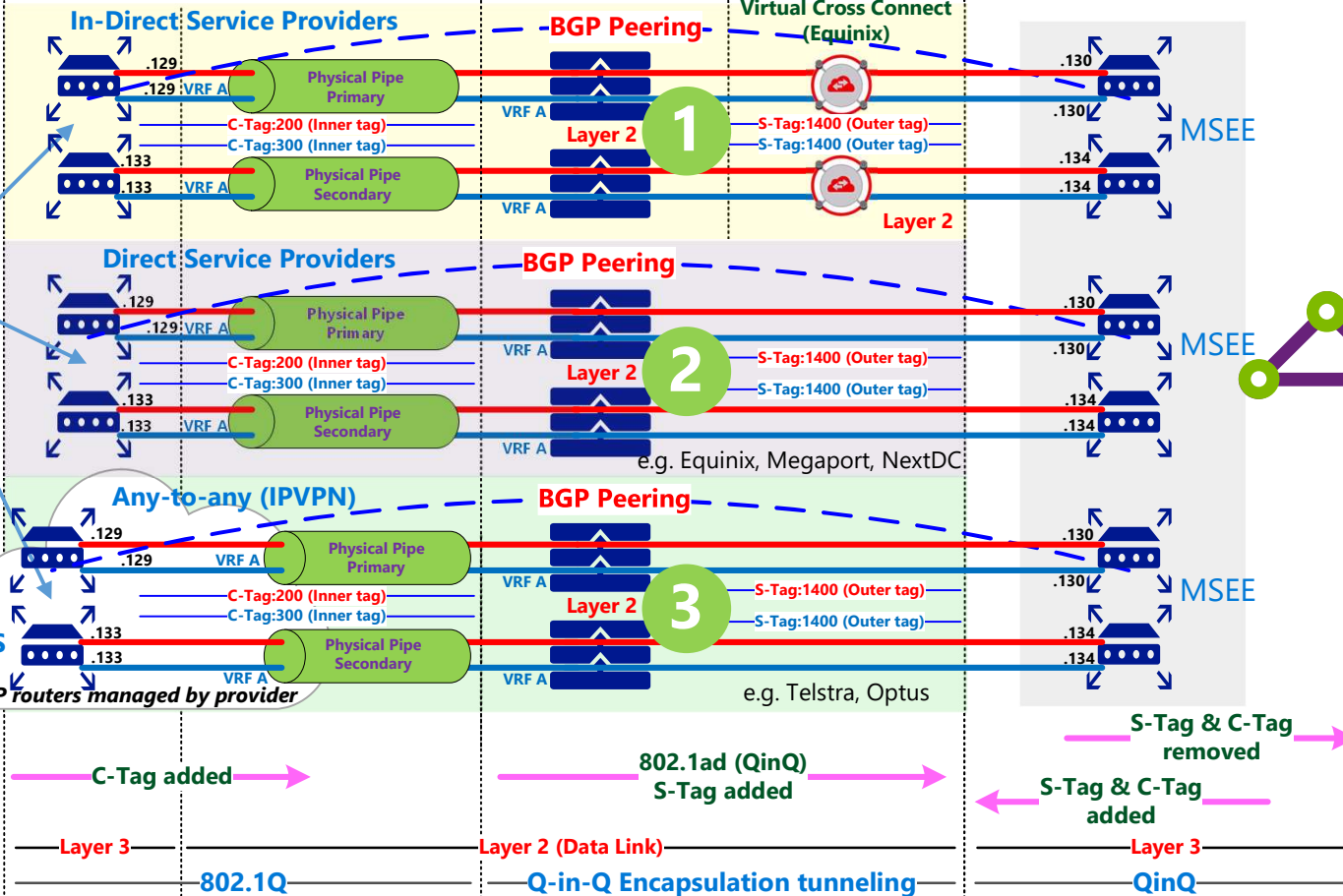
With **ExpressRoute Direct** you can use either **Dot1Q** to **QinQ**. A port pair on the MSEE routers using **Dot1Q** require unique C-Tags on the port pair across all circuits & peerings. Using **QinQ** encapsulation, this doesn't require unique C-Tags across the port pair – this is similar to how Exchange Providers provide connections to customers that don't use **ExpressRoute Direct**

DRAFT v2 | October 2018  
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Peerings	PRIMARY SUBNET	SECONDARY SUBNET
Microsoft	93.112.211.128/30	93.112.211.132/30
Azure private	192.168.100.128/30	192.168.100.132/30



Unlike with **Public Peering**, **Microsoft Peering** requires an additional public subnet to be available so it can be used for **NAT'ing** and **advertising**. This subnet cannot be the same as the subnet used for **peering**



ASN: 65121

93.112.211.136/30

10.1.1.0/24

**BGP Advertising**

Microsoft Public Prefixes

10.10.1.0/24

