

ExpressRoute Circuit & Workload Checklist of Guidance

Azure Black Belt Team – rev 1.40

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1 Validation of pre-requisites

1.1 Validate Partner Pieces

- ✓ Customer has contracts in place with supported ER partner? <https://azure.microsoft.com/en-us/documentation/articles/expressroute-locations/>
- ✓ Customer has a system integrator partner/MCS in place for delivery? (contracts, SOW, etc. in place?)

1.2 Validate Workloads

- ✓ Customer has identified all Cloud Workloads that will connect with ER and those are supported? (see below in section 2 for full list), noting that ExpressRoute for Office 365 only recommended in exceptional situations, otherwise not required nor recommended. (see <https://support.office.com/en-us/article/Azure-ExpressRoute-for-Office-365-6d2534a2-c19c-4a99-be5e-33a0cee5d3bd> for details)

1.3 Validate Network Requirements

- ✓ Customer has fulfilled all ER circuit pre-requisites? <https://azure.microsoft.com/en-us/documentation/articles/expressroute-prerequisites/>
- ✓ Customer has approved all routing requirements? <https://azure.microsoft.com/en-us/documentation/articles/expressroute-routing/>
 - ✓ Make sure you know which routes you'll be sending over to Azure. If using forced tunneling, make sure that you're understanding the consequences (all traffic to be routed through on premise stuff)
- ✓ Customer has fulfilled all NAT requirements? <https://azure.microsoft.com/en-us/documentation/articles/expressroute-nat/>
- ✓ Customer decided on best hybrid architecture with network security? <https://azure.microsoft.com/en-us/documentation/articles/best-practices-network-security/>
- ✓ Customer has internal sign-off from Network Groups and Security Groups?
- ✓ Are the network designs ready – where is terminating the ExpressRoute circuit(s) ? Behind a specific zone in a firewall? On the same MPLS network as the other MPLS endpoints/branch offices?
- ✓ Has the customer reviewed the FAQ - <https://azure.microsoft.com/en-us/documentation/articles/expressroute-faqs/>

1.4 Validation that ExpressRoute Circuit is properly configured

- ✓ ER Partner has received Service Key
- ✓ ER Provisioning Status says "Provisioned"
- ✓ IP addresses are allowed through firewalls
 - Validate customer firewalls are configured
 - Validate ER partner firewalls (if applicable)

1.5 Validate the specific workload BGP peers are working

1.5.1 Test Azure Private Peer (IaaS workloads) (if applicable)

- Ping router to router
- If not working, validate with the “Get-AzureRmExpressRouteCircuitARPTable” command on Azure side, and validate the ARP table on your equipment or check with your ExpressRoute partner if that test fails
- Verify BGP peering session status on your device as well as with the “Get-AzureRmExpressRouteCircuitRouteTable” command.
- Link a VNET to an ER circuit
- Validate VNET ranges (customer specific IP ranges) are advertised and received by the customer router
- Deploy a VM in the VNET and run connectivity tests from on-premises to the VM (and vice versa)

1.5.2 Test Azure Public Peer (PaaS workloads) (if applicable)

- Ping router to router
- If not working, validate with the “Get-AzureRmExpressRouteCircuitARPTable” command on Azure side, and validate the ARP table on your equipment or check with your ExpressRoute partner if that test fails
- Verify BGP peering session status on your device as well as with the “Get-AzureRmExpressRouteCircuitRouteTable” command.
- Validate the NAT is operating between the customer network and Microsoft
- Validate Azure region IP addresses per region - <http://www.microsoft.com/en-us/download/details.aspx?id=41653>

1.5.3 Test Microsoft Peer (if applicable)

- Ping router to router
- If not working, validate with the “Get-AzureRmExpressRouteCircuitARPTable” command on Azure side, and validate the ARP table on your equipment or check with your ExpressRoute partner if that test fails
- Verify BGP peering session status on your device as well as with the “Get-AzureRmExpressRouteCircuitRouteTable” command.
- Validate ASN is owned by the customer/ER partner
 - Open a support ticket to validate ASN configuration
- Validate the 500+ O365/CRM IP address advertisements are received by the customer router - <https://support.office.com/en-us/article/Office-365-URLs-and-IP-address-ranges-8548a211-3fe7-47cb-abb1-355ea5aa88a2?ui=en-US&rs=en-US&ad=US>
- Validate that the bi-directional NAT is operating between ExpressRoute and the internal network
- Validate that routes to the customer NAT are being advertised from the customer router
- Validate that the NAT public IP range (NAT pool) is not advertised to Microsoft through any other ExpressRoute or public Internet network circuit

- Set up a single host on the inside of the NAT and use ping, tracert, and tcpping to test connectivity across the new circuit to the host outlook.office365.com.
 - See more potential testing demonstrated here <https://support.office.com/en-us/article/Implementing-ExpressRoute-for-Office-365-77735c9d-8b80-4d2f-890e-a8598547dea6>
- This is a key milestone before connecting any Office 365 clients, if this fails and all of the above are validated, please raise a support incident with Microsoft

2 Workload specific Requirements

2.1 Supported Workloads

2.1.1 Azure IaaS

- ✓ Is the virtual network ASM or ARM?
 - For ARM - <https://azure.microsoft.com/en-us/documentation/articles/expressroute-howto-add-gateway-resource-manager/>
 - Moving from ASM to ARM - <https://azure.microsoft.com/en-us/documentation/articles/expressroute-move/>
- ✓ ER and S2S VPN coexistence - <https://azure.microsoft.com/en-us/documentation/articles/expressroute-howto-coexist-resource-manager/>
- ✓ Best Practices with Network Virtual Appliances (NVAs) - <https://azure.microsoft.com/en-us/documentation/articles/best-practices-network-security/>

2.1.2 Azure PaaS

- ✓ Is the PaaS service supported? <https://azure.microsoft.com/en-us/documentation/articles/expressroute-faq/#supported-services>
- ✓ Does the PaaS service live within a Virtual Network? If so see Azure IaaS guidance below

2.1.3 Office 365

- ✓ General guidance - <http://aka.ms/expressrouteoffice365>
- ✓ Running with ExpressRoute for O365 - <https://support.office.com/en-us/article/Routing-with-ExpressRoute-for-Office-365-e1da26c6-2d39-4379-af6f-4da213218408?ui=en-US&rs=en-US&ad=US>
- ✓ IPs and URLs for Firewall Rules - <https://support.office.com/en-us/article/Office-365-URLs-and-IP-address-ranges-8548a211-3fe7-47cb-abb1-355ea5aa88a2?ui=en-US&rs=en-US&ad=US>
- ✓ Bandwidth and Tuning – <http://aka.ms/Tune>
- ✓ O365 routing - <https://support.office.com/en-us/article/Office-365-network-traffic-management-e1da26c6-2d39-4379-af6f-4da213218408>
- ✓ Integration with On-premises environments - <https://support.office.com/en-us/article/Office-365-integration-with-on-premises-environments-263faf8d-aa21-428b-aed3-2021837a4b65?ui=en-US&rs=en-US&ad=US>

2.1.4 Skype for Business

- ✓ Skype for Business QoS guidance and requirements - <https://support.office.com/en-gb/article/ExpressRoute-and-QoS-in-Skype-for-Business-Online-20c654da-30ee-4e4f-a764-8b7d8844431d?ui=en-US&rs=en-GB&ad=GB>
- ✓ Bandwidth calculator - <https://www.microsoft.com/en-us/download/details.aspx?id=19011>

2.1.5 CRM Online

- ✓ URLs - <https://support.microsoft.com/en-us/kb/2655102>

2.1.6 PowerBI & Project Online

- ✓ <https://powerbi.microsoft.com/en-us/documentation/powerbi-admin-power-bi-expressroute/>

3 Internet-only Workloads

- ✓ CDN
- ✓ Visual Studio Team Services Load Testing
- ✓ Multi-factor Authentication
- ✓ O365 Portal
- ✓ O365 CDN
- ✓ O365 Cert revocation list
- ✓ O365 Deprecated FQDNs
- ✓ O365 Rights Management
- ✓ Yammer
- ✓ Sway
- ✓ On-premises Identity Provider Sign-In
- ✓ O365 ProPlus client downloads
- ✓ O365 in China

3.1 See supported services Links:

- ✓ <https://support.office.com/en-us/article/Office-365-URLs-and-IP-address-ranges-8548a211-3fe7-47cb-abb1-355ea5aa88a2?ui=en-US&rs=en-US&ad=US>
- ✓ <https://azure.microsoft.com/en-us/documentation/articles/expressroute-fags/#supported-services>