Virtual network peering

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Virtual network peering enables you to seamlessly connect two or more [Virtual Networks](https://learn.microsoft.com/en-us/azure/virtual-network/virtual-networks-overview) in Azure.

The virtual networks appear as one for connectivity purposes.

The traffic between virtual machines in peered virtual networks uses the Microsoft backbone infrastructure.

Like traffic between virtual machines in the same network, traffic is routed through Microsoft's *private* network only.

Azure supports the following types of peering:

* Virtual network peering: Connecting virtual networks within the same Azure region.
* Global virtual network peering: Connecting virtual networks across Azure regions.

The benefits of using virtual network peering, whether local or global, include:

* A low-latency, high-bandwidth connection between resources in different virtual networks.
* The ability for resources in one virtual network to communicate with resources in a different virtual network.
* The ability to transfer data between virtual networks across Azure subscriptions, Microsoft Entra tenants, deployment models, and Azure regions.
* The ability to peer virtual networks created through the Azure Resource Manager.
* No downtime to resources in either virtual network when creating the peering, or after the peering is created.

Network traffic between peered virtual networks is private. Traffic between the virtual networks is kept on the Microsoft backbone network. No public Internet, gateways, or encryption is required in the communication between the virtual networks.

Machine generated alternative text:
10.0.0.0/16 
10.1.0.0/24 
Virtual network 
peering 

Connectivity

For peered virtual networks, resources in either virtual network can directly connect with resources in the peered virtual network.

The network latency between virtual machines in peered virtual networks in the same region is the same as the latency within a single virtual network.

The network throughput is based on the bandwidth that's allowed for the virtual machine, proportionate to its size.

There isn't any extra restriction on bandwidth within the peering.

The traffic between virtual machines in peered virtual networks is routed directly through the Microsoft backbone infrastructure, not through a gateway or over the public Internet.

You can apply network security groups in either virtual network to block access to other virtual networks or subnets. When you configure virtual network peering, either open or close the network security group rules between the virtual networks. If you open full connectivity between peered virtual networks, you can apply network security groups to block or deny specific access. Full connectivity is the default option. To learn more about network security groups, see [Security groups](https://learn.microsoft.com/en-us/azure/virtual-network/network-security-groups-overview).

Resize the address space of Azure virtual networks that are peered

You can resize the address space of Azure virtual networks that are peered without incurring any downtime on the currently peered address space. This feature is useful when you need to resize the virtual network's address space after scaling your workloads. Once the address space is resized, peers must sync with the new address space changes. Resizing works for both IPv4 and IPv6 address spaces.

Addresses can be resized in the following ways:

* Modifying the address range prefix of an existing address range (For example changing 10.1.0.0/16 to 10.1.0.0/18)
* Adding address ranges to a virtual network
* Deleting address ranges from a virtual network
* Resizing of address space is supported cross-tenant

Syncing of virtual network peers can be performed through the Azure portal or with Azure PowerShell. We recommend that you run sync after every resize address space operation instead of performing multiple resizing operations and then running the sync operation. To learn how to update the address space for a peered virtual network