Networking in Azure

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Solutions Architect

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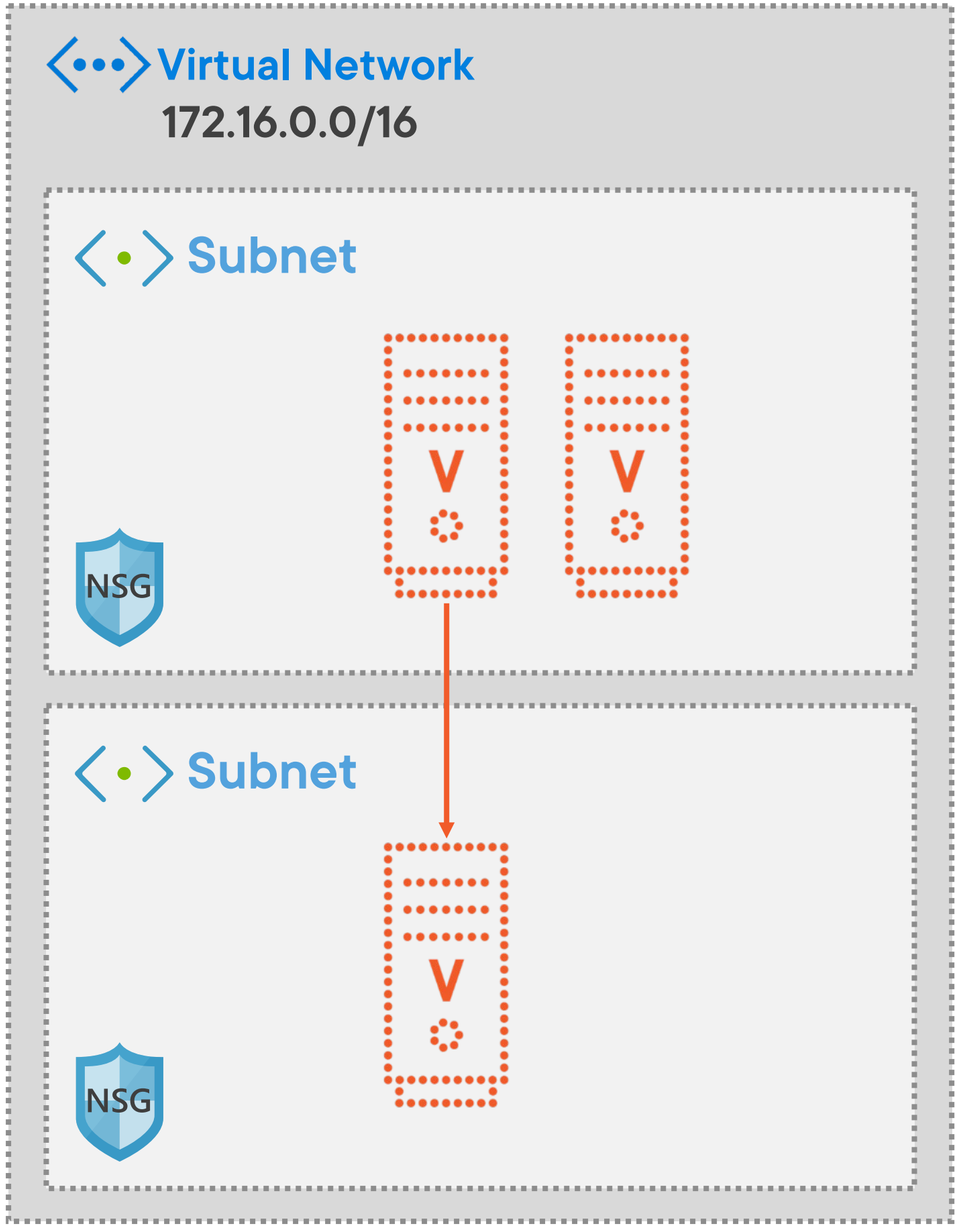
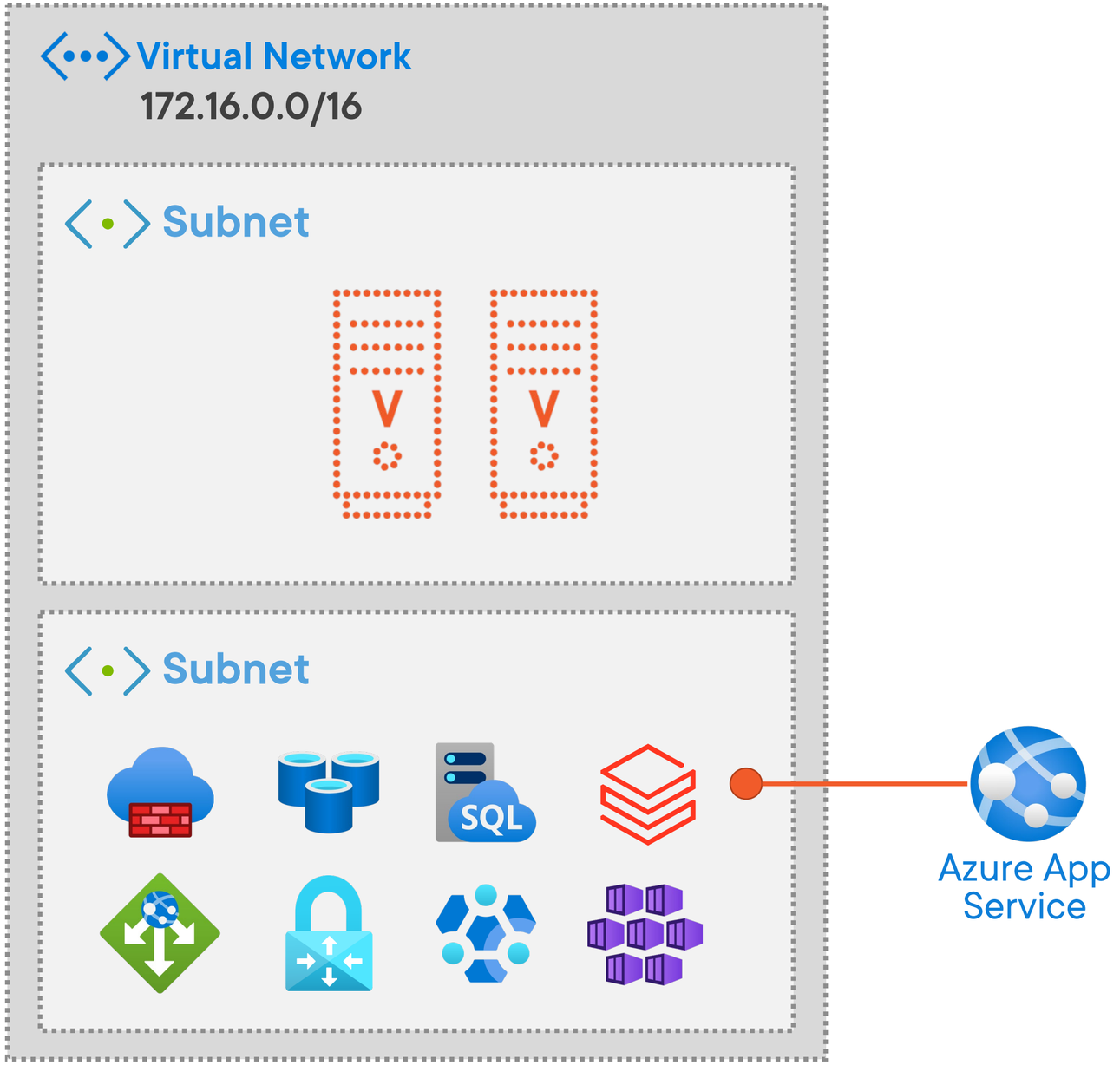
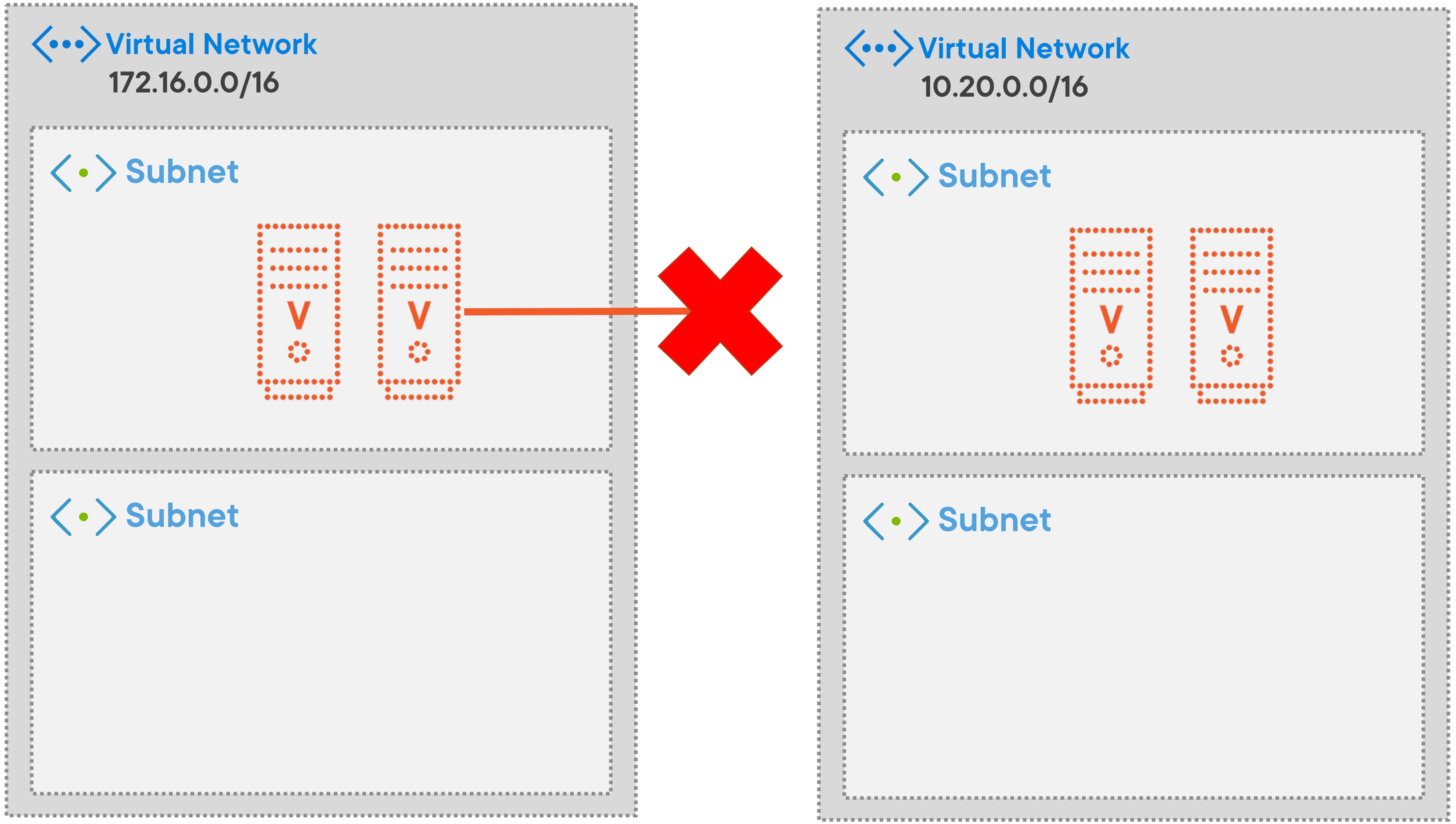
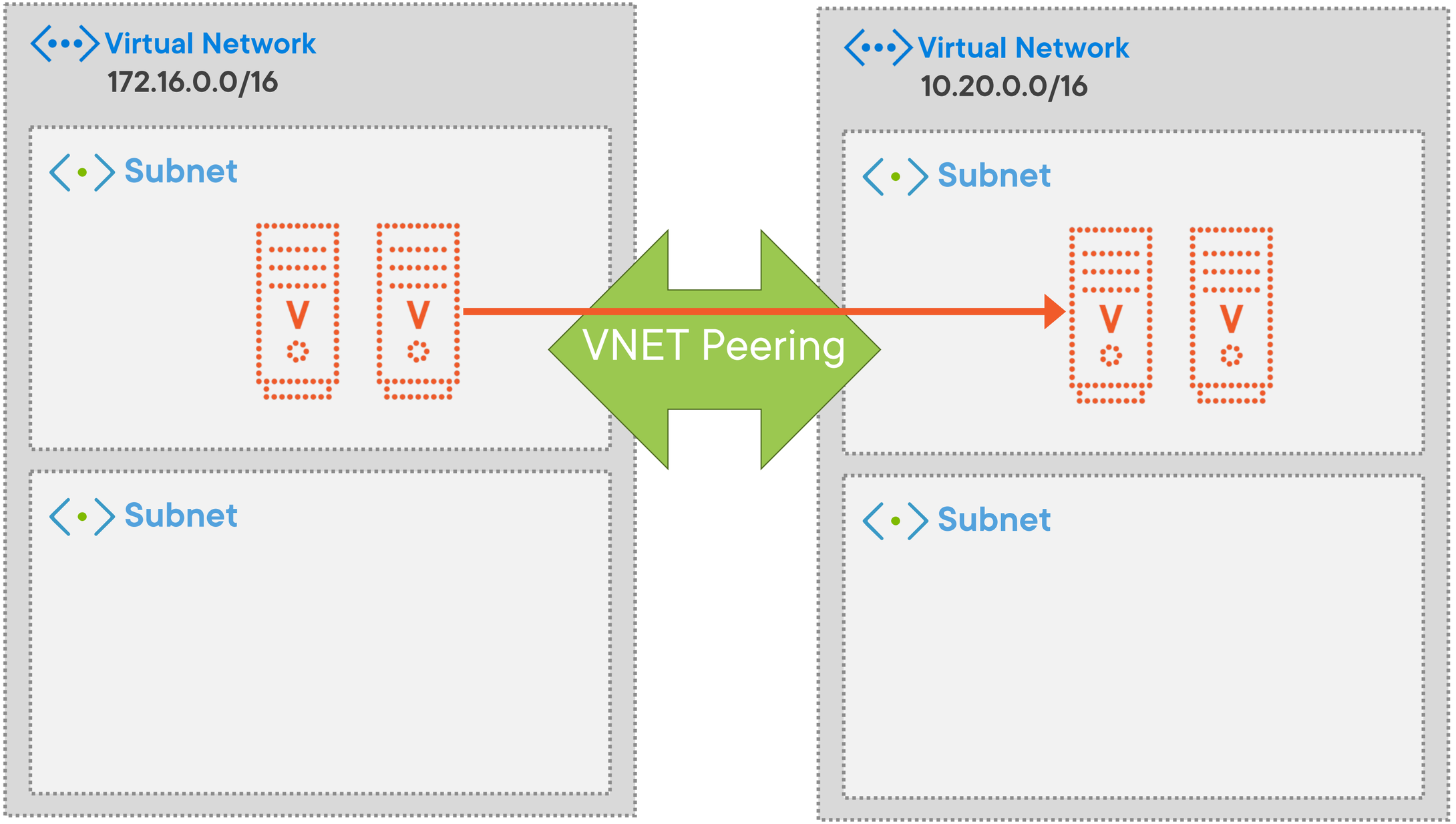
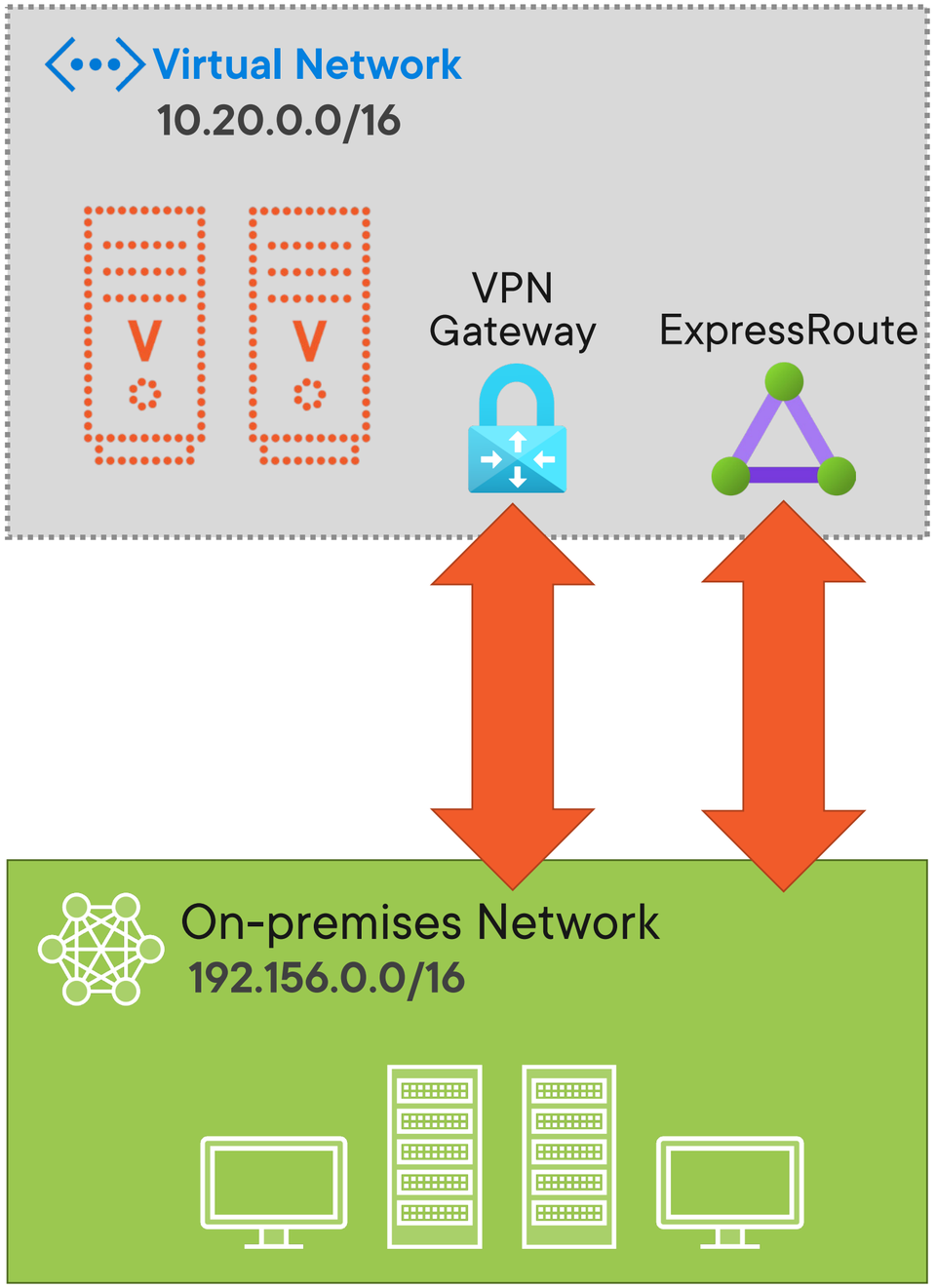
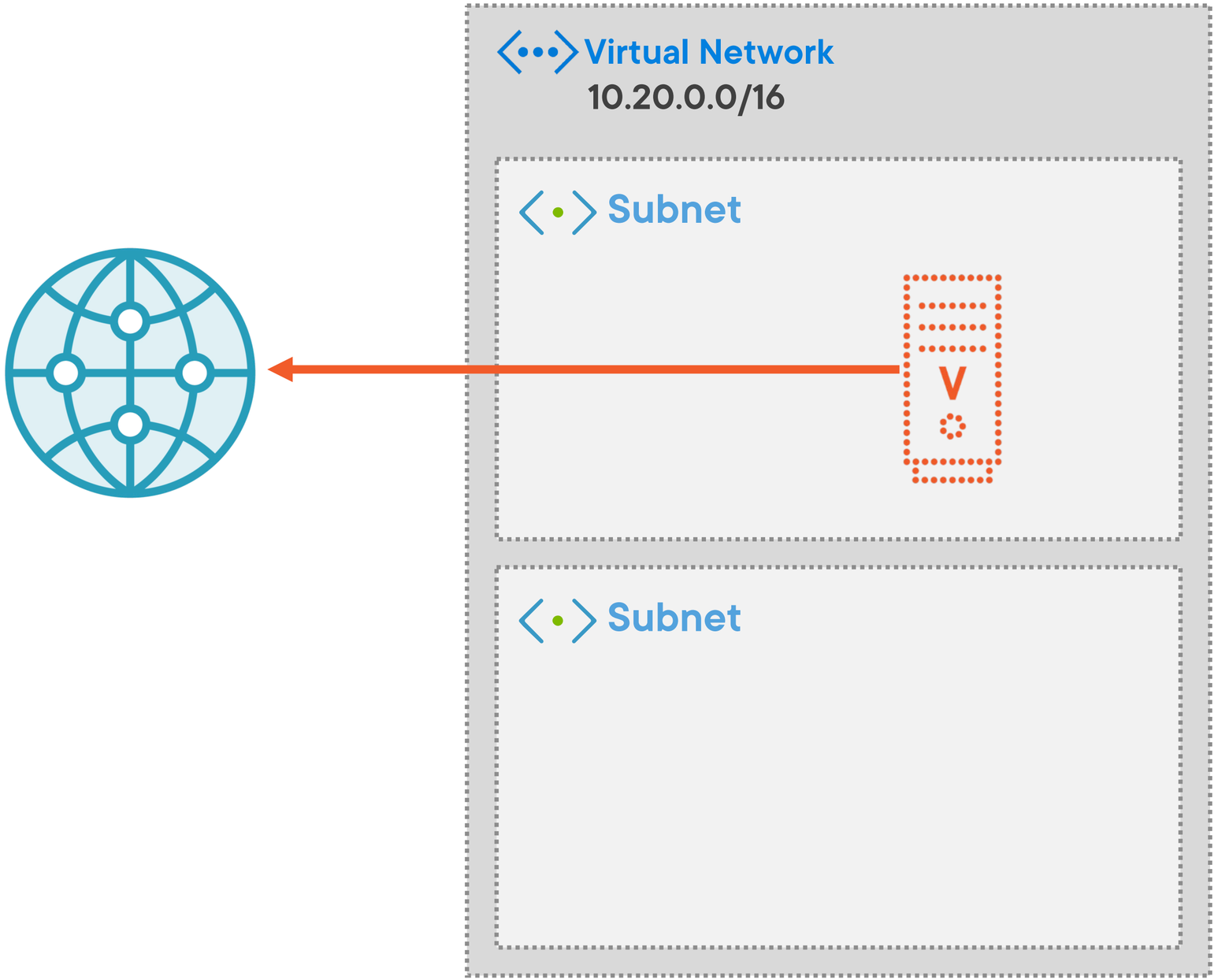

Virtual Network
172.16.0.0/16
Subnet
NSG
Subnet
NSG

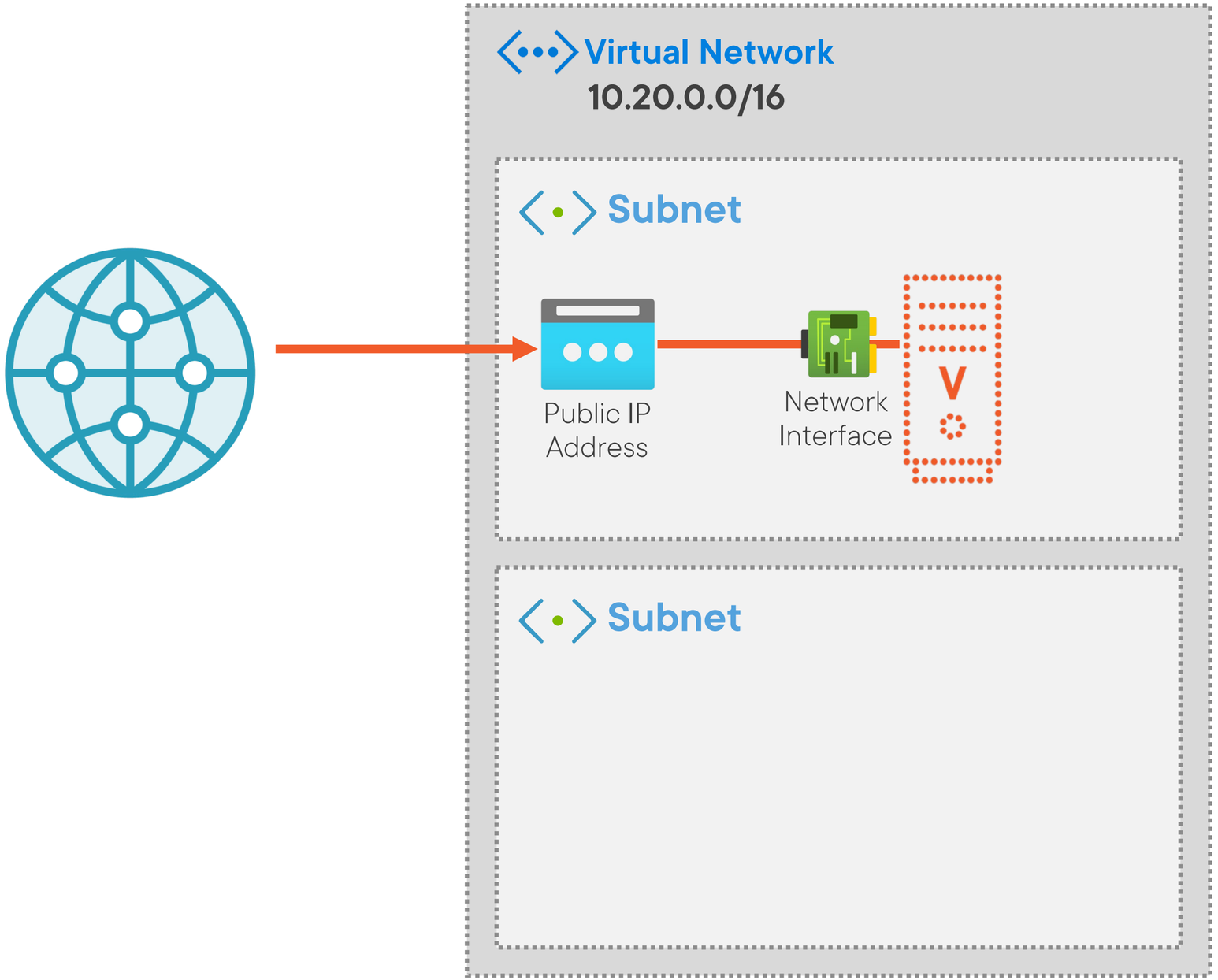

Virtual Network
172.16.0.0/16
Subnet
Subnet
SQL
Azure App Service

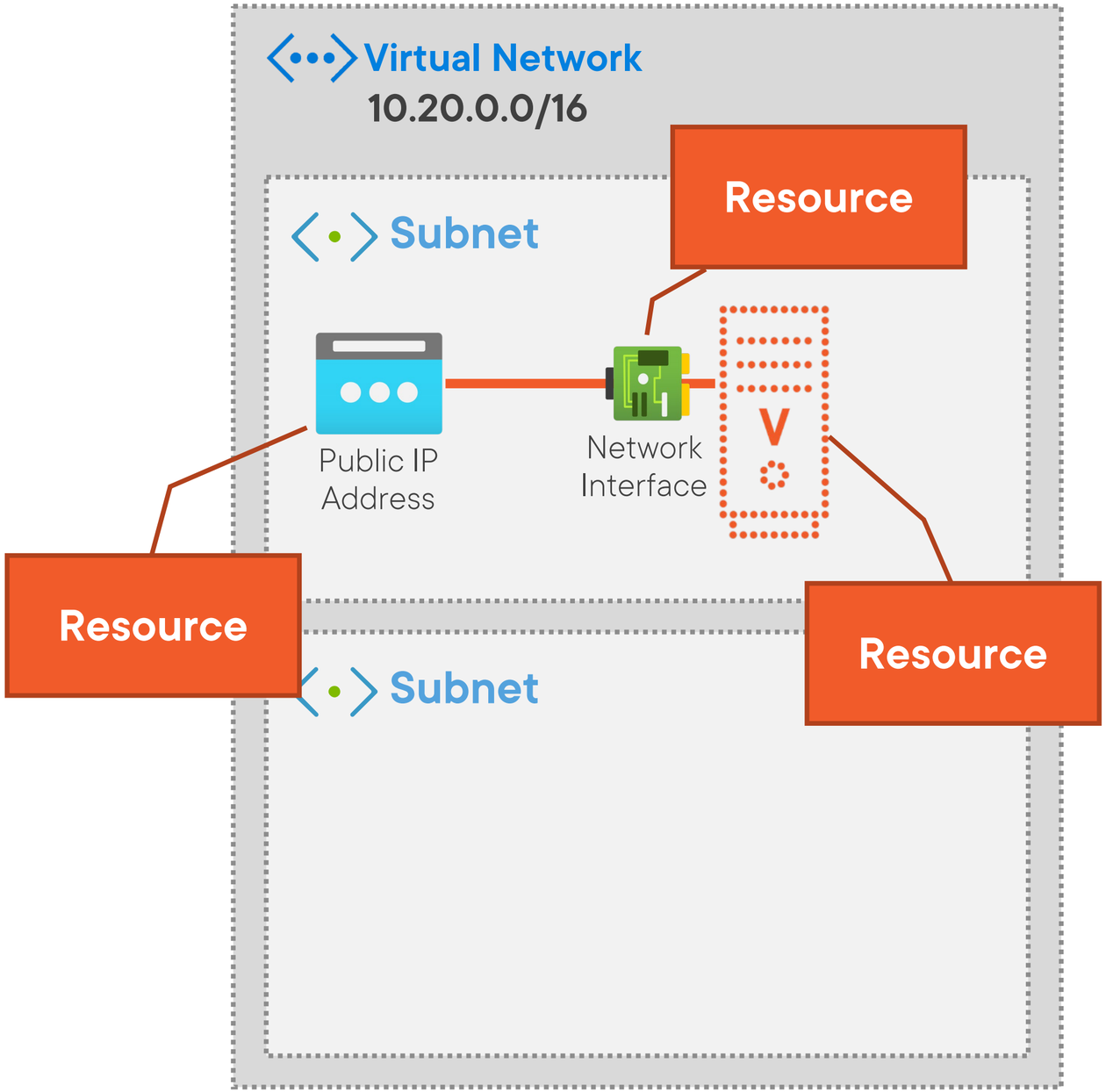

Virtual Network
172.16.0.0/16
Subnet
Subnet
Virtual Network
10.20.0.0/16
Subnet
Subnet

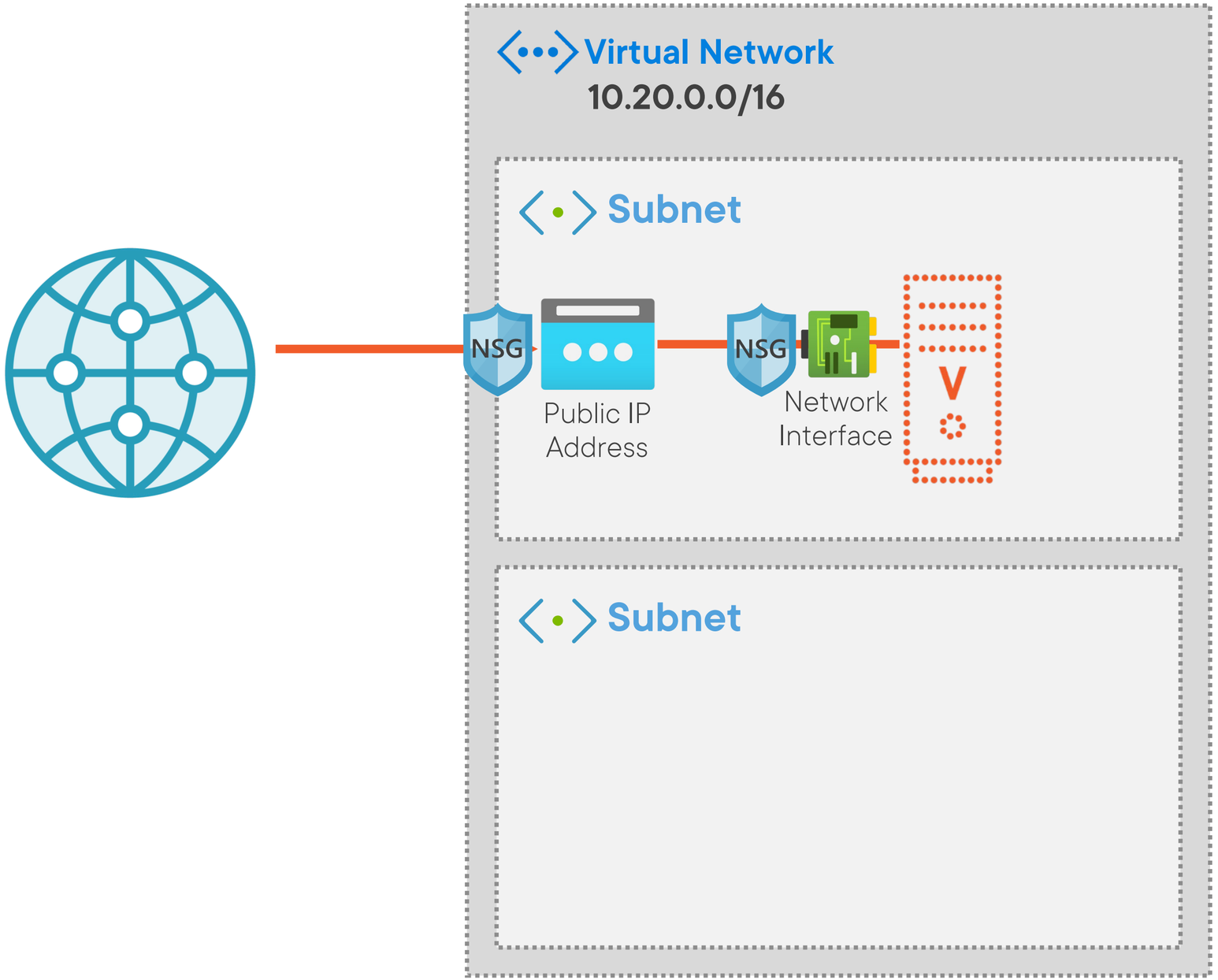

Virtual Network
172.16.0.0/16
Subnet
Subnet
VNET Peering
Virtual Network
10.20.0.0/16
Subnet
Subnet

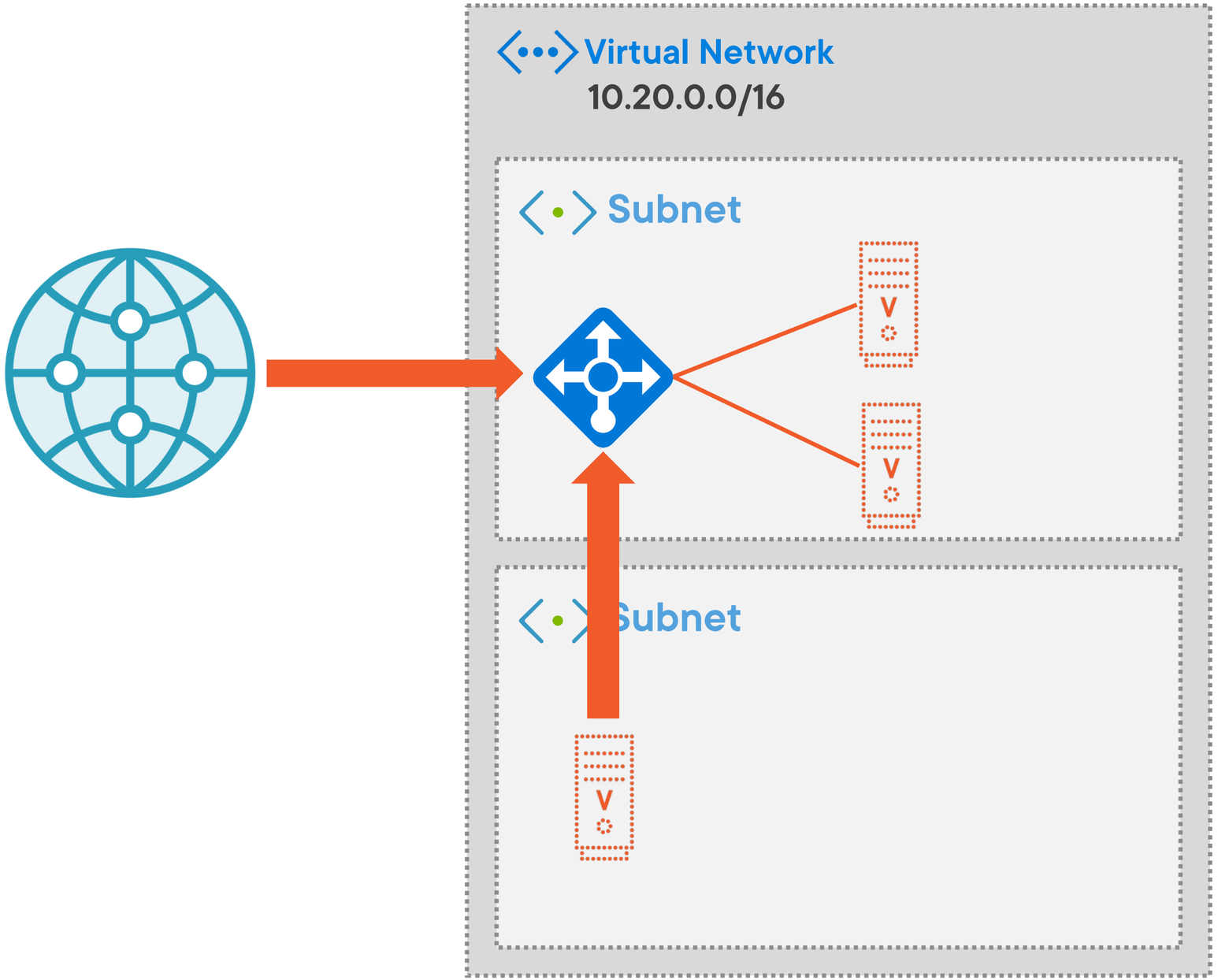

Virtual Network
10.20.0.0/16
VPN
Gateway
ExpressRoute
On-premises Network
192.156.0.0/16

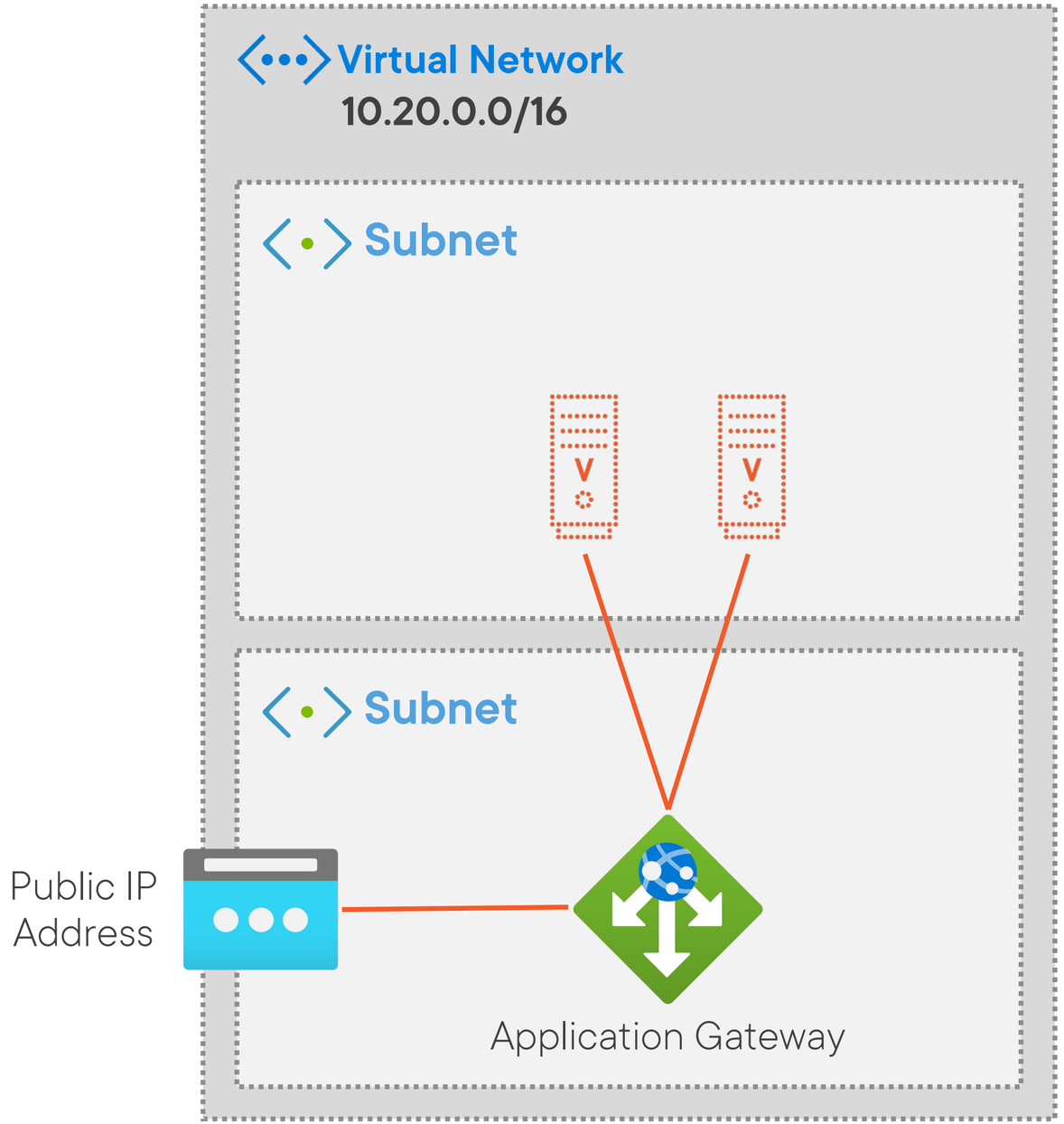

Virtual Network
10.20.0.0/16
Subnet
Subnet


Virtual Network
10.20.0.0/16
Subnet
Public IP Address
Network Interface
Subnet


Virtual Network
10.20.0.0/16
Subnet
Resource
Public IP
Address
Network
Interface
Resource
Resource
Subnet


Virtual Network
10.20.0.0/16
Subnet
NSG
Public IP
Address
NSG
Network
Interface
Subnet


Virtual Network
10.20.0.0/16
Subnet
Subnet



Application Gateway Features:

- SSL Termination
- Autoscaling
- Session Affinity
- HTTP Header Rewriting
- Advanced Routing
- Web Application Firewall (WAF)

Module Overview

Create a virtual network and subnets

Attach a virtual machine to the vnet

Network Security Groups (NSG)

VNET peering

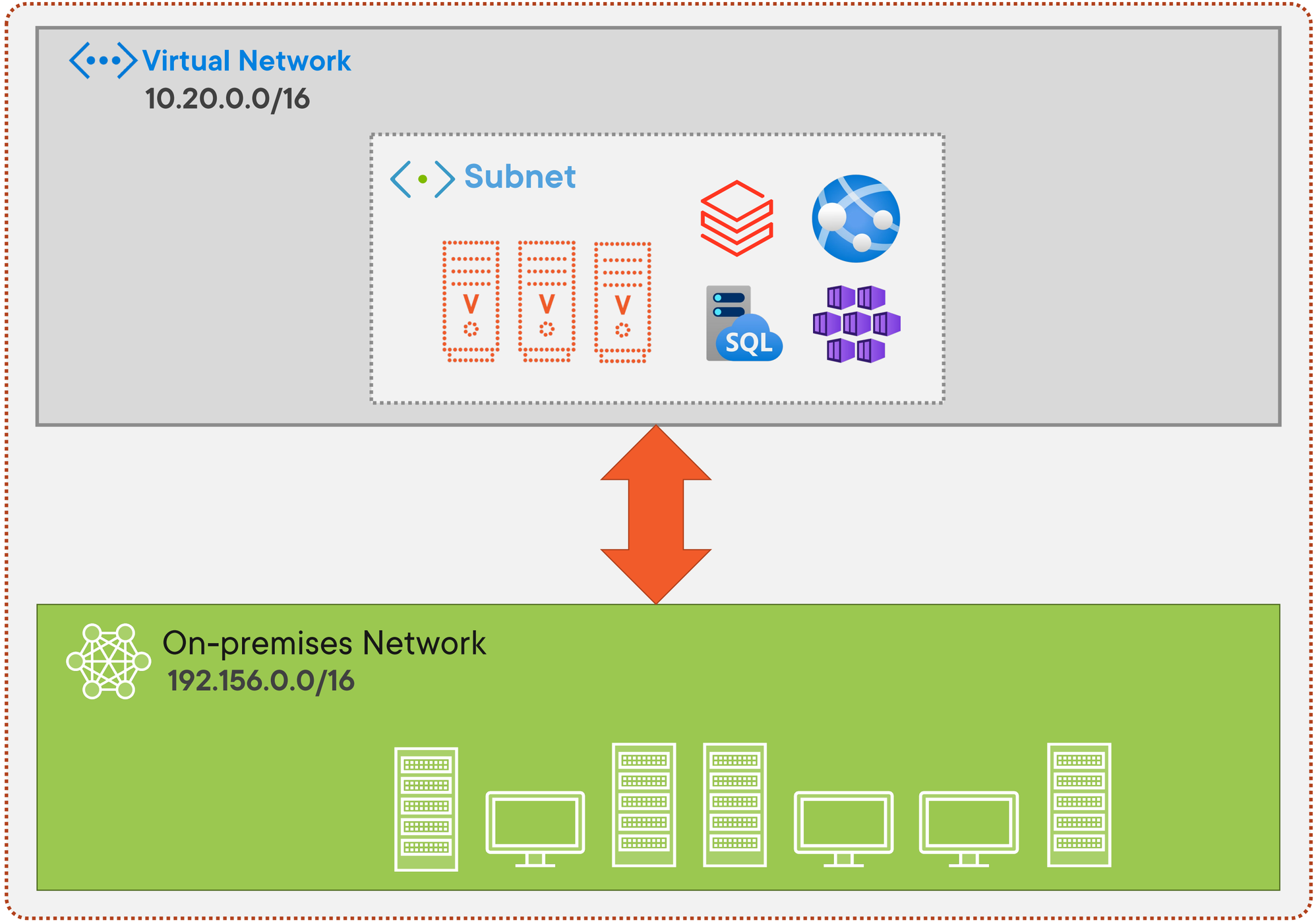
Connectivity to Azure

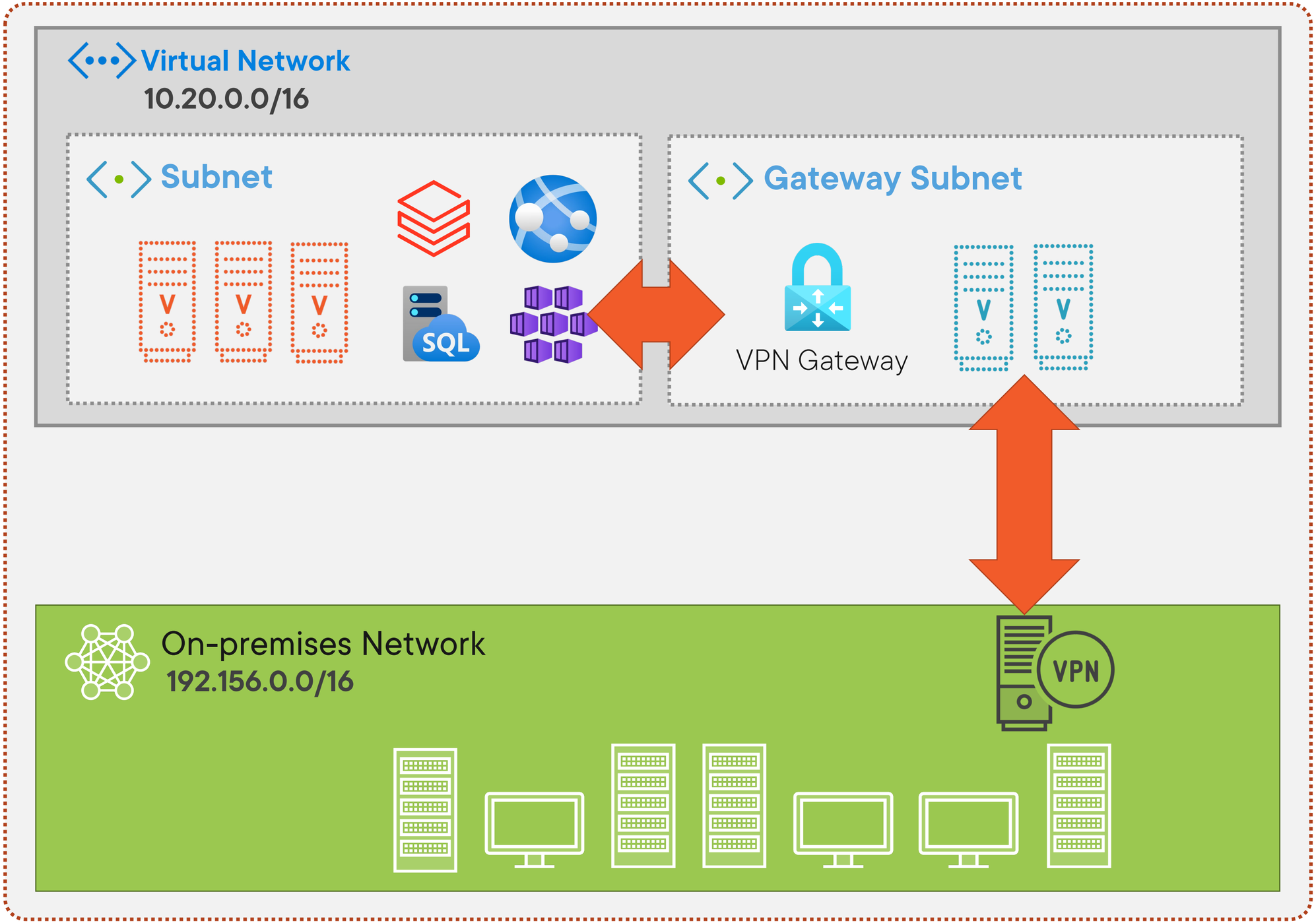
- VPN Gateway
- ExpressRoute

Azure DNS

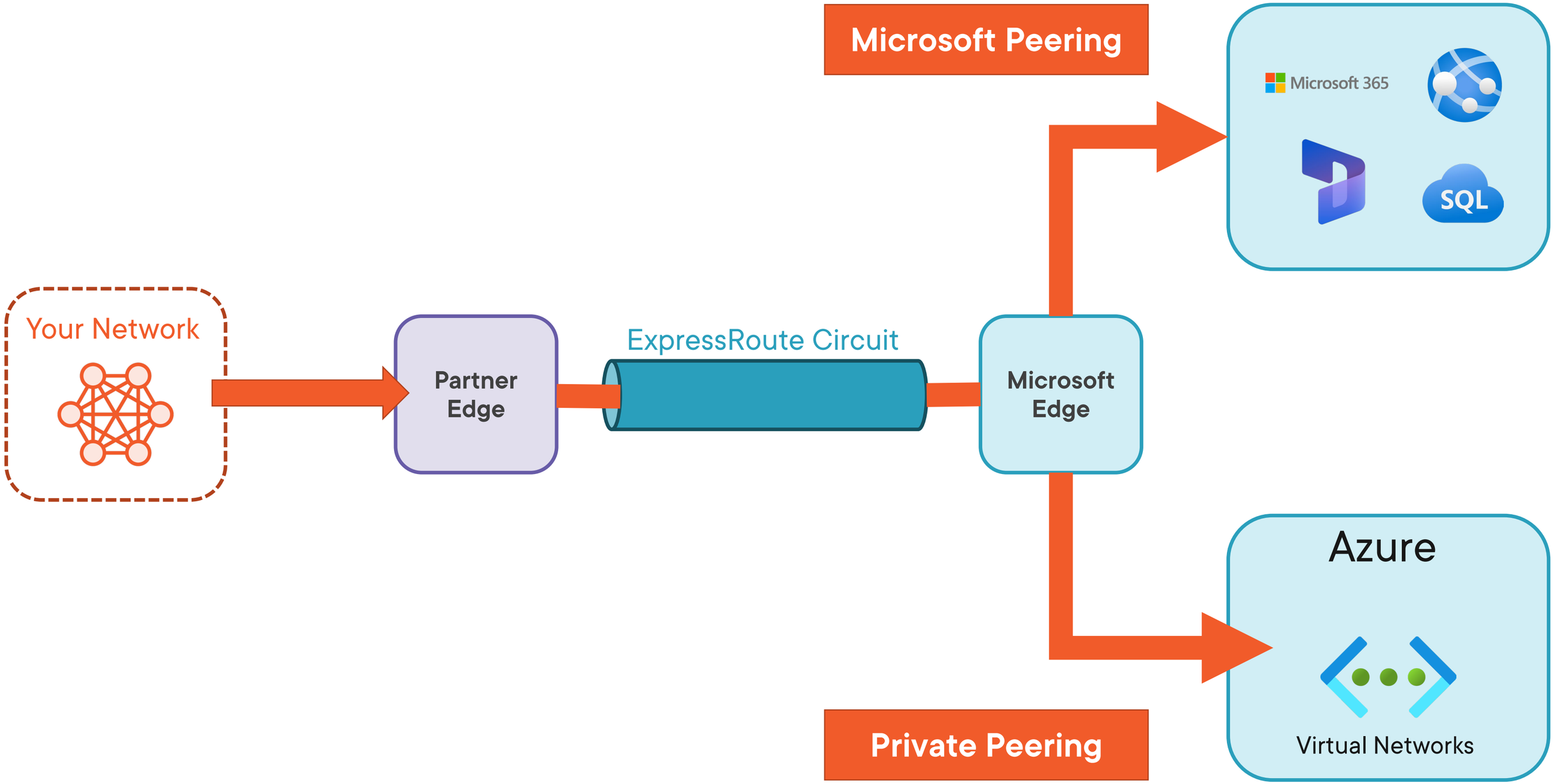
Private Endpoints

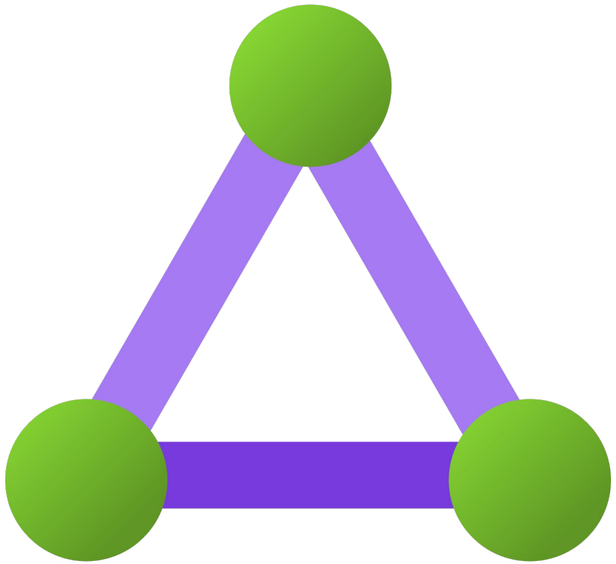
Azure VPN Gateway


Virtual Network
10.20.0.0/16
Subnet
SQL
On-premises Network
192.156.0.0/16


Virtual Network
10.20.0.0/16
Subnet
SQL
Gateway Subnet
VPN Gateway
On-premises Network
192.156.0.0/16
VPN

Azure ExpressRoute

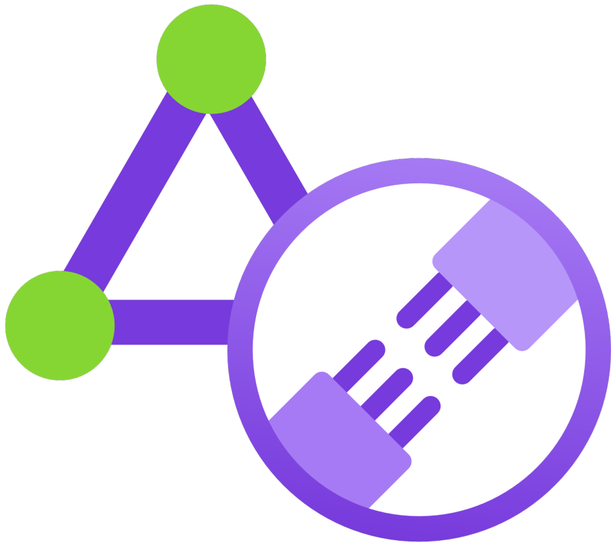

Microsoft Peering
Microsoft 365
SQL
Your Network
Partner Edge
ExpressRoute Circuit
Microsoft Edge
Azure
Virtual Networks
Private Peering



ExpressRoute

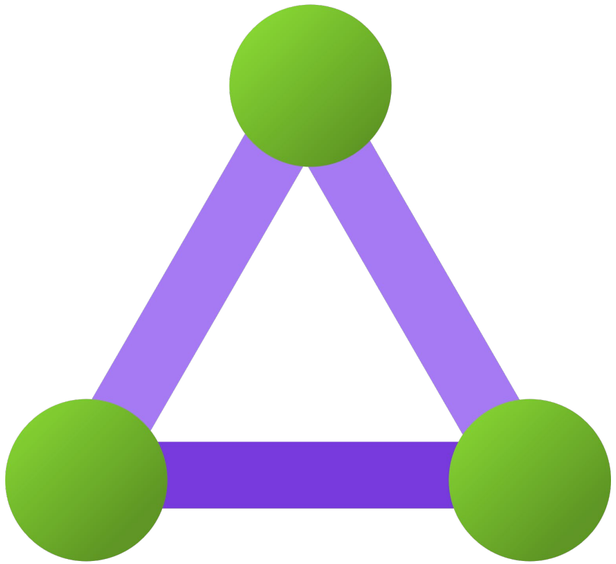
Bandwidth (depends on service provider)

- 50 Mbps
- 100 Mbps
- 200 Mbps
- 500 Mbps
- 1 Gbps
- 2 Gbps
- 5 Gbps
- 10 Gbps



ExpressRoute Direct

- Direct connection to Microsoft Edge routers
- Increased speed (up to 100Gbps)
- Encryption options
- Used by large corporations, banks, government



ExpressRoute

Data egress charges

- Metered billing
- Unlimited egress

ExpressRoute plans

- Standard
- Local
- ExpressRoute Premium Add-on

Azure DNS

https://**myapp**.azurewebsites.net

App Service

https://**myfunction**.azurewebsites.net

Function App

20.104.233.124

https://**myweb1.**eastus.cloudapp.azure.com

Virtual Machine

https://www.**myapp.com**

App Service

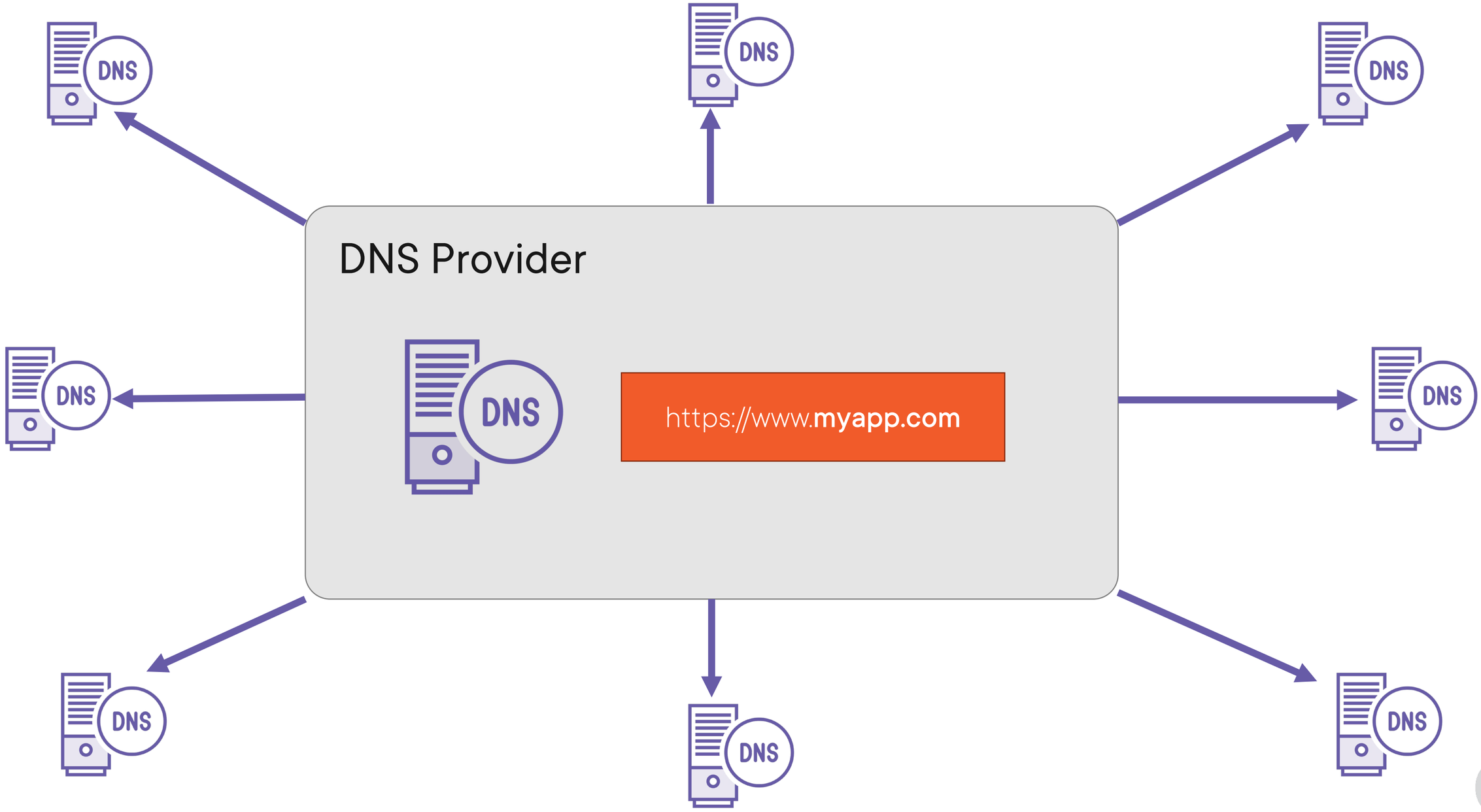
https://www.**myendpoint.net**

Function App

https://www.**myapp.ca**

Virtual Machine

.COM
.NET
.INFO
Domain
Registrar
https://www.myapp.com


DNS
DNS
DNS
DNS Provider
DNS
https://www.myapp.com
DNS
DNS
DNS
DNS
DNS

Azure DNS

Hosting service for DNS domains

Domains can be purchased using Azure

- App Service Domains
- Uses GoDaddy for domain registration
- Managed by Azure DNS
- You can point the domain to other services

Benefits of Azure DNS

Role-based Access Control in Azure

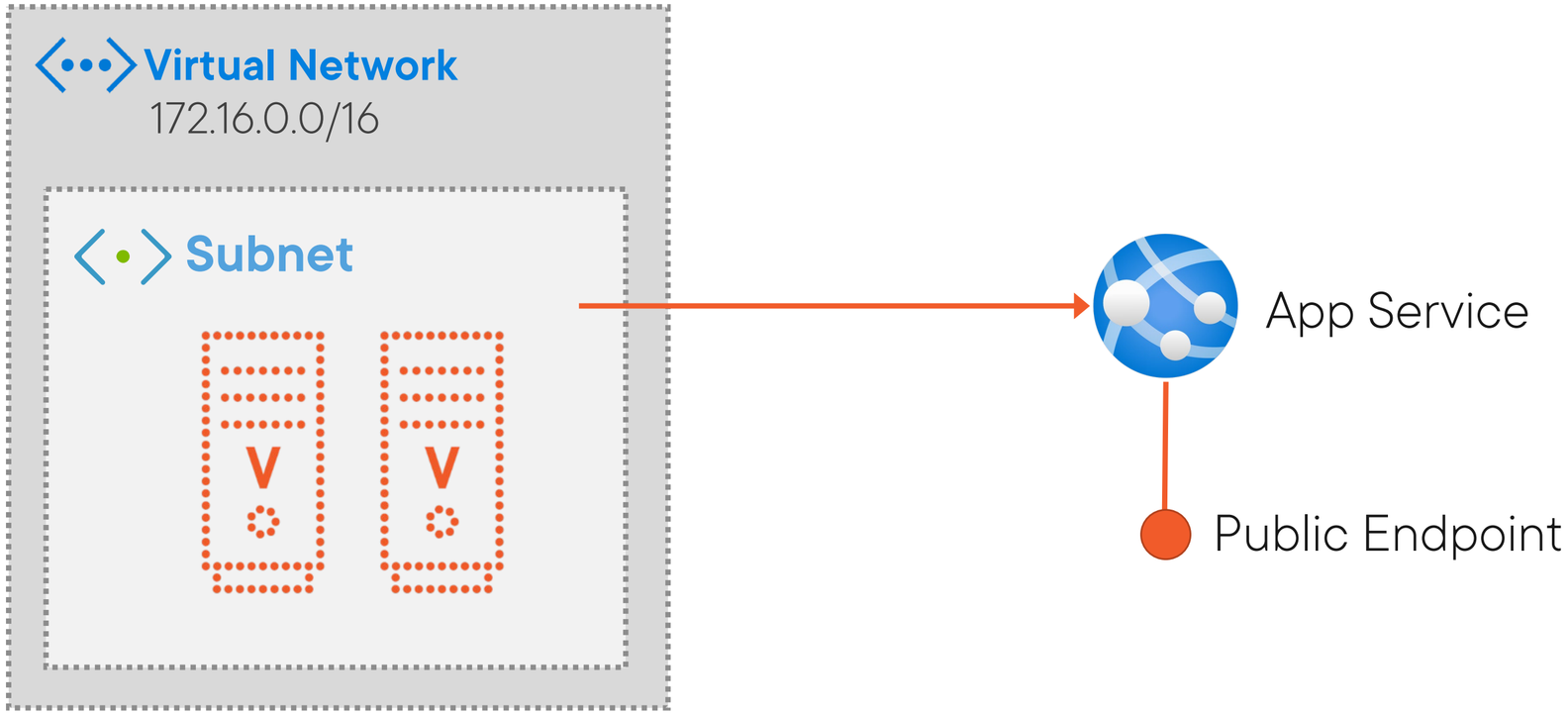
Activity Logs

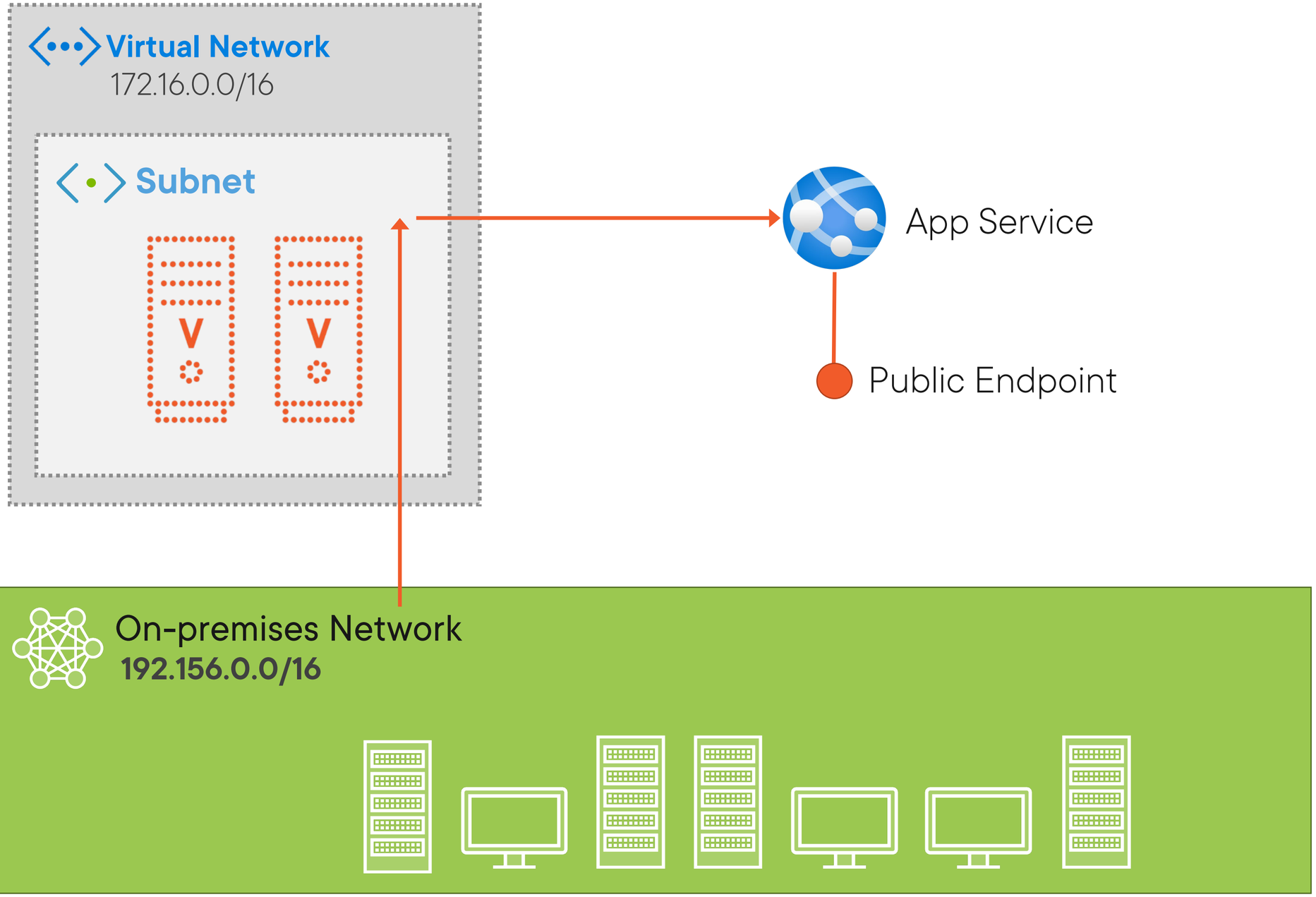
Global Network of DNS Servers

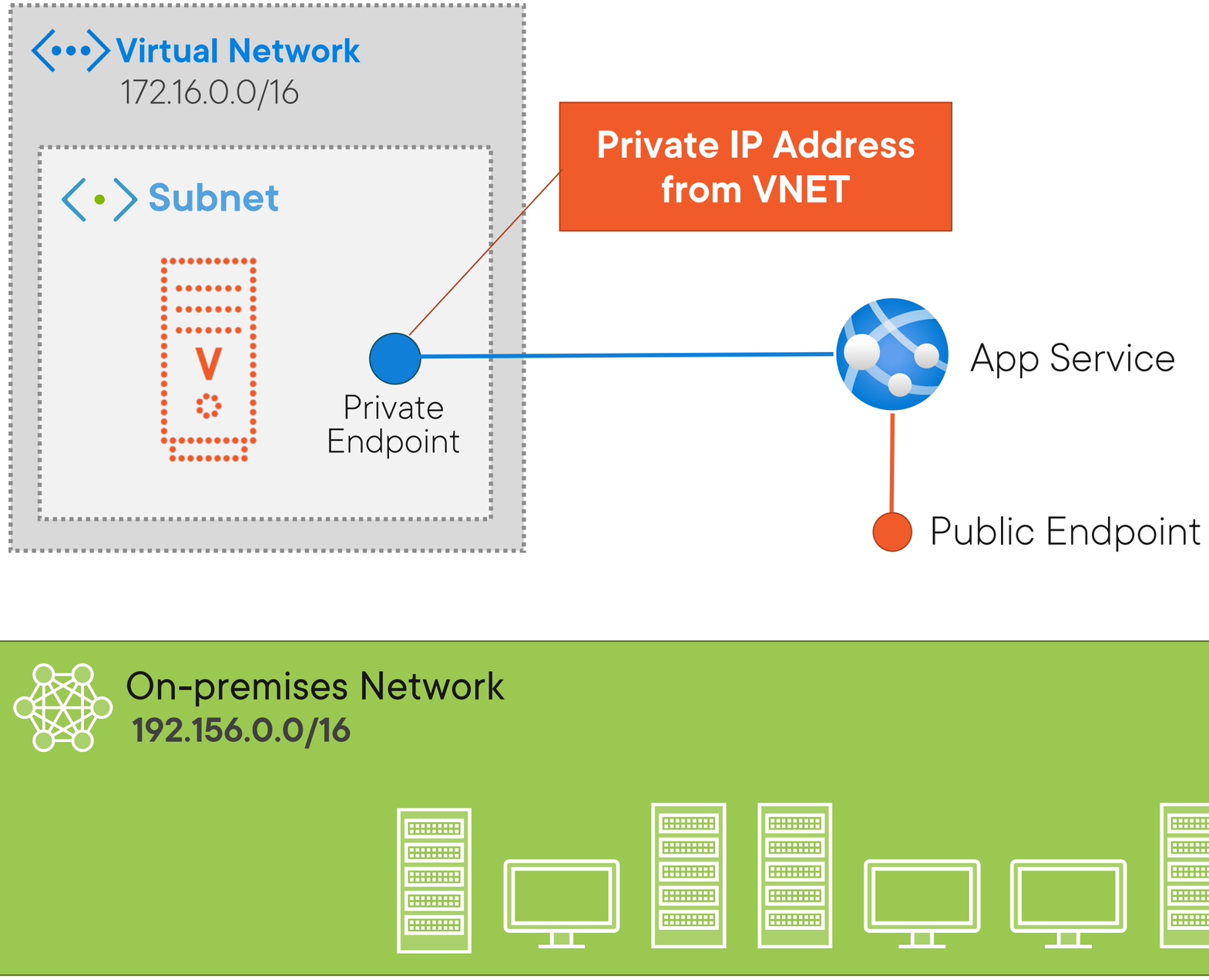
Support for Private Domains (VNET)

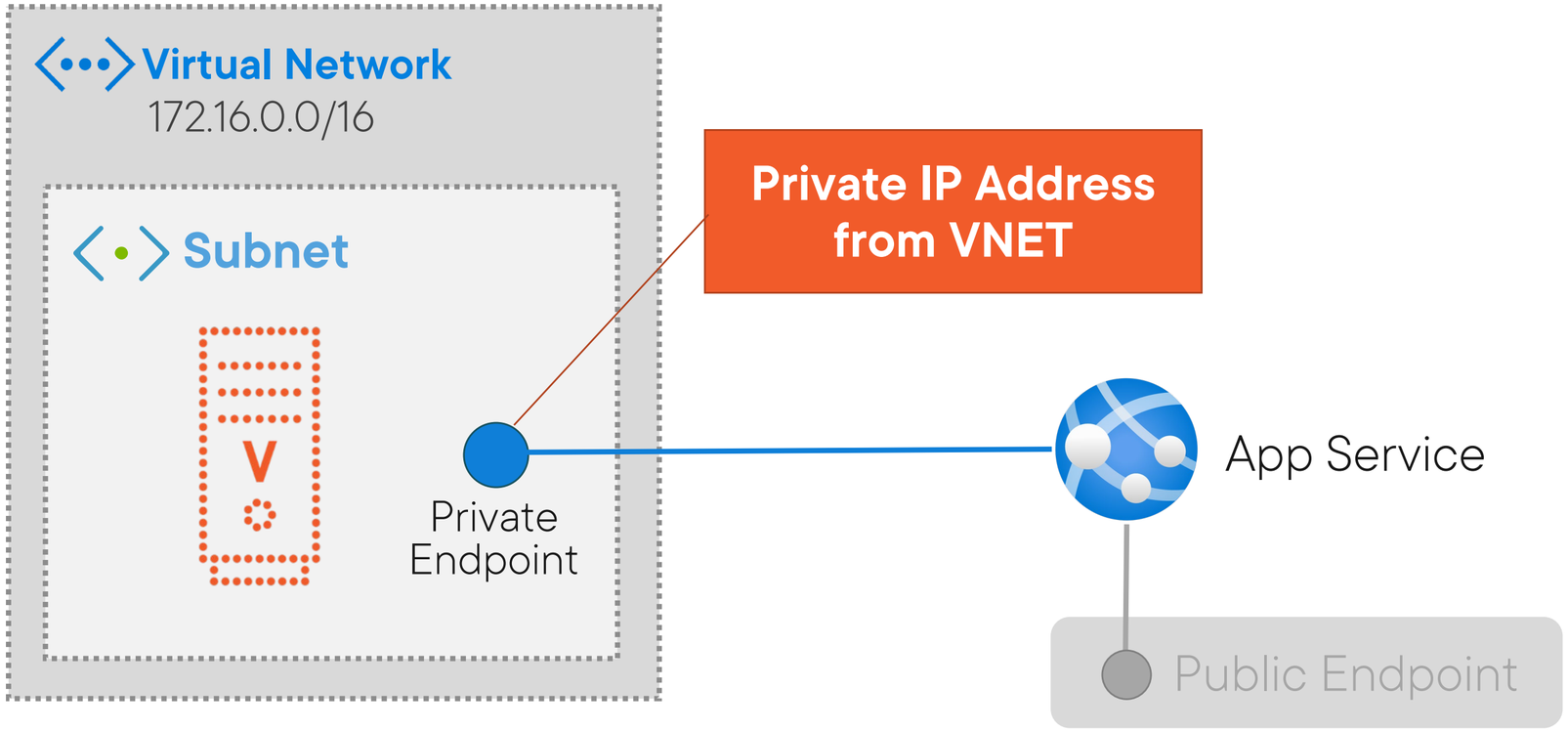
Alias Records to Azure Services

Private Endpoints


Virtual Network
172.16.0.0/16
Subnet
App Service
Public Endpoint


Virtual Network
172.16.0.0/16
Subnet
App Service
Public Endpoint
On-premises Network
192.156.0.0/16


Virtual Network
172.16.0.0/16
Subnet
Private IP Address from VNET
Private Endpoint
App Service
Public Endpoint
On-premises Network
192.156.0.0/16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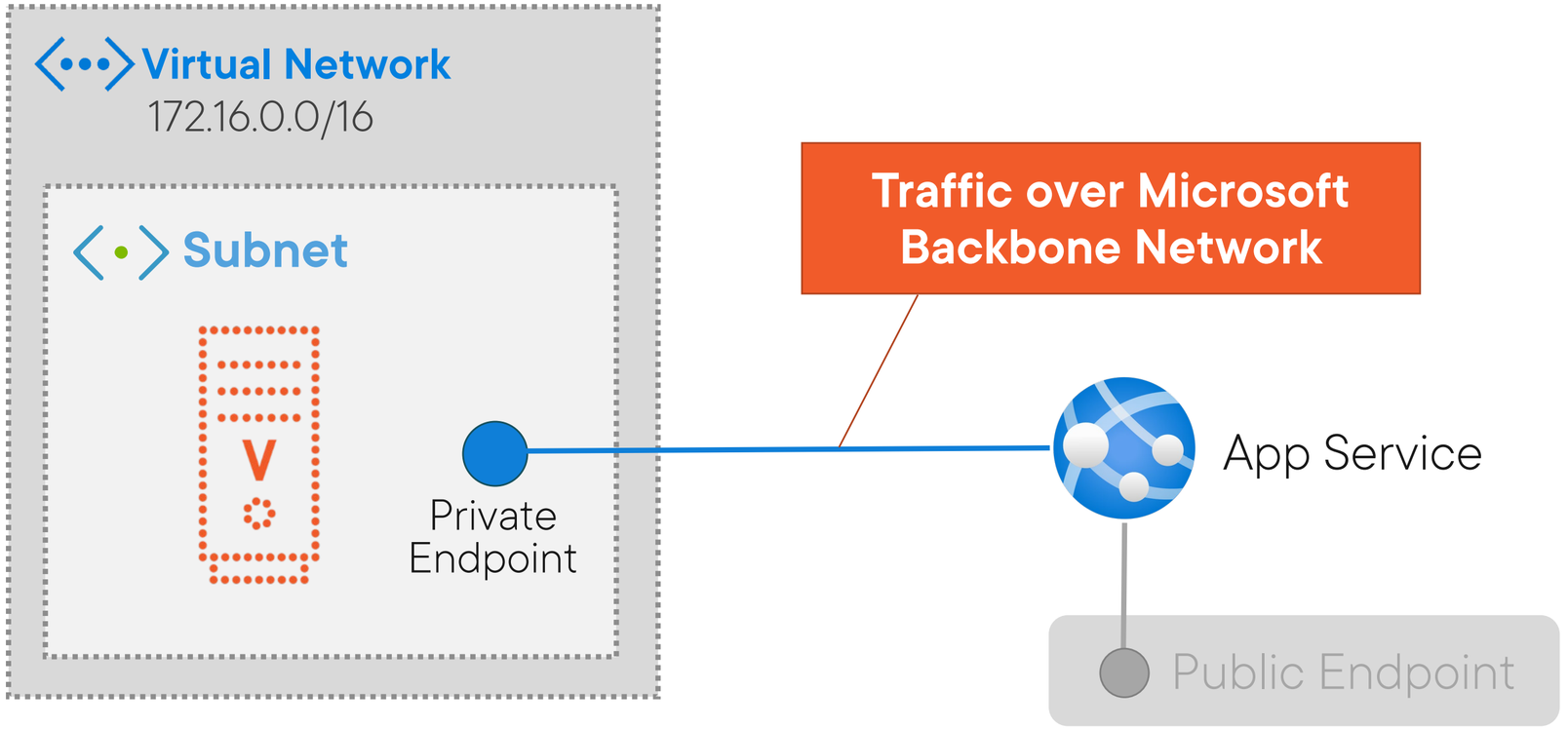
Subnet
Private IP Address from VNET
Private Endpoint
App Service
Public Endpoint

On-premises Network
192.156.0.0/16


Virtual Network
172.16.0.0/16
Subnet
Private Endpoint
Traffic over Microsoft Backbone Network
App Service
Public Endpoint

On-premises Network
192.156.0.0/16

Module Summary

- Networking in Azure
- Virtual Networks (VNET)
- Network Security Groups (NSG)
- Peering VNETs
- VPN Gateway
- ExpressRoute
- Azure DNS
- Private Endpoints

Up Next:
Data Storage in Azure