Exploring Azure Core Products

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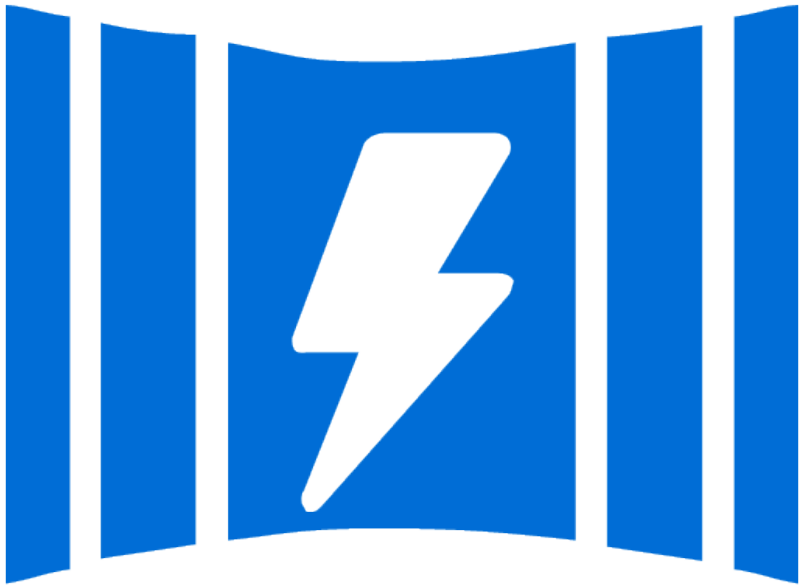
Set of services

On-demand computing power



Azure Compute

Azure Compute

Virtual Machines

Containers

Azure App Service

Serverless Computing

Azure Compute Benefits

Easy to provision new resources

Pay for what you use

Platform-as-a-Service options available

Scale depending on workloads

Overview

- Virtual Machines
- Containers
- App Services
- Serverless Compute
- Networking products
- Windows Virtual Desktop
- Azure CDN

Virtual Machines in Azure

Azure Virtual Machines

Infrastructure-as-a-Service (IaaS)

Full control over operating system

Must maintain and patch VM

When creating a VM:

- Type of image
- Size of VM
- Availability options

Azure Virtual Machines

Can install custom software

Can shut down to save costs

- Manually or on a schedule

Enables hybrid cloud

Familiar administrative model

Lift-and-shift migration

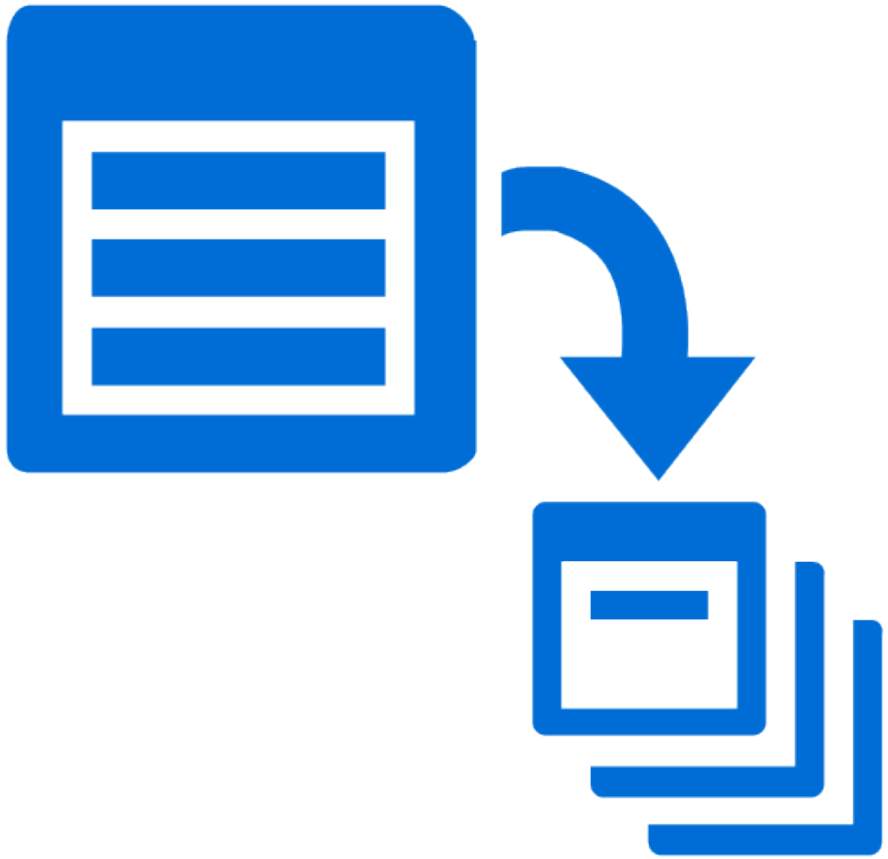
- Azure Site Recovery
- Azure Migrate

Uses an Azure virtual network (VNET)

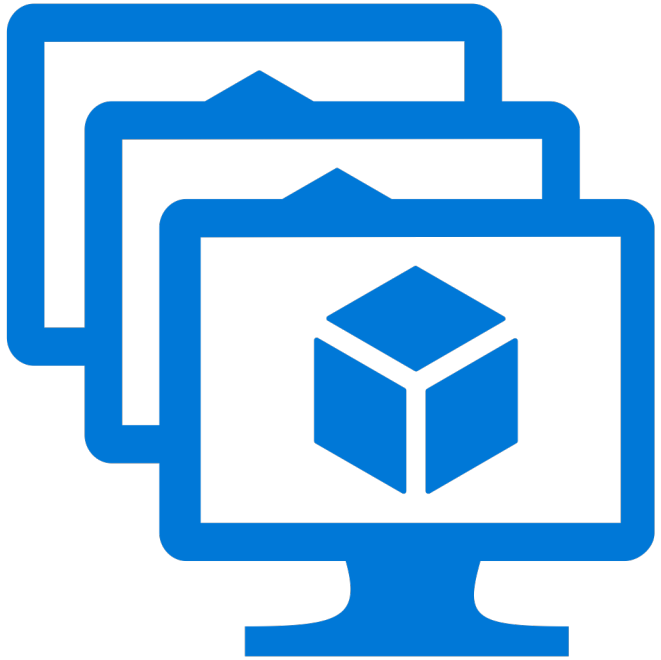
Underlying disks are stored in Azure Storage Account

Pool of Virtual Machines

High Performance Computing (HPC)



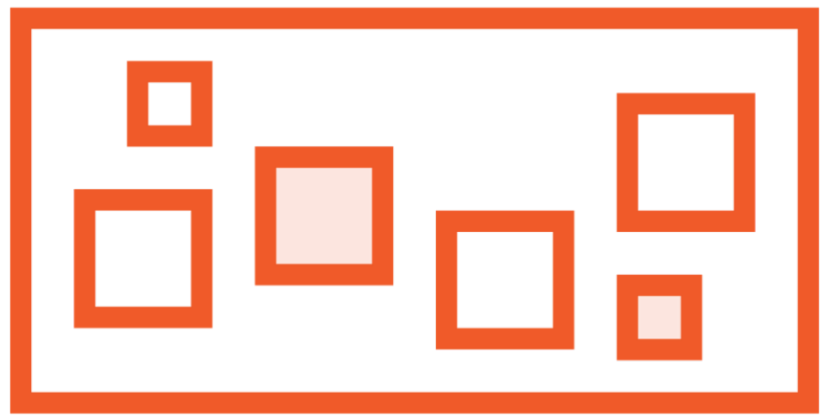
Azure Batch

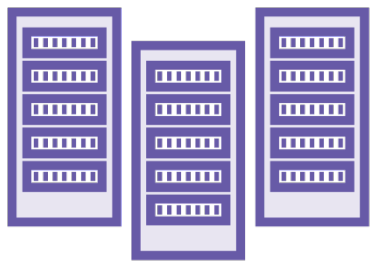


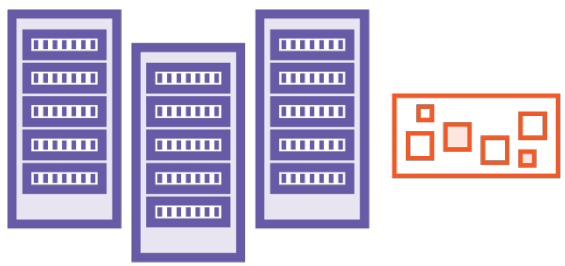
Virtual Machine Scale Sets

- Identical Virtual Machines with load balancing
- Number of VMs can scale out/in
- Spread across fault domains and update domains
- Only pay for the underlying resources

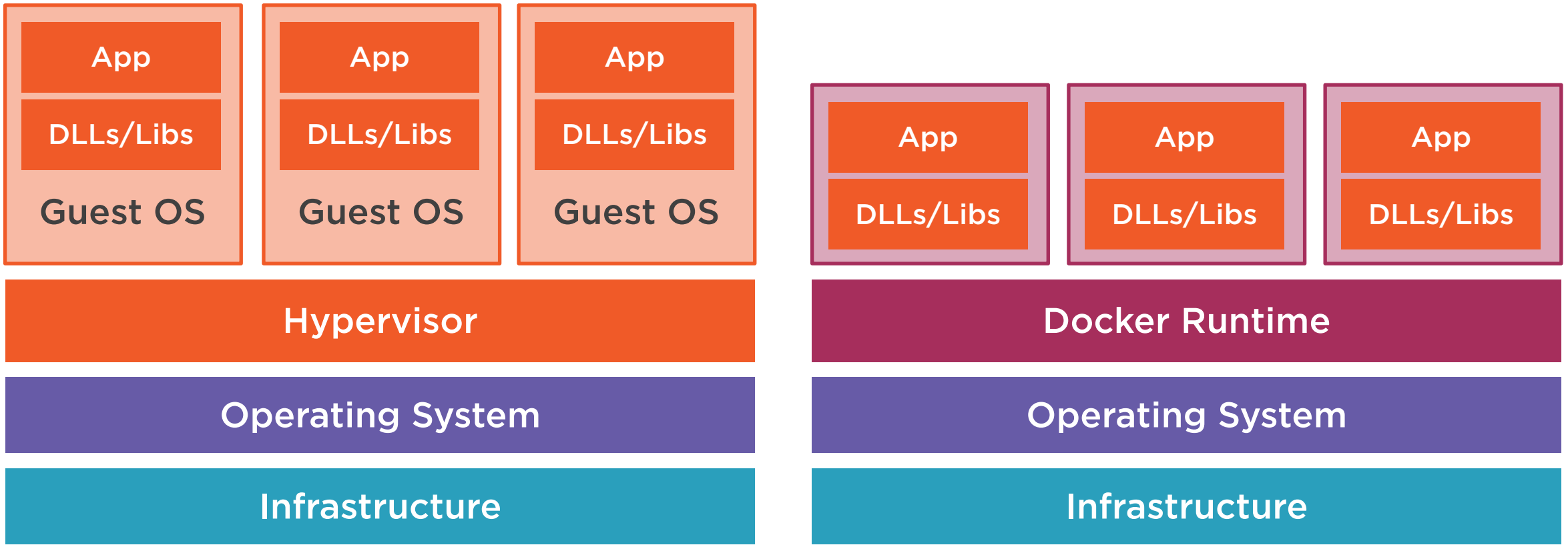
Container Options in Azure

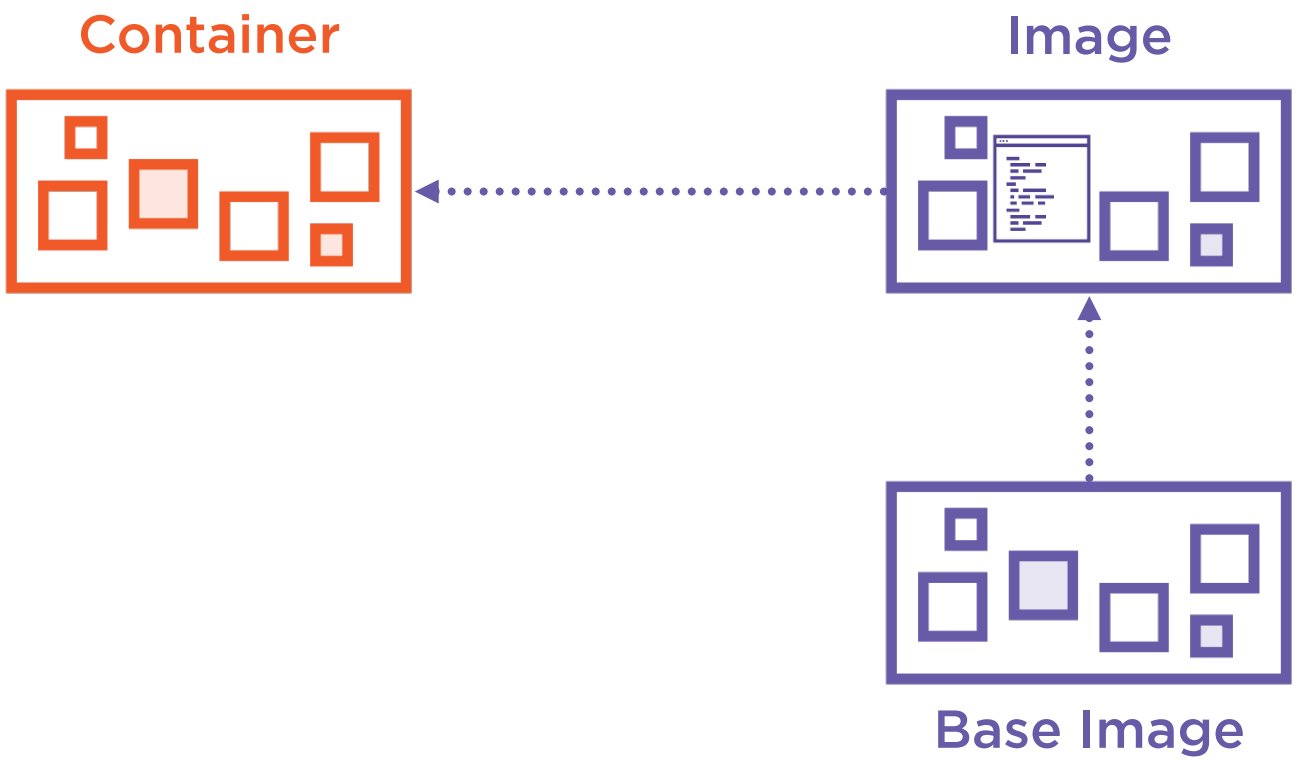


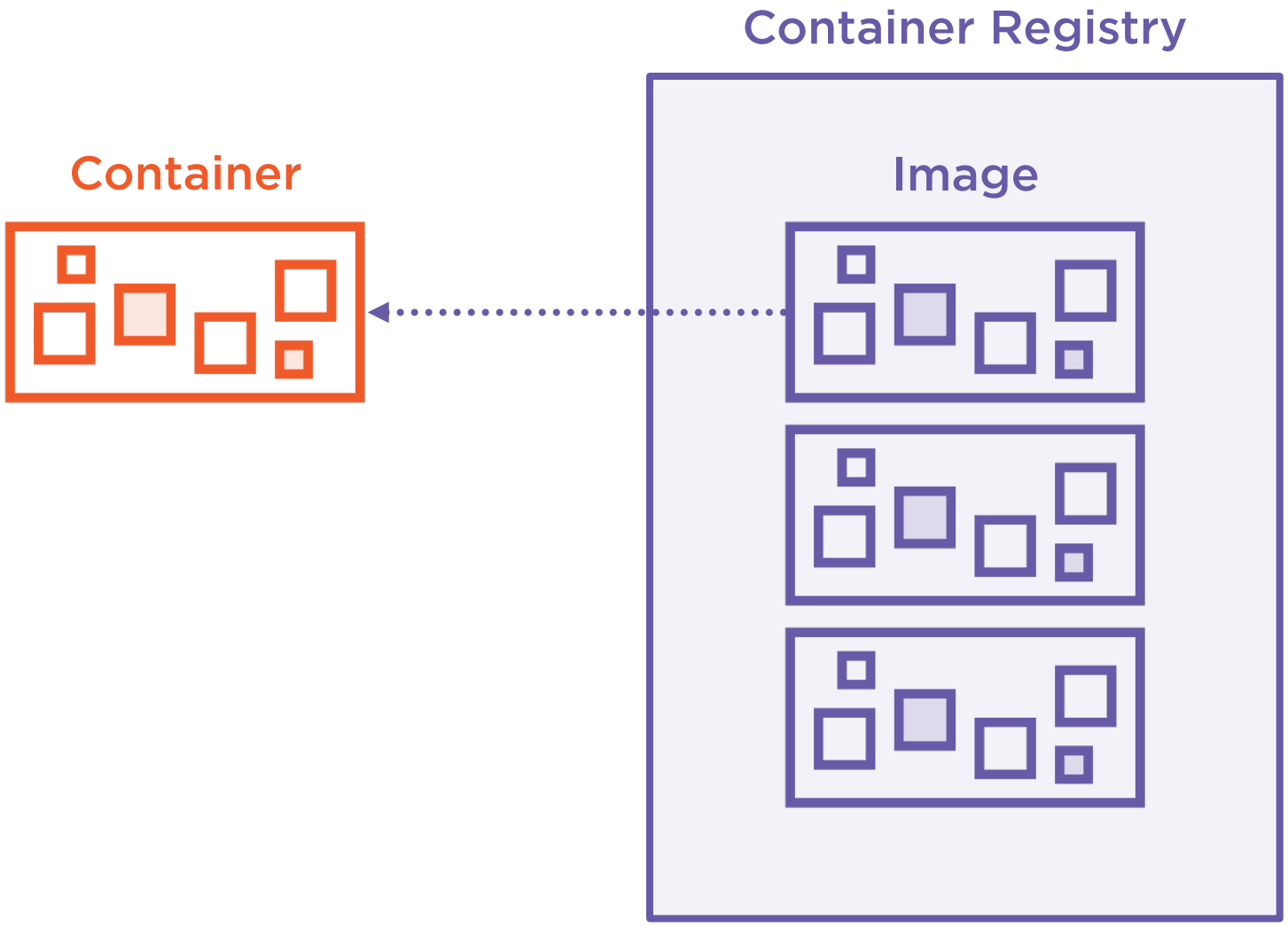


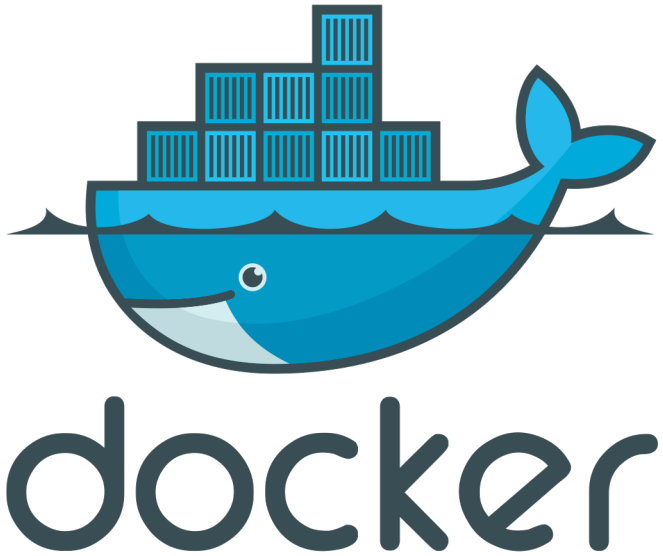


Virtual Machines vs Containers




Container
Image
Base Image


Container Registry
Container
Image



Standard for container format

Runtime for Docker containers

Open-source project

Docker is also a company that evolves the technology

Hosting Options for Containers

Local Workstation

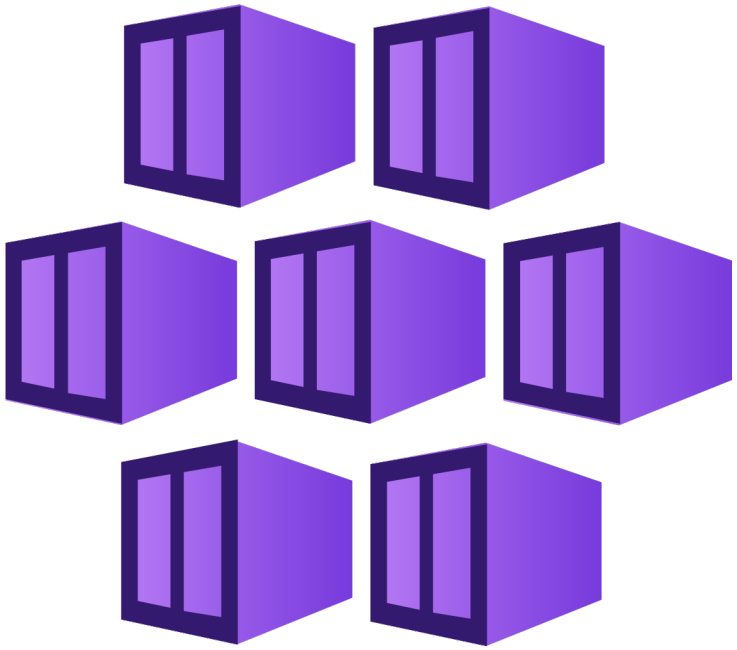
On-premises Servers

VMs in Azure

Azure Container Instances (ACI)

Azure Kubernetes Service (AKS)

Azure App Service



Azure Kubernetes Service (AKS)

- Container management system in Azure
- Scale out container-based applications
- Monitoring and deploying containers
- Pods are groups of containers
- Nodes are virtual machines
- Can leverage VM Scale Sets
- Azure Container Registry
- Azure Monitor

Azure App Service

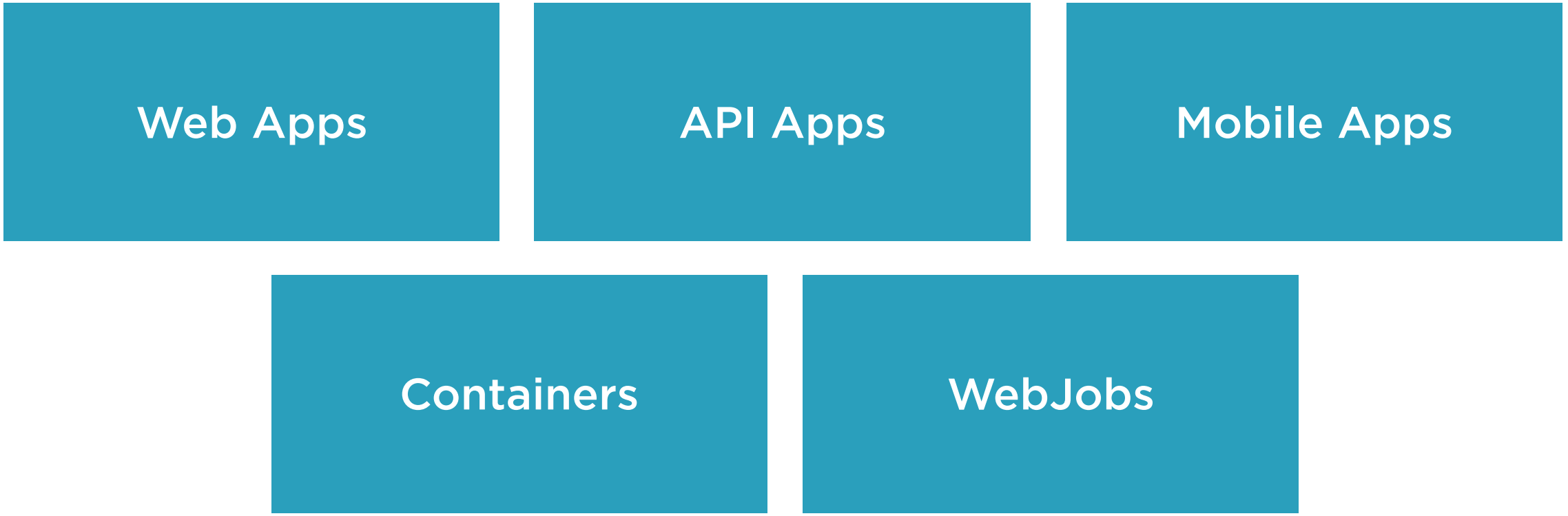
Azure App Service

Similar to traditional web hosting

Framework runtimes installed on servers

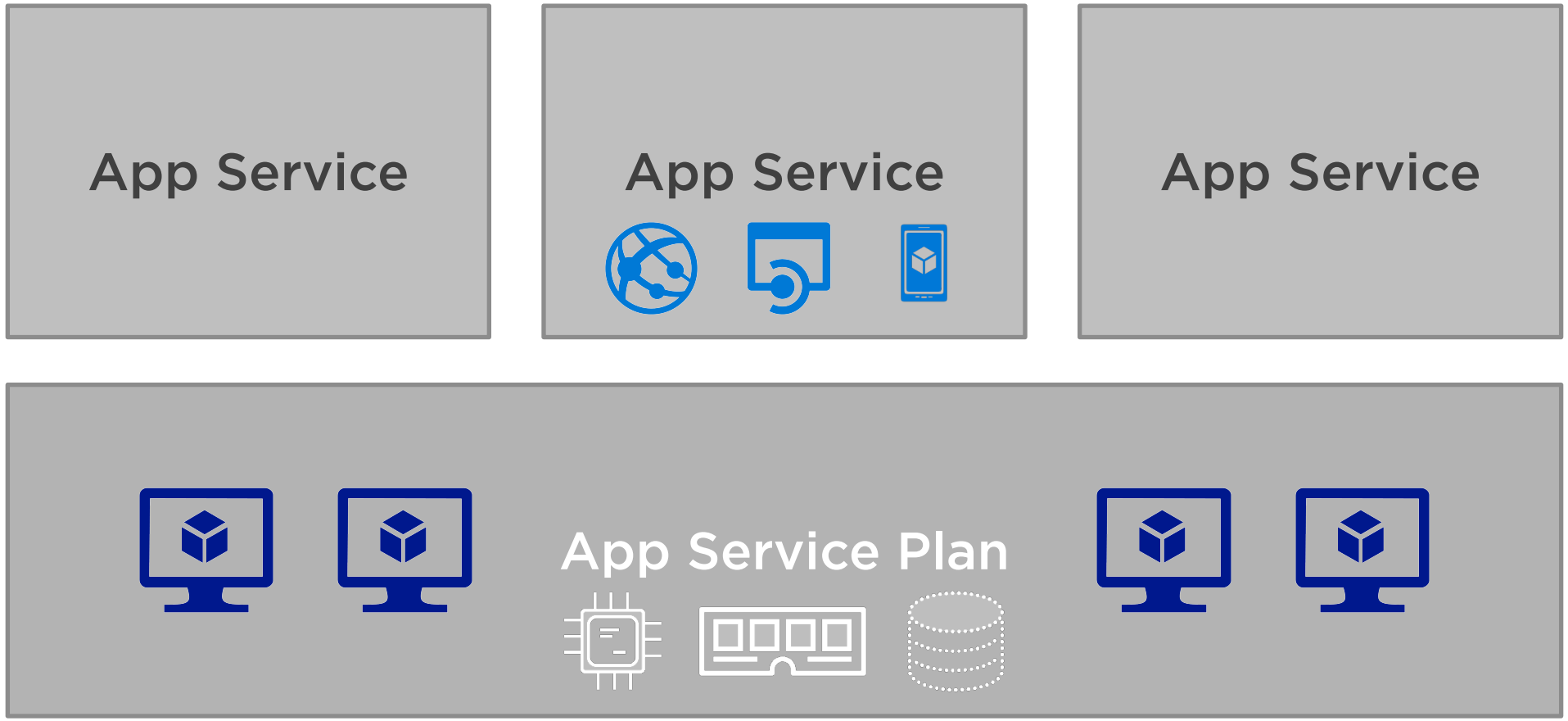
Azure manages web servers for you

Azure App Service



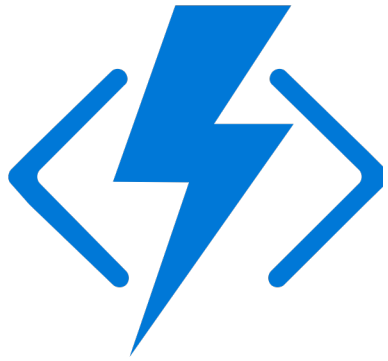
https://<your app service name>.azurewebsites.net

Azure App Service Plans



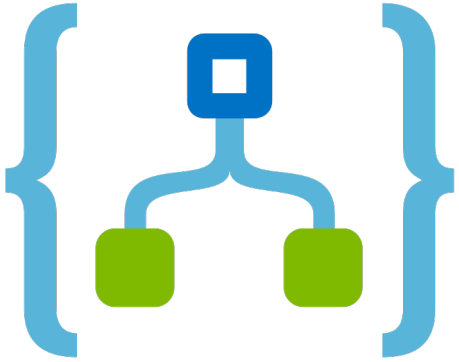
Serverless Compute

Serverless Compute



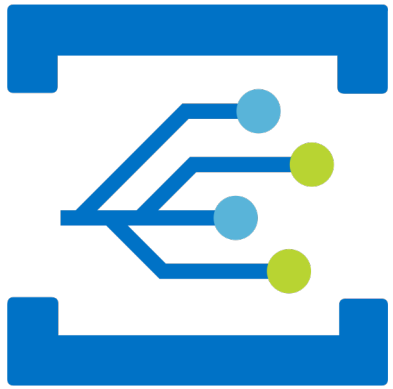
Azure Functions

Run custom code
Initiated by triggers



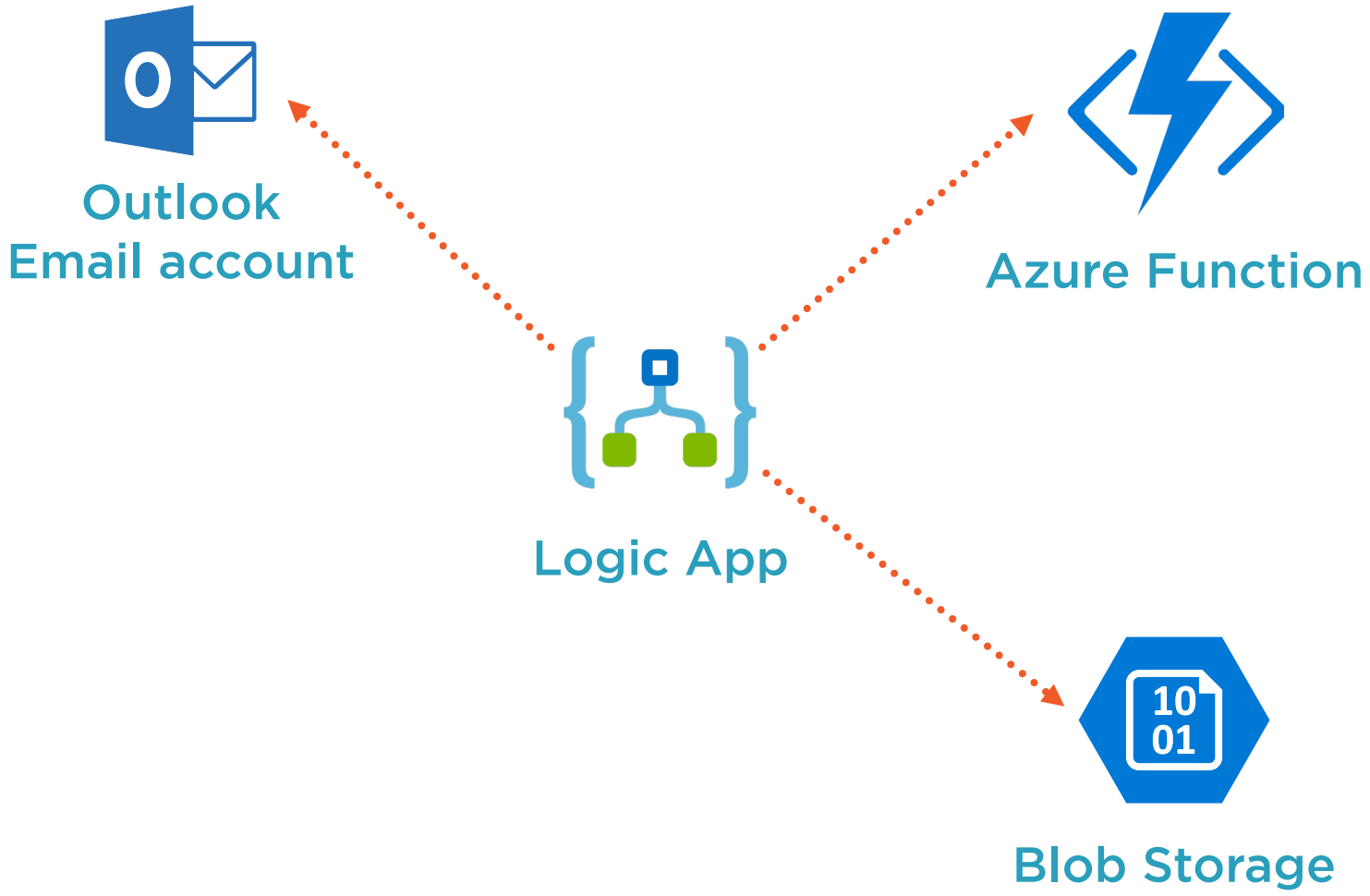
Azure Logic Apps

Designer in portal
Initiated by triggers
Large library of connectors

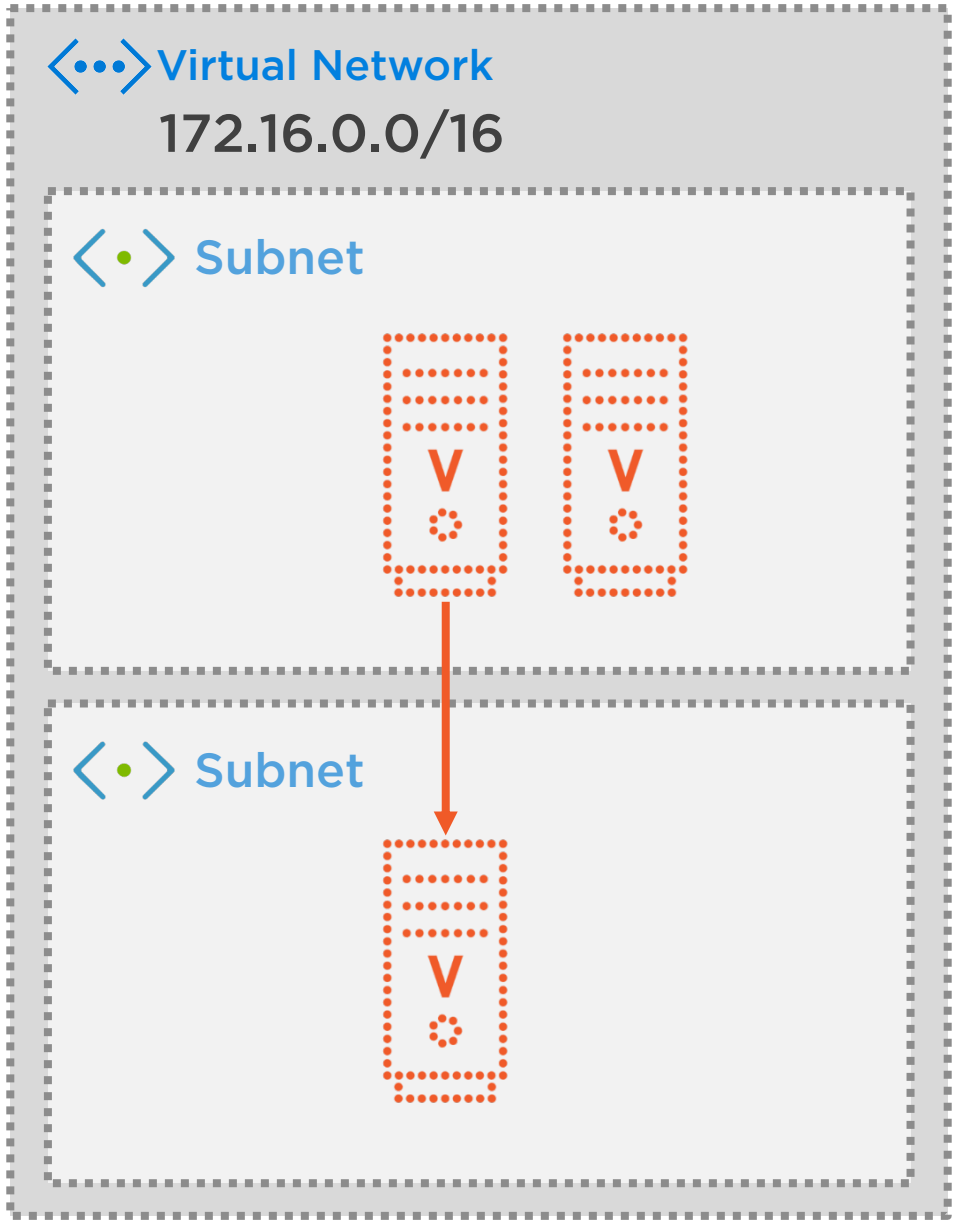


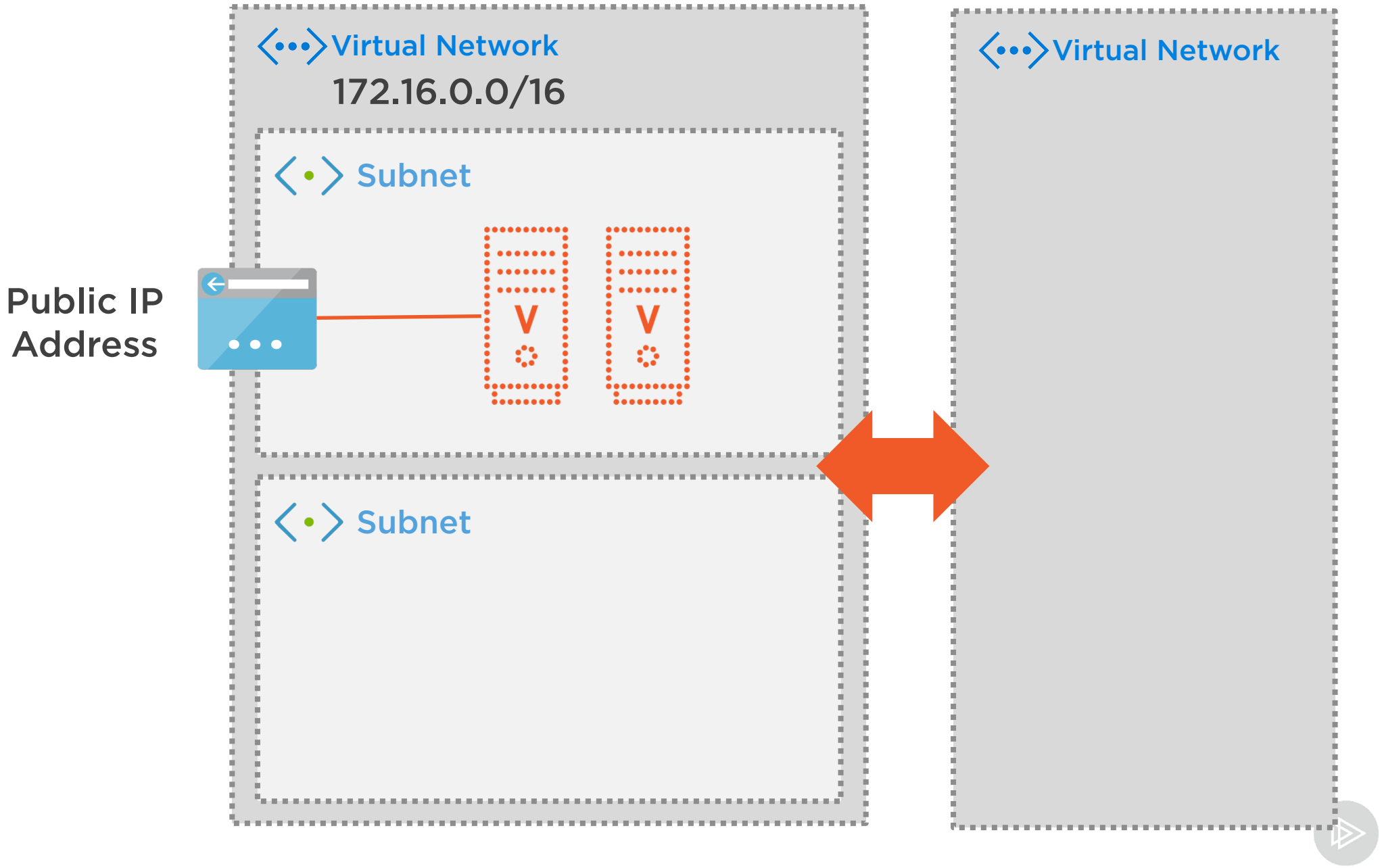
Azure Event Grid

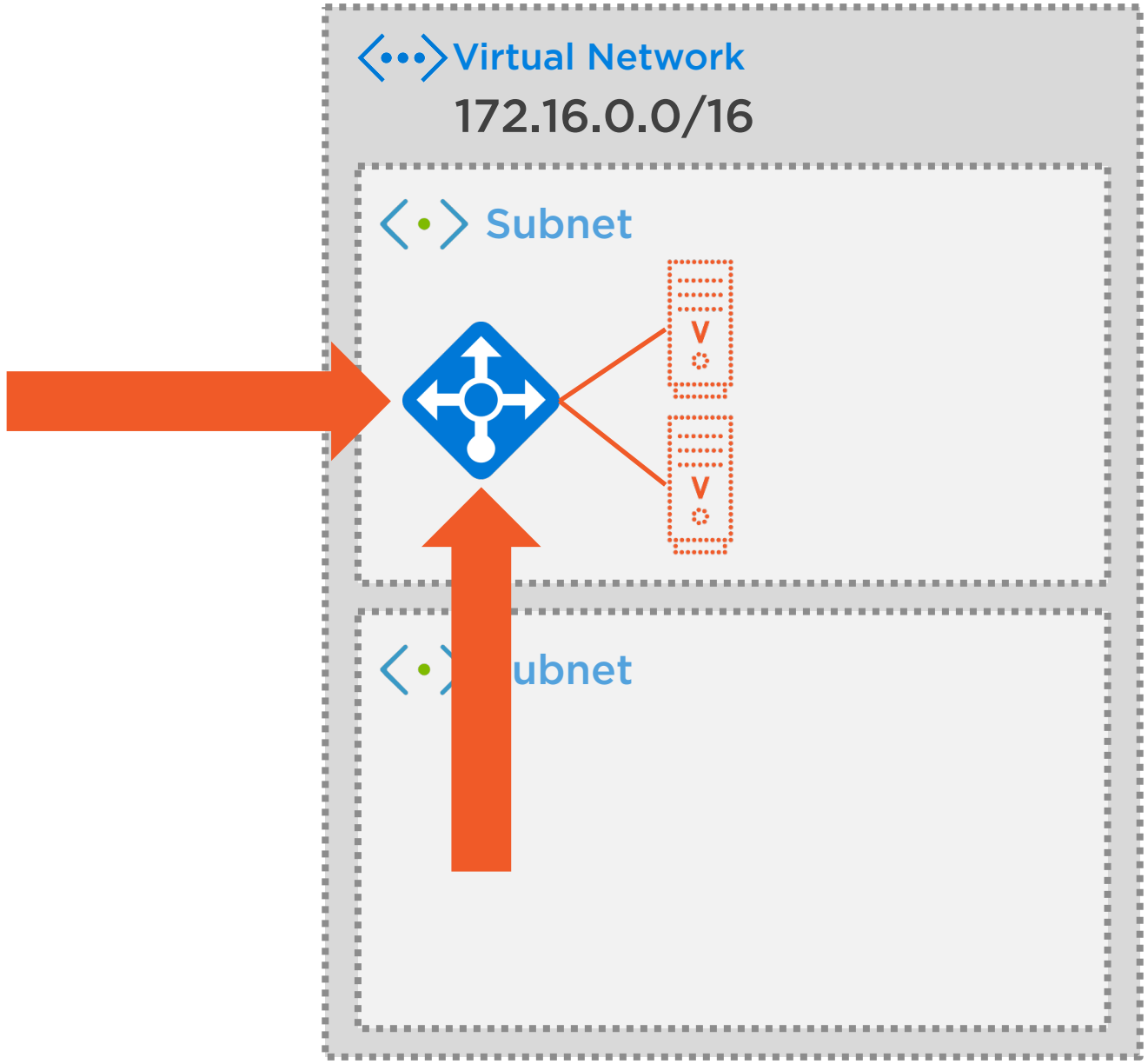
Connects data sources and event handlers

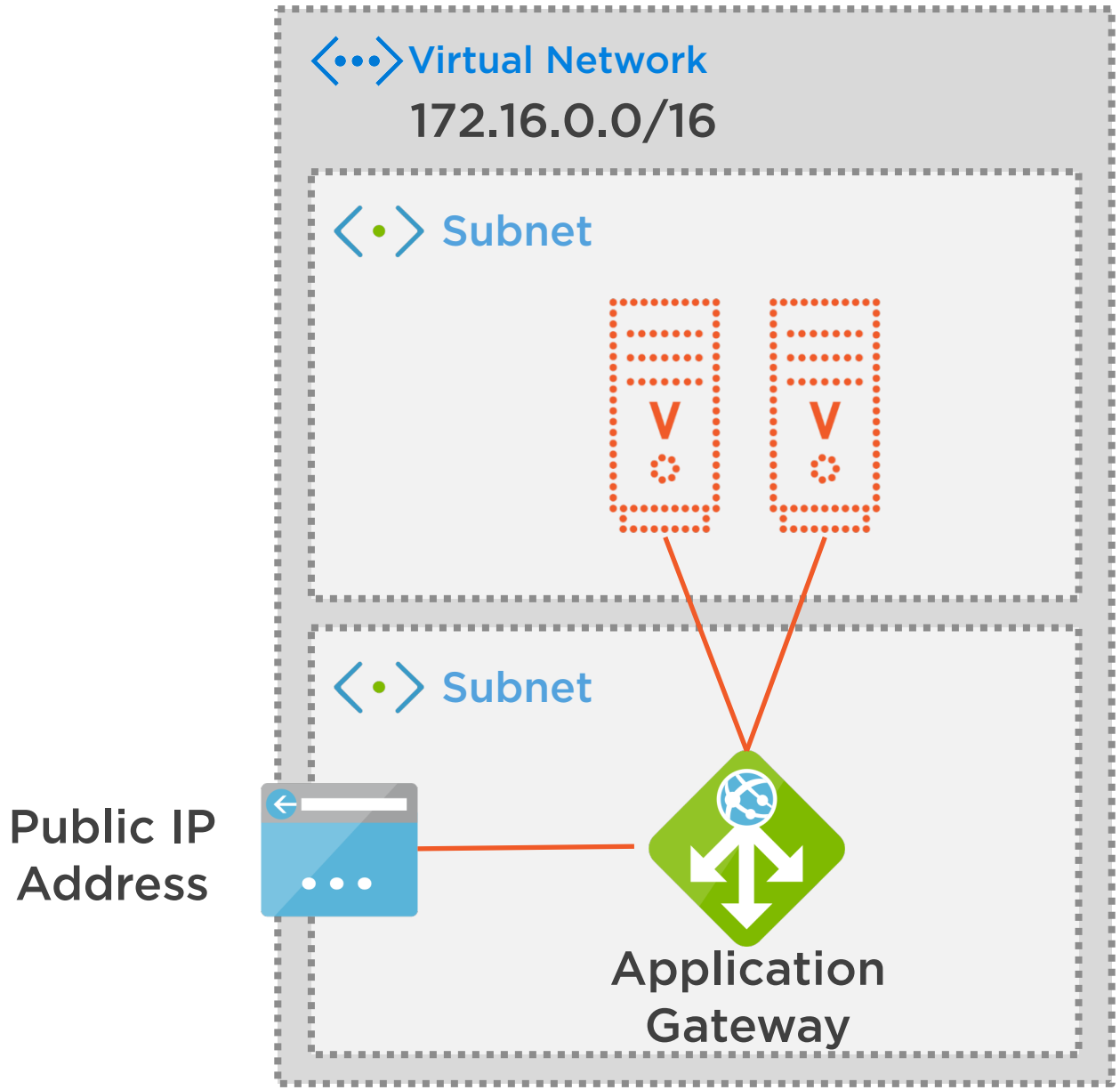

Outlook
Email account
Azure Function
Logic App
10
01
Blob Storage

Core Networking Products in Azure


Virtual Network
172.16.0.0/16
Subnet
Subnet

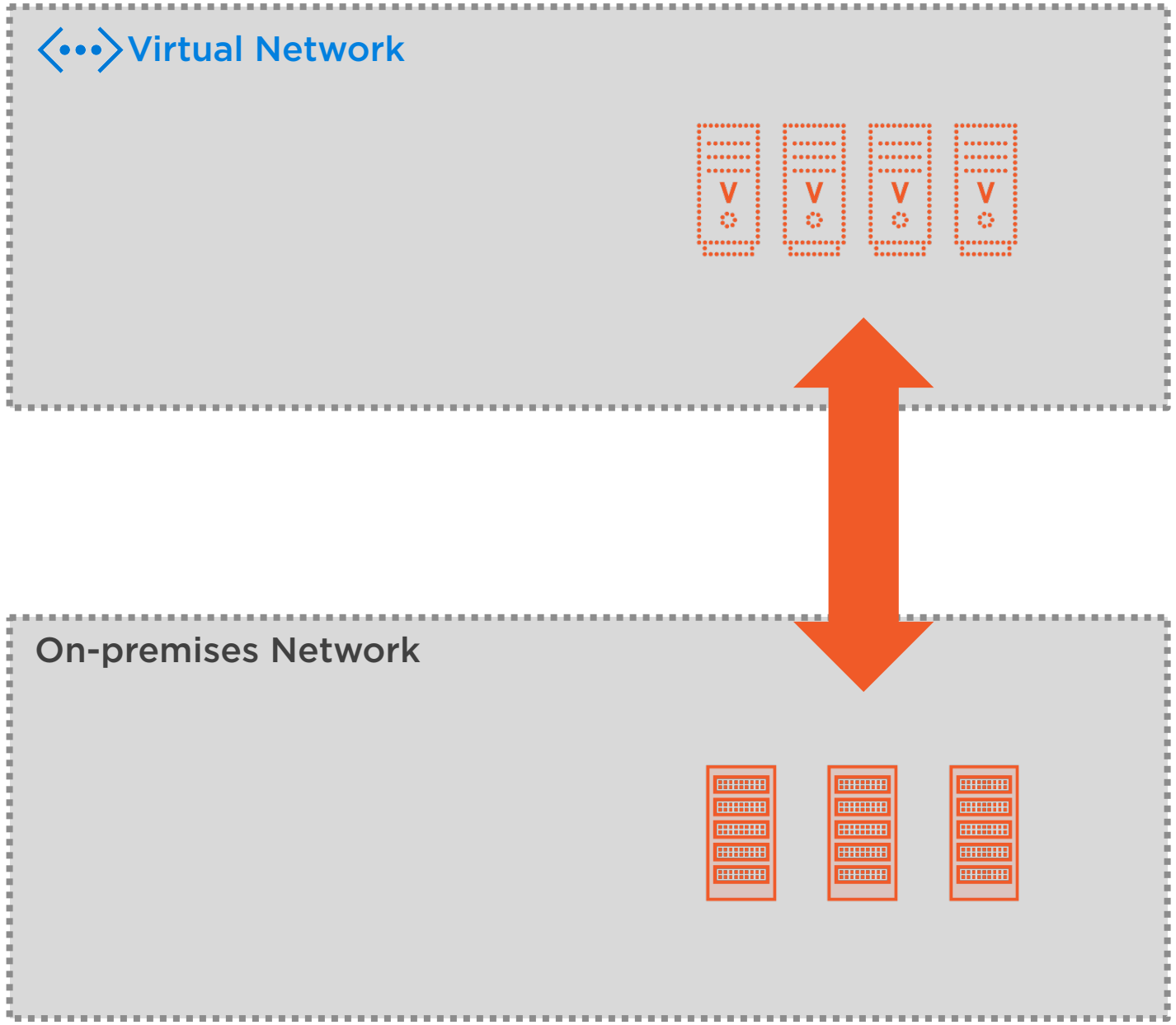

Virtual Network
172.16.0.0/16
Subnet
Subnet
Public IP
Address
Virtual Network

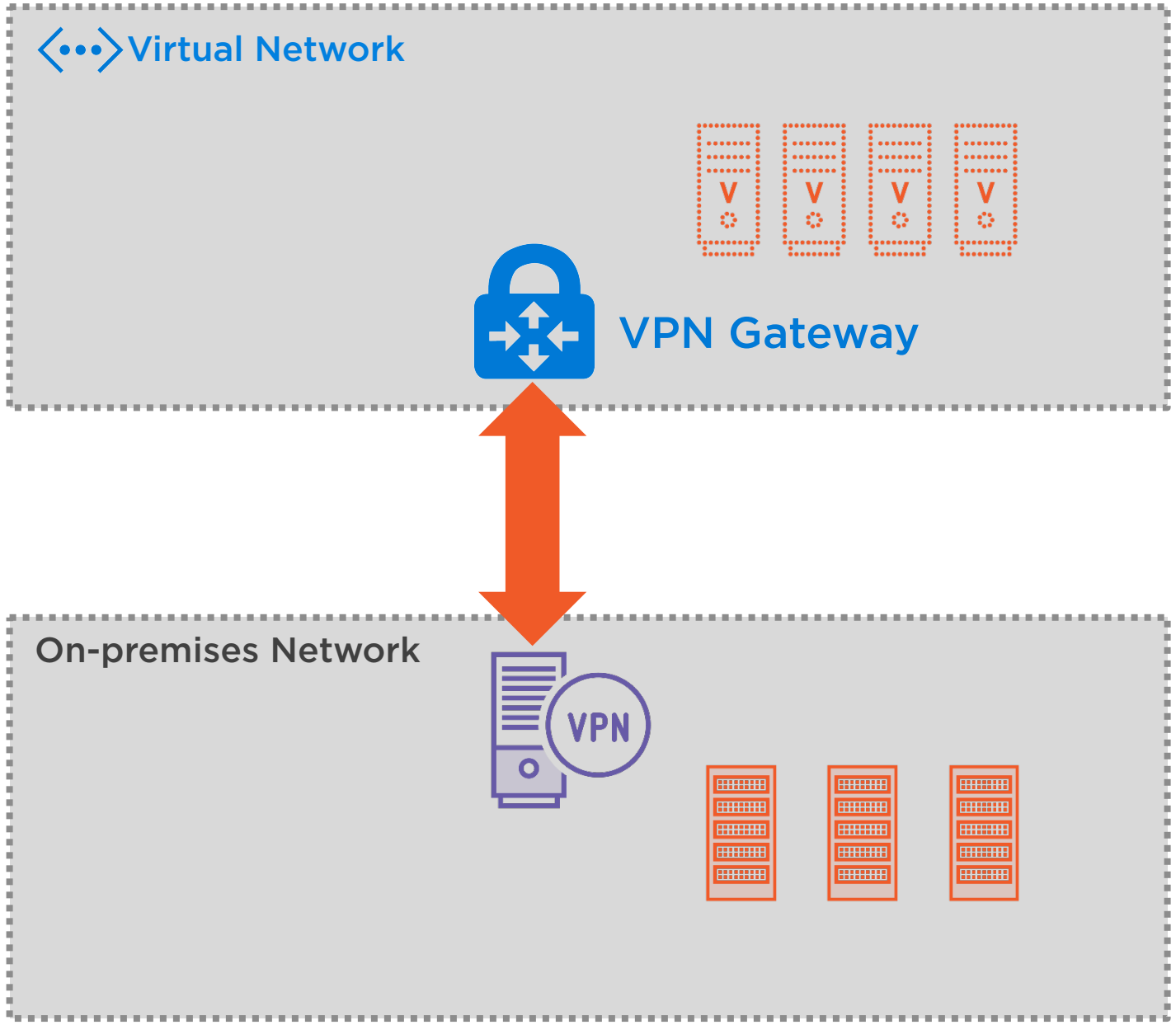

Virtual Network
172.16.0.0/16
Subnet
ubnet

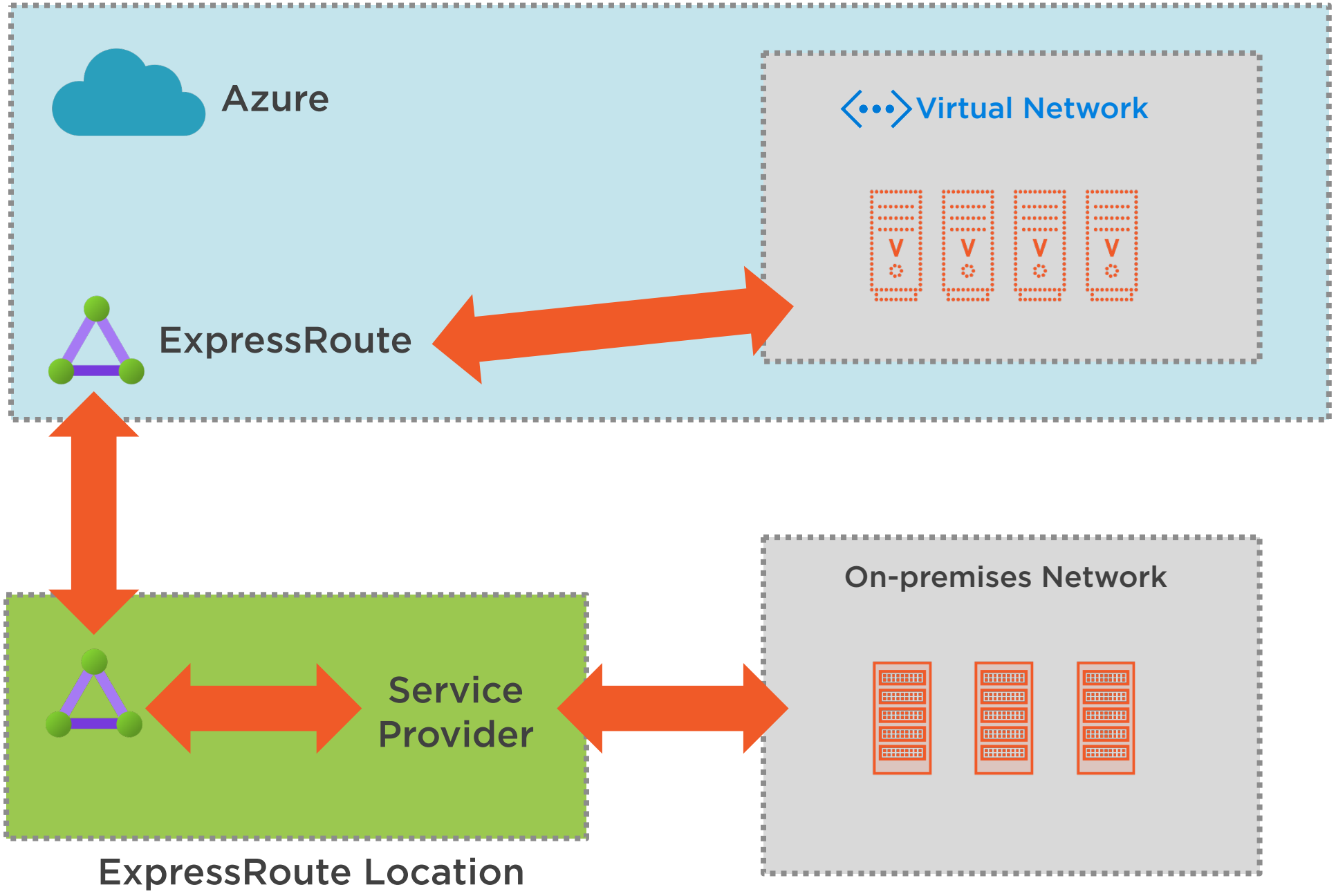


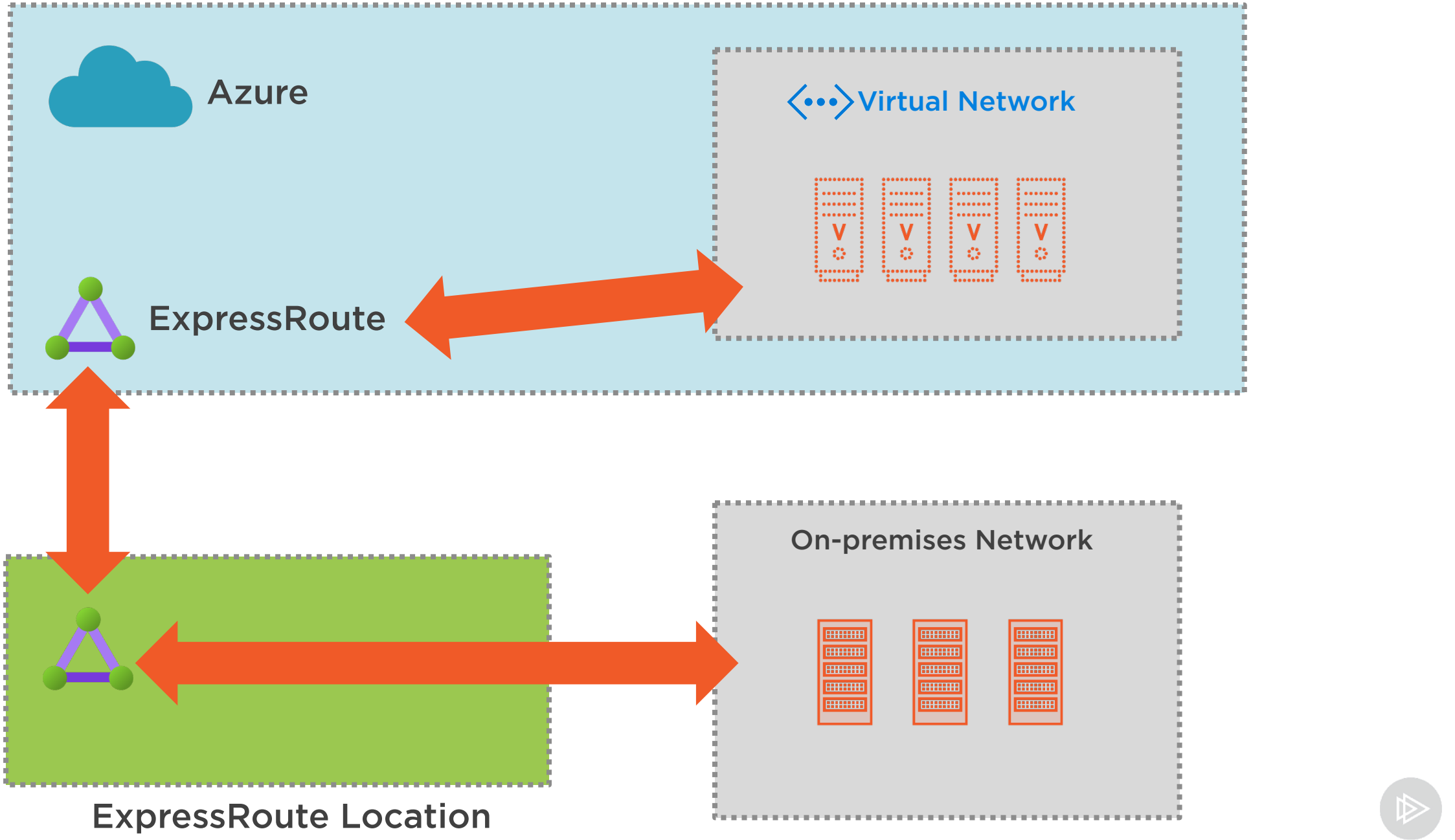
Application Gateway Features:

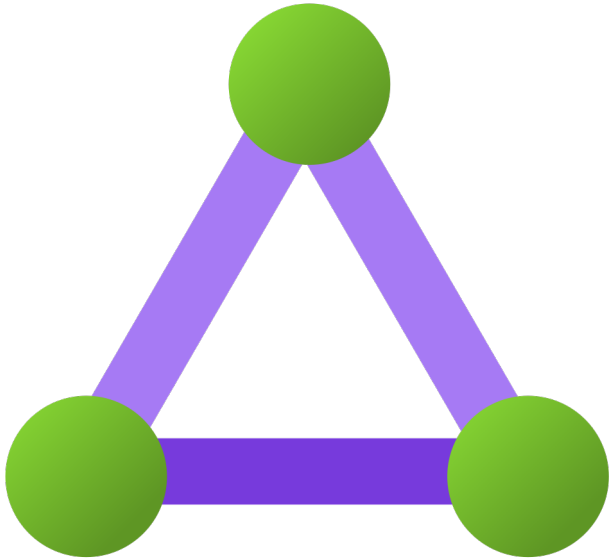
- SSL Termination
- Autoscaling
- Session Affinity
- HTTP Header Rewriting
- Advanced Routing
- Web Application Firewall (WAF)


Virtual Network
On-premises Network


Virtual Network
VPN Gateway
On-premises Network
VPN


Azure
Virtual Network
ExpressRoute
Service Provider
On-premises Network
ExpressRoute Location


Azure
Virtual Network
ExpressRoute
On-premises Network
ExpressRoute Location



ExpressRoute

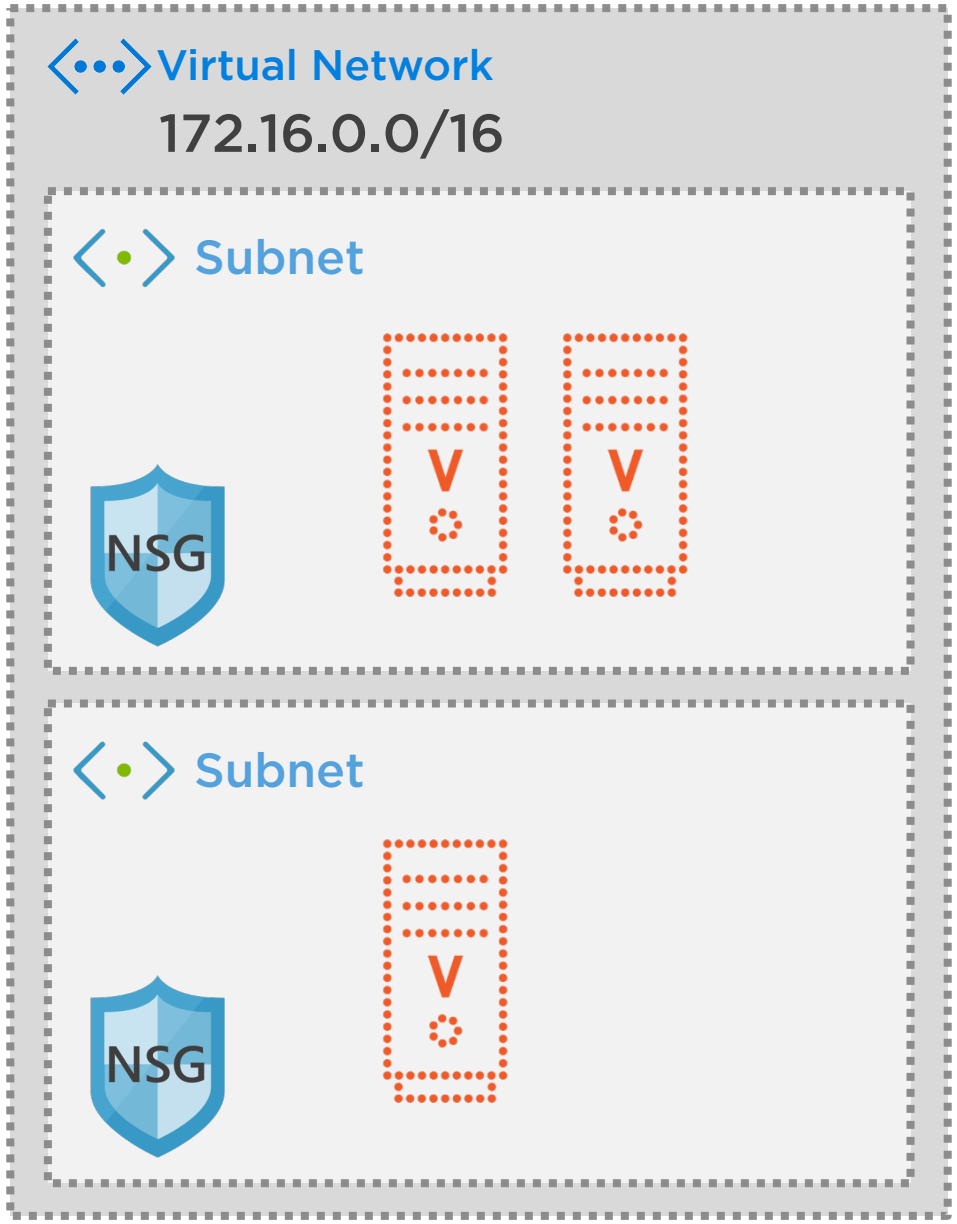
Pricing

- Metered data (per GB outbound)
- Unlimited data

Bandwidth

- 50Mbps to 10Gbps
- 100Gbps (ExpressRoute Direct)

Redundancy


Virtual Network
172.16.0.0/16
Subnet
NSG
Subnet
NSG

Windows Virtual Desktop

Windows Virtual Desktop

Full desktop for users

Apps running remotely

Similar to Remote Desktop Services (RDS)

Fully managed solution in the cloud

Windows Virtual Desktop Supported Clients

Windows

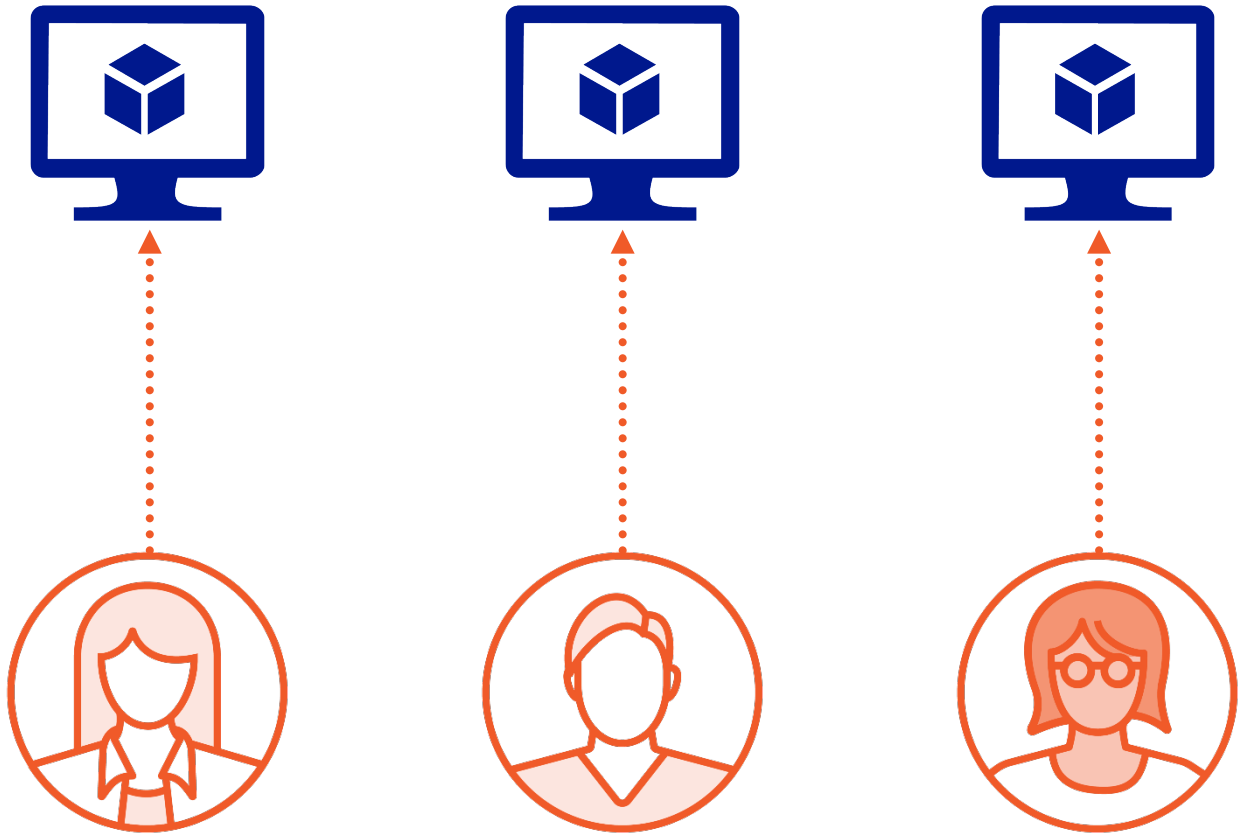
Mac

iOS

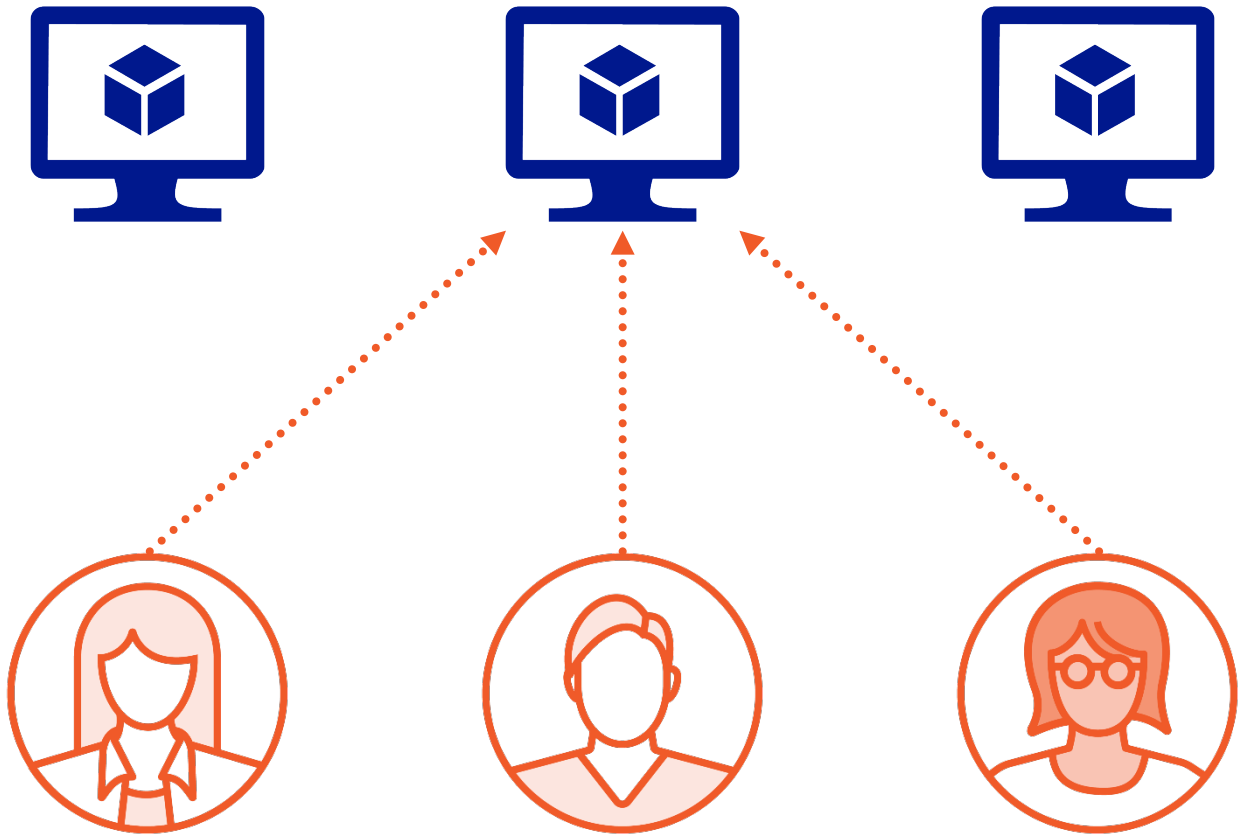
Android

HTML5 Browser

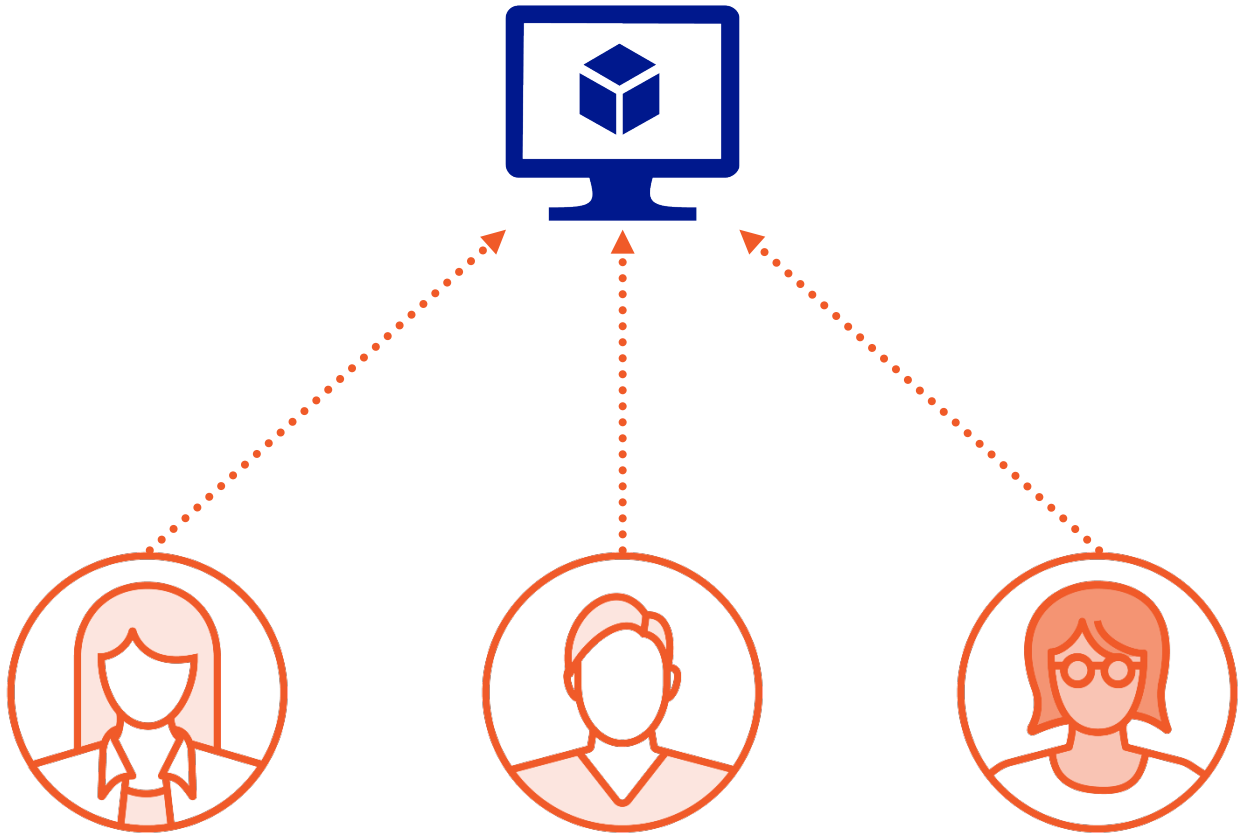
Remote Desktop Services



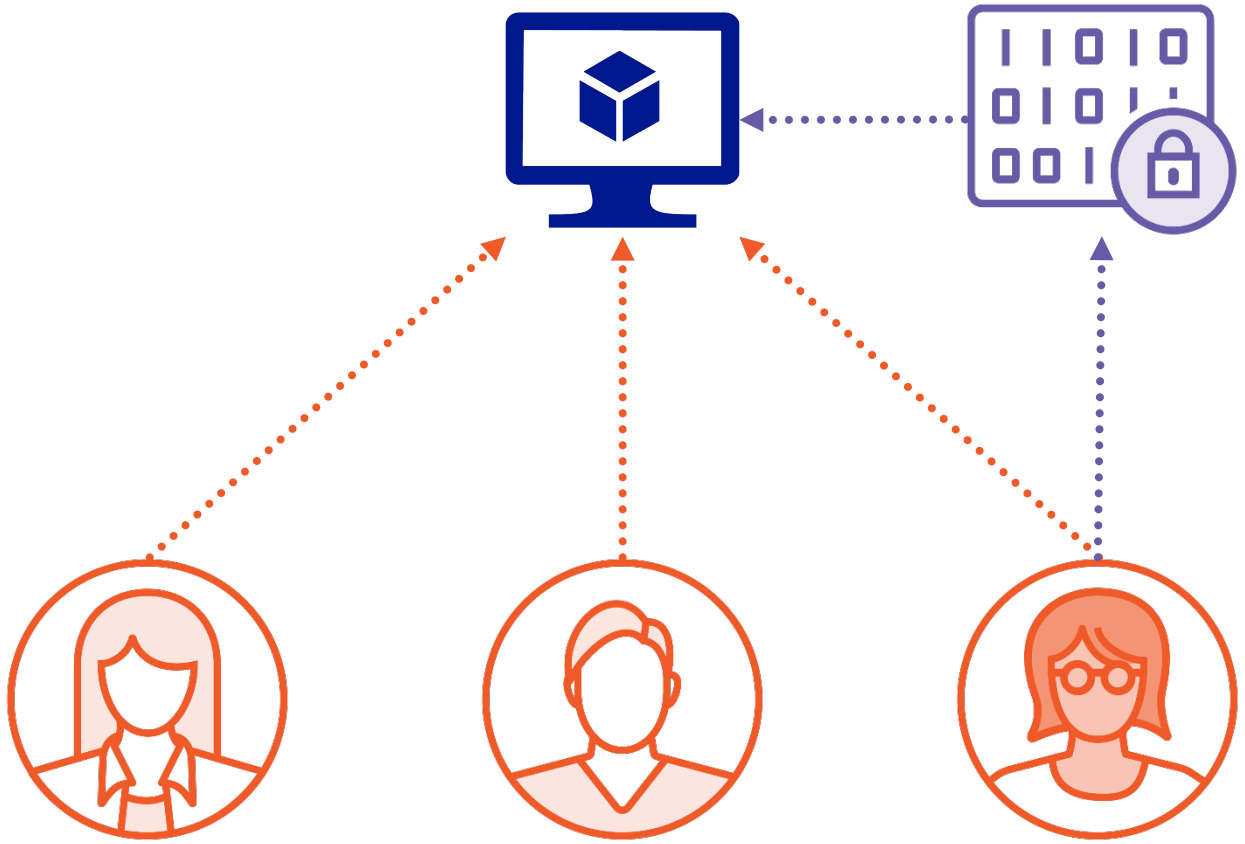
Windows Virtual Desktop



Windows Virtual Desktop



Windows Virtual Desktop



Windows Virtual Desktop

Authentication using Azure AD

Azure Multi-factor Authentication

Supported operating systems:

- Windows Server 2019
- Windows Server 2016
- Windows Server 2012 R2
- Windows 10 Enterprise
- Windows 7 Enterprise

Azure Content Delivery Network (CDN)

Azure CDN

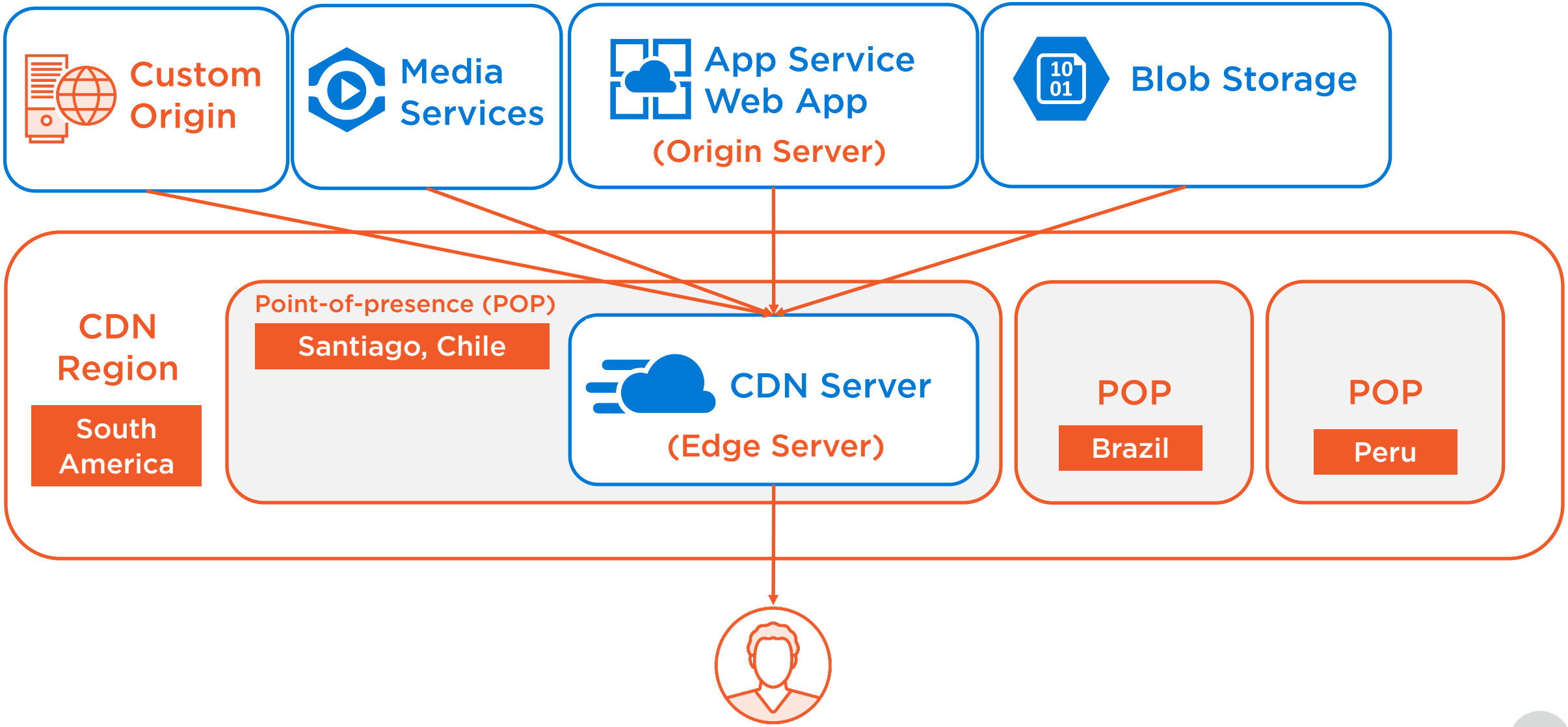
Distributed network of servers

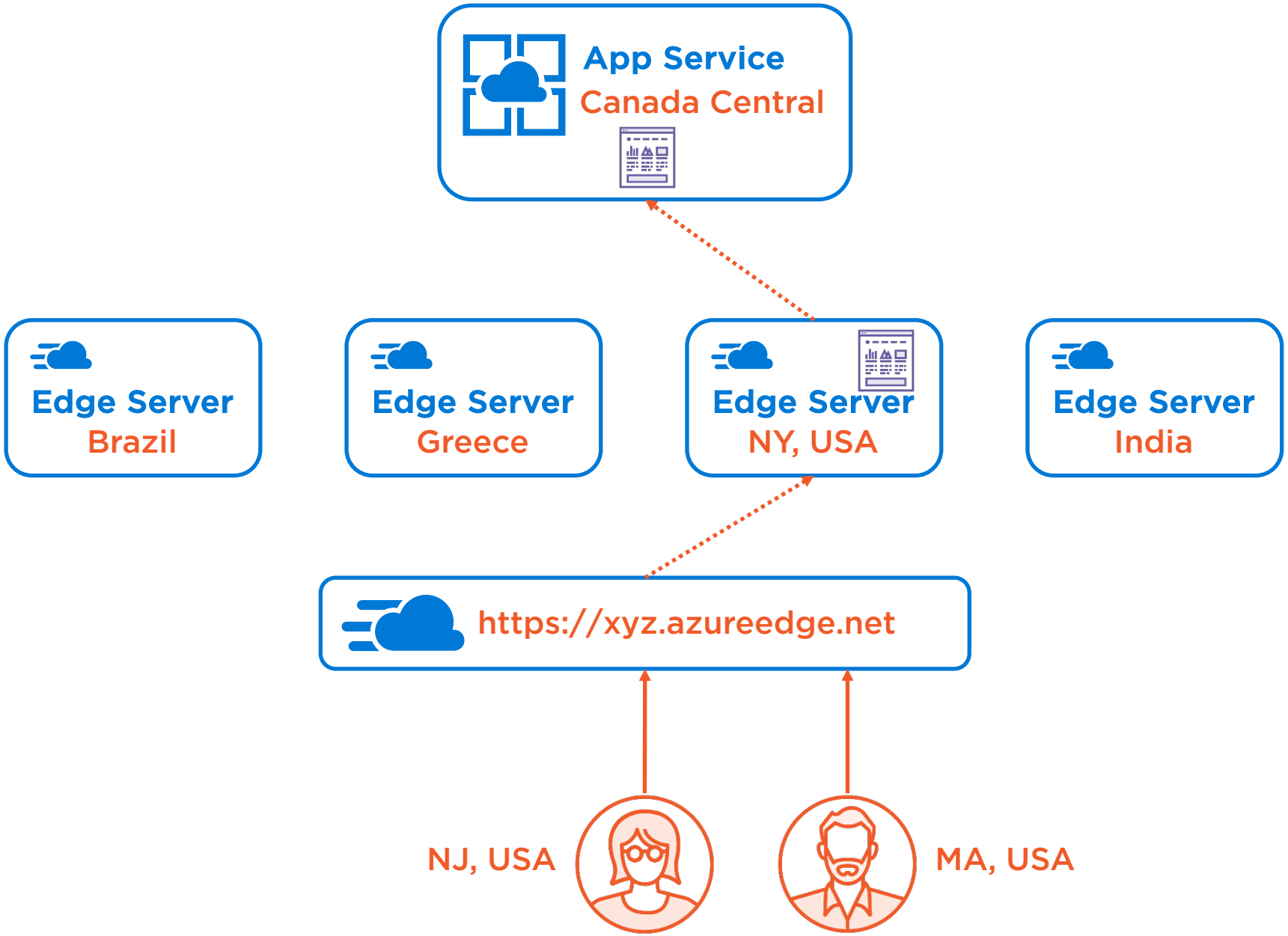
Store cached data

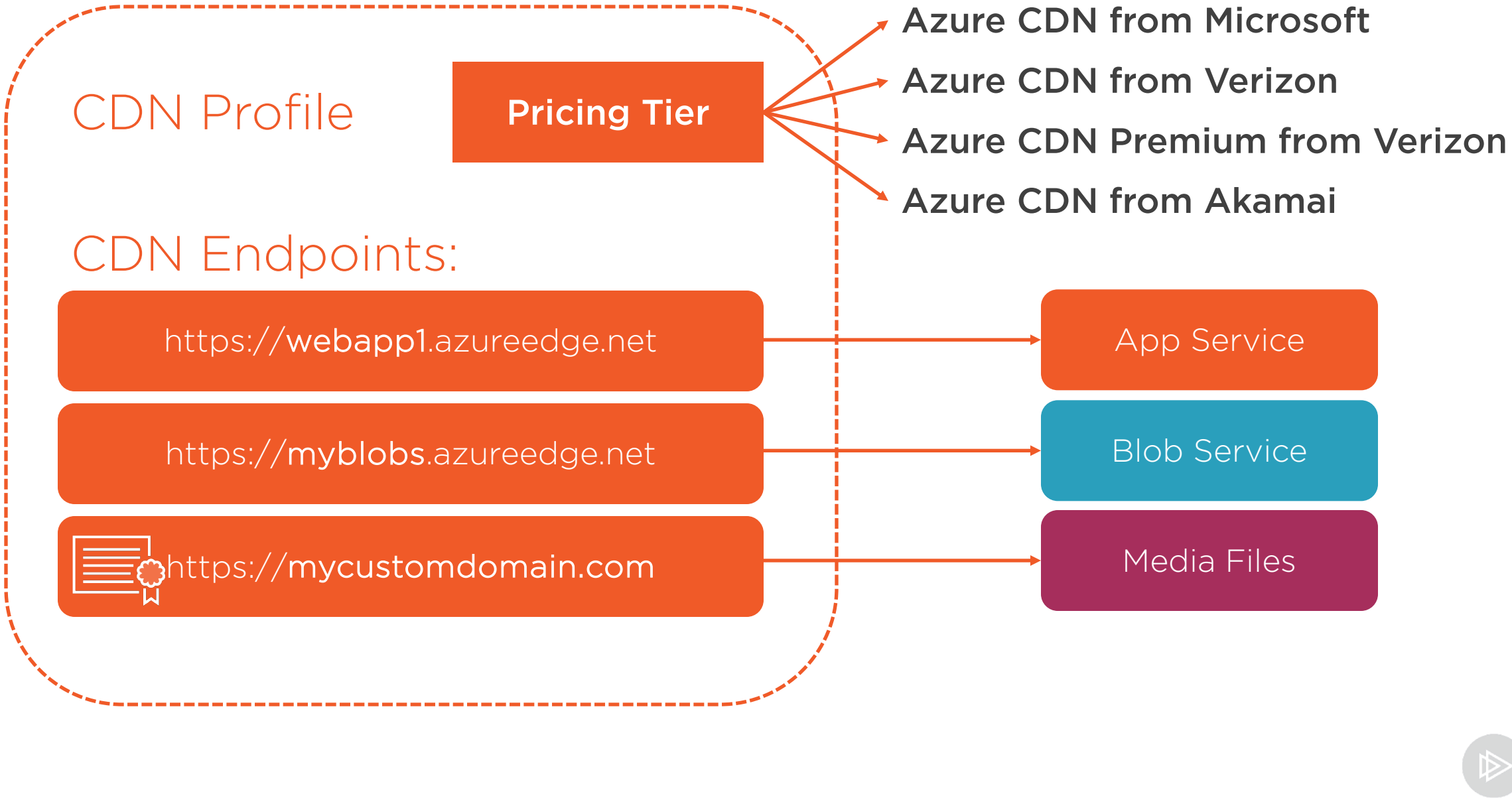
- Minimize latency to global users
- Offload traffic from source servers

Typically static data

Also dynamic data using Dynamic Site Acceleration (DSA)


Custom Origin
Media Services
App Service Web App
(Origin Server)
10 01
Blob Storage
CDN Region
South America
Point-of-presence (POP)
Santiago, Chile
CDN Server
(Edge Server)
POP
Brazil
POP
Peru


App Service
Canada Central
Edge Server
Brazil
Edge Server
Greece
Edge Server
NY, USA
Edge Server
India
https://xyz.azureedge.net
NJ, USA
MA, USA


CDN Profile
Pricing Tier
Azure CDN from Microsoft
Azure CDN from Verizon
Azure CDN Premium from Verizon
Azure CDN from Akamai
CDN Endpoints:
https://webapp1.azureedge.net
https://myblobs.azureedge.net
https://mycustomdomain.com
App Service
Blob Service
Media Files

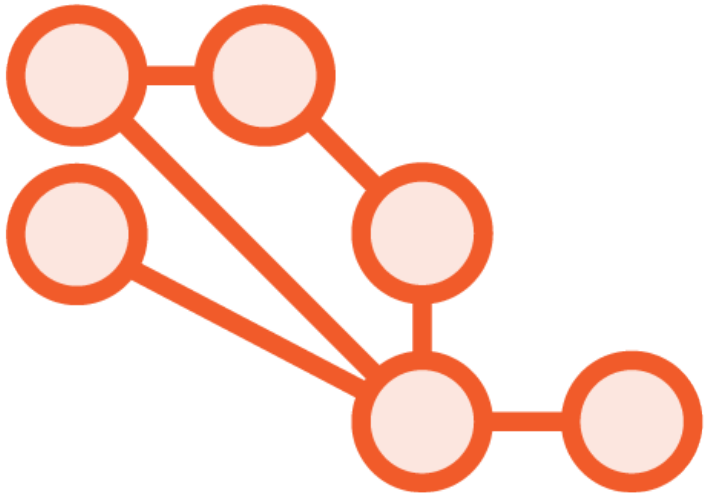
Dynamic Site Acceleration (DSA)

Dynamic data in response to user behavior

DSA is an optimization option

Uses several different approaches

Dynamic Site Acceleration

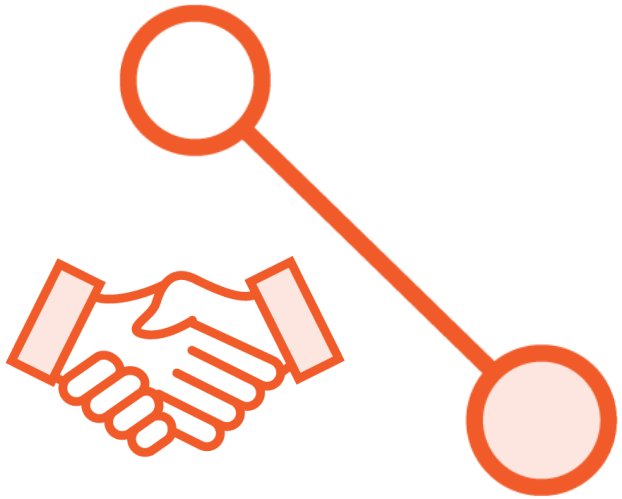


Route Optimization

Finds fastest route to origin server

Compares paths

Performs health checks



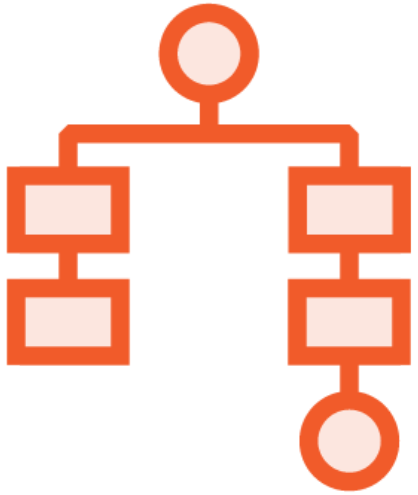
TCP Optimization

Avoids “TCP slow start”

Persistent connections

Tuning packet parameters

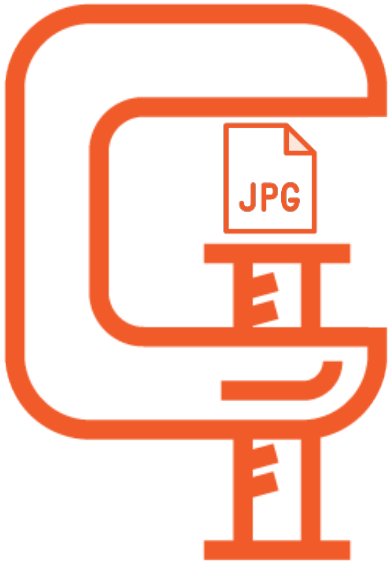
Dynamic Site Acceleration



Object Prefetch

Parses HTML

Serves embedded images and scripts



Adaptive Image Compression

Monitors network quality

Provides smaller files when network speed is slower

Module Summary

- Azure Compute options
- Virtual Machines
- Containers
- App Service
- Serverless computing
- Core networking products
- Windows Virtual Desktop
- Azure CDN

Up Next:
Data Storage in Azure