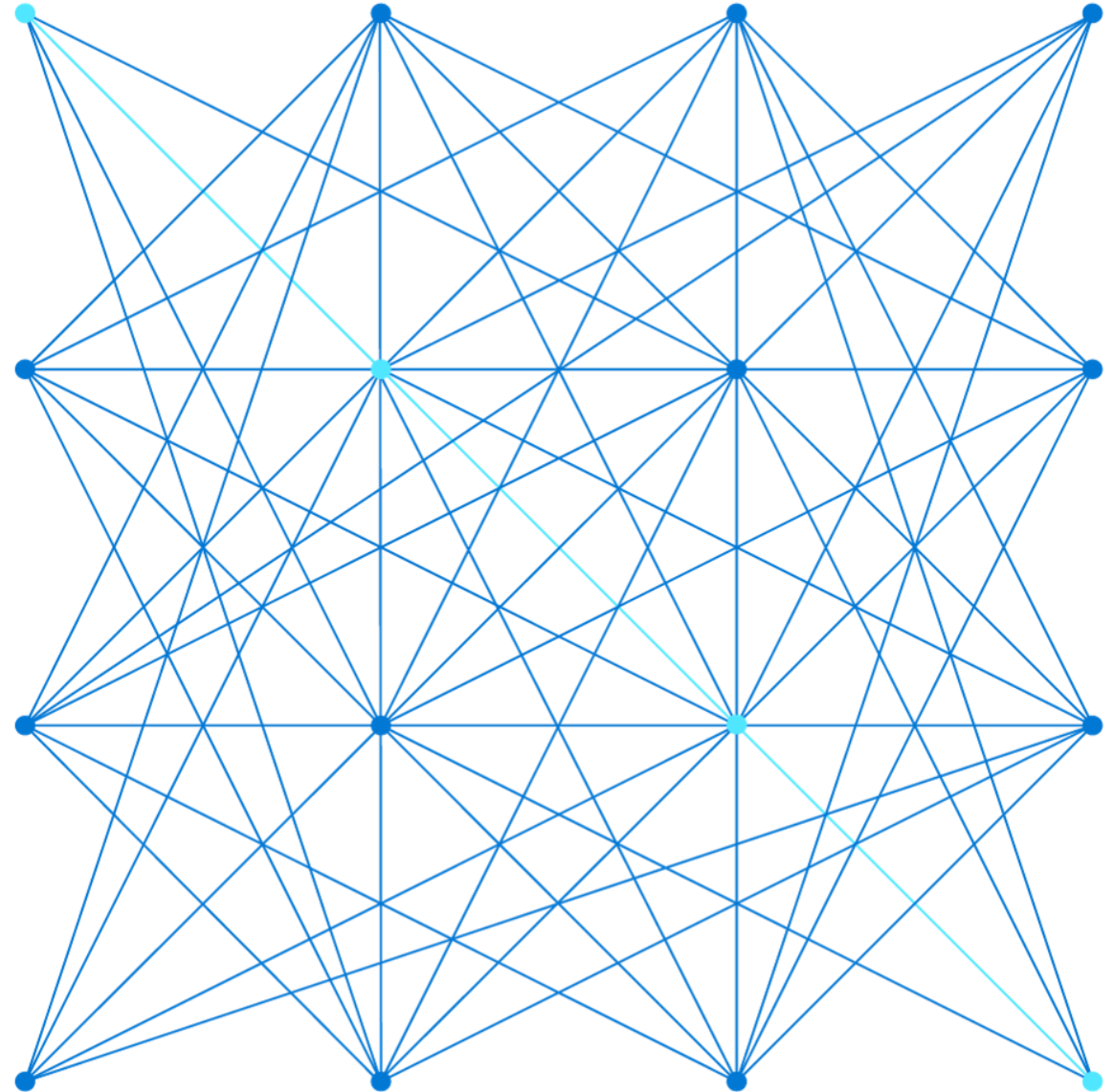


AZ-700

Load balancing non-HTTP(S) traffic




Course Agenda

Module 01: Introduction to Azure Virtual Networks

Module 02: Designing and Implementing Hybrid Networking

Module 03: Designing and Implementing Azure ExpressRoute

Module 04: Load balance non-HTTP(S) traffic in Azure 

Module 05: Load balance HTTP(S) traffic in Azure

Module 06: Design and Implement Network Security

Module 07: Design and Implement private access to Azure Services

Module 08: Design and Implement Network Monitoring

Module Overview



Explore load balancing options in the Azure portal



Design and implement **Azure Load Balancer** using the Azure portal



Exercise - Create and configure an internal load balancer using the Azure portal



Explore Azure **Traffic Manager**

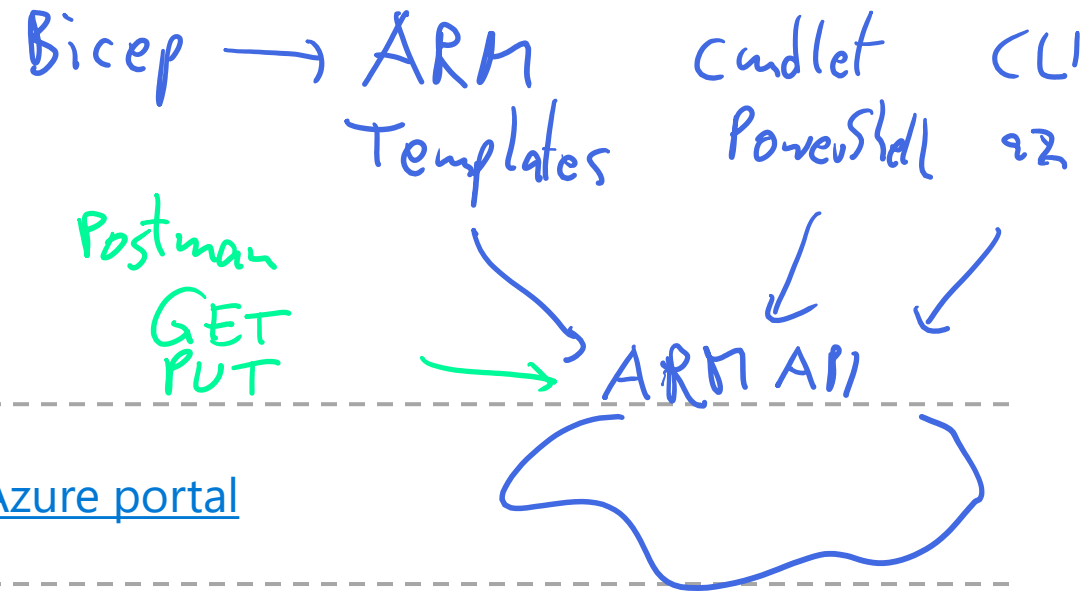
Pol

DNS

1
2
3



Exercise: create a traffic manager profile using the Azure portal



Explore load balancing options in the Azure portal



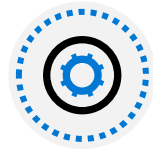
Explore load balancing options in the Azure portal overview



What is a Load balancer



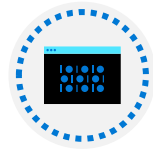
Load balancing options for Azure



Choosing a load balancing option

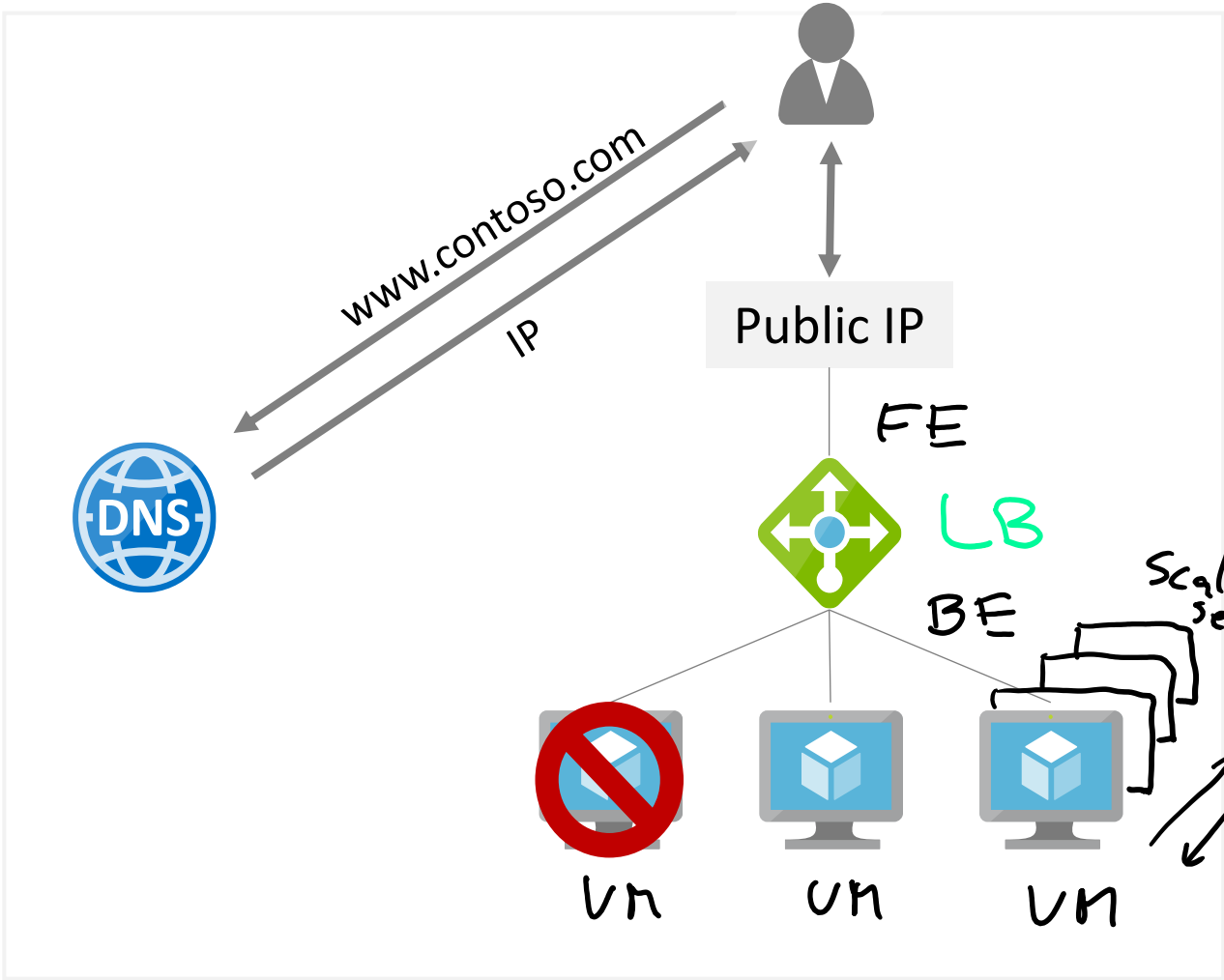
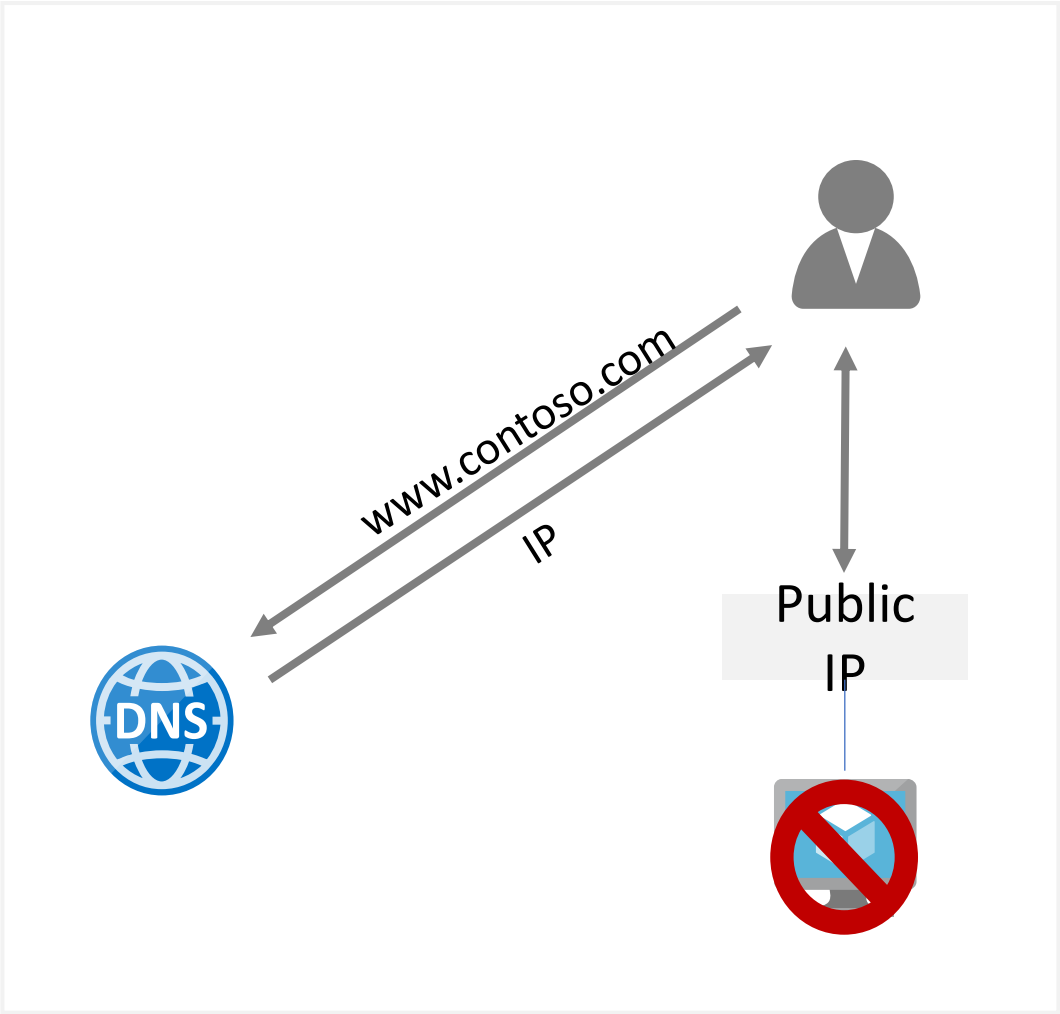


Demonstration

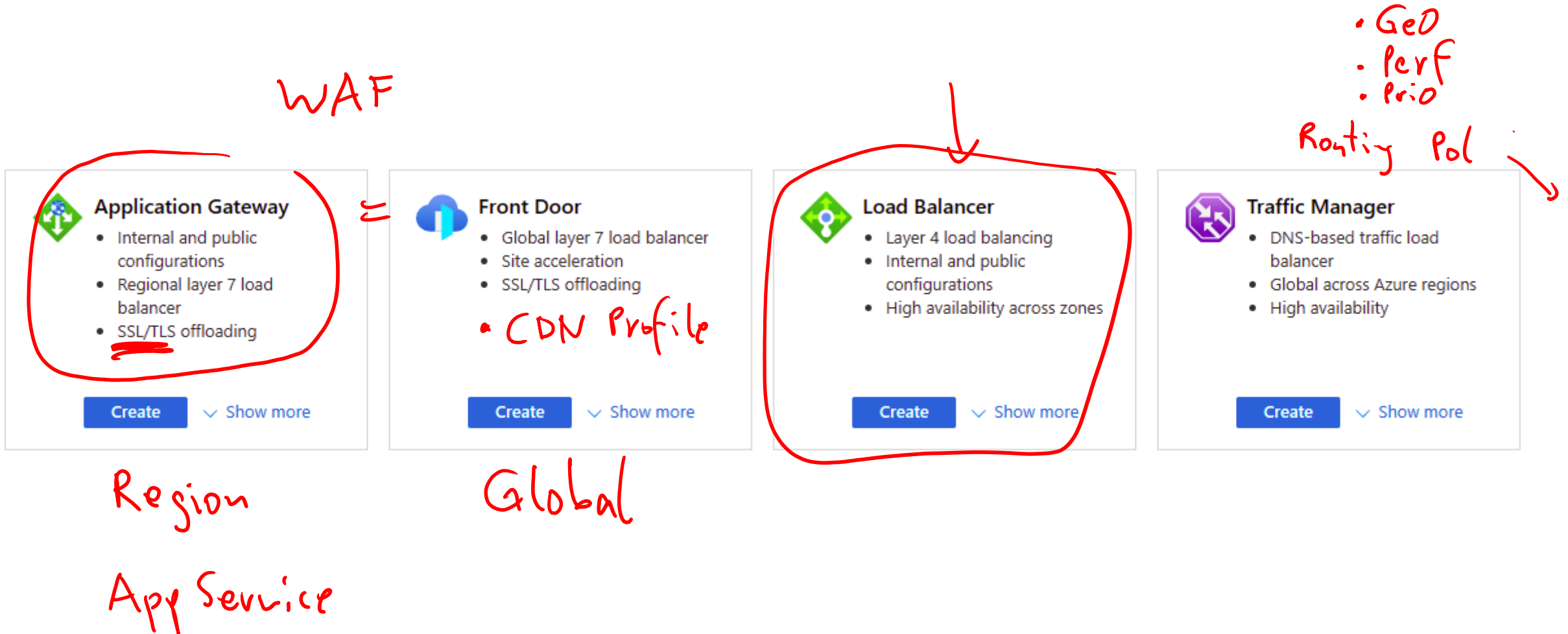


Review

What is a Load balancer

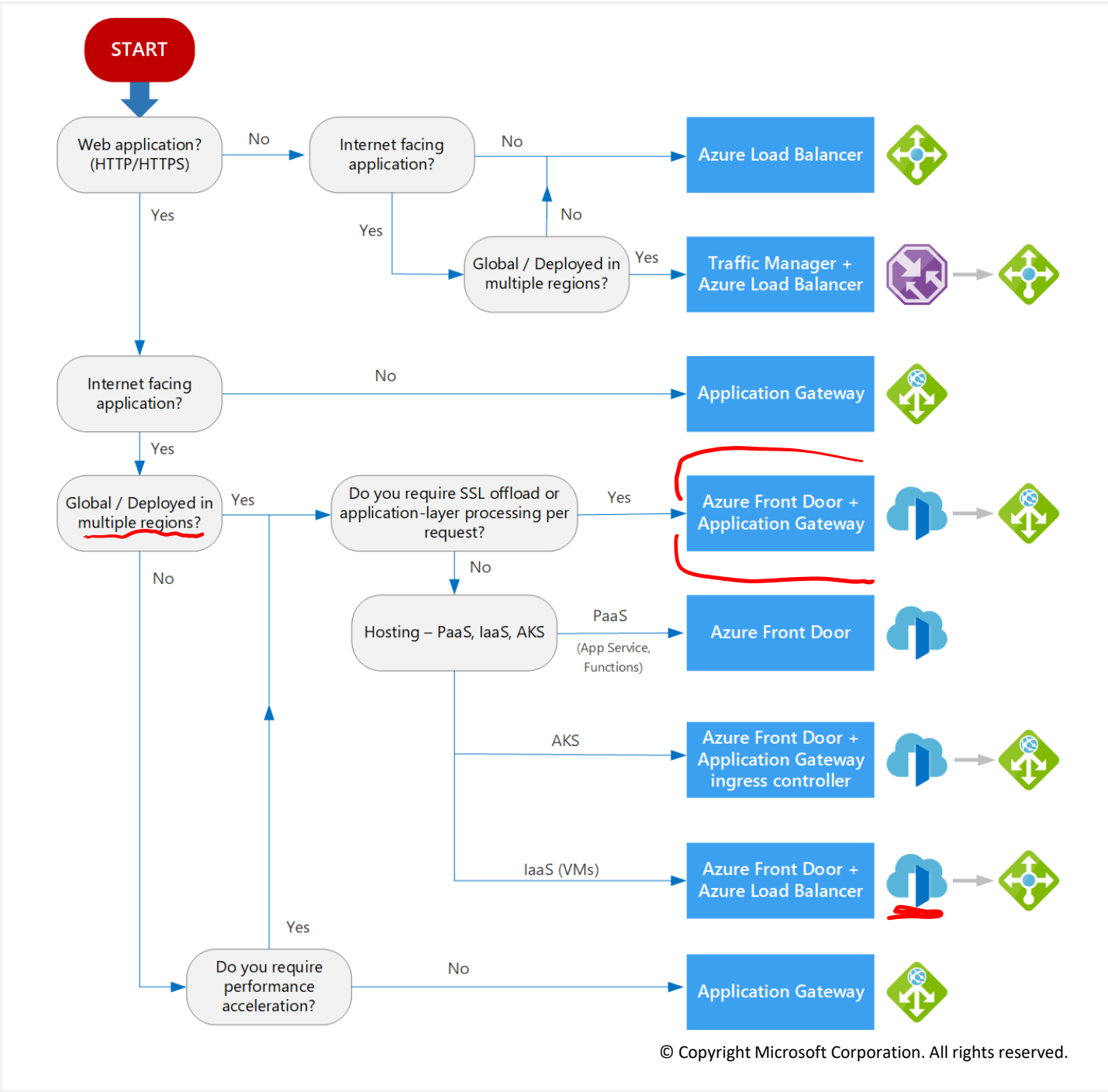


Load balancing options for Azure

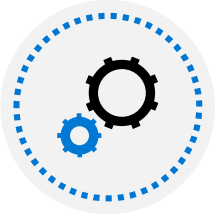


Choosing a load balancing option

- Type of traffic
- Scope
- Availability
- Cost
- Features and limitations



Demonstration



Create the virtual network



Create load balancer



Create backend servers and test virtual machine with IIS installed



Test the load balancer

Summary and Resources – Explore load balancing options in the Azure portal

Knowledge Check Questions

Microsoft Learn Modules (docs.microsoft.com/Learn)



Improve application scalability and resiliency by using Azure Load Balancer

Design and implement Azure Load balancer



Design and implement Azure Load Balancer overview



Determine Load Balancer type



Gateway Load Balancer



Azure Load balancer and availability zones



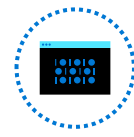
Determine Load Balancer SKUs



Create Load balancer in the Azure portal



Create Backend Pools



Create Load Balancer Rules



Configure Session Persistence



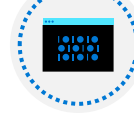
Create Health Probes



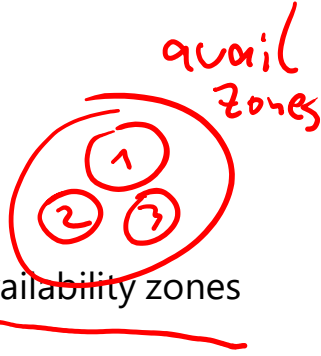
Configure outbound traffic with Standard load balancer



Demonstration



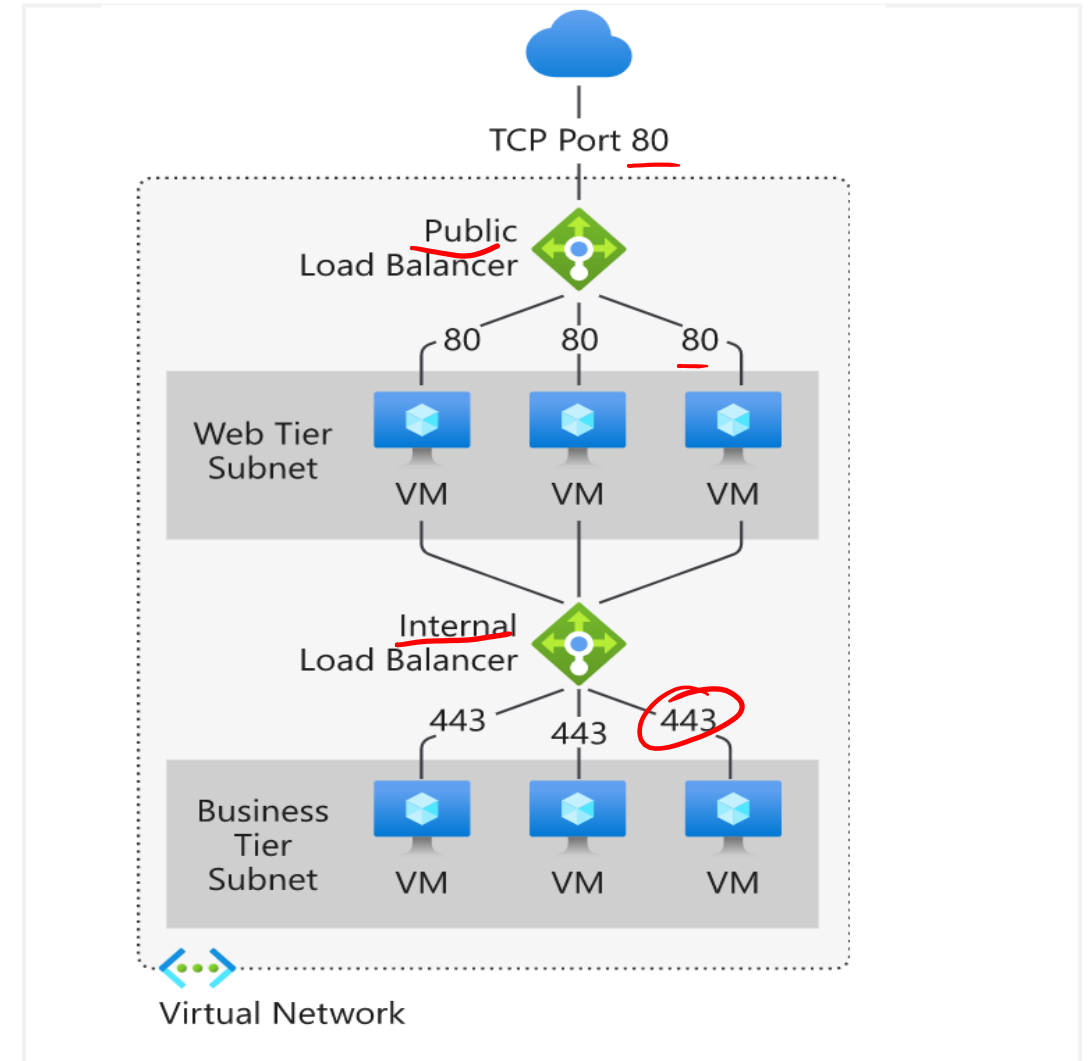
Review



Choosing a Load Balancer Type

A **public load balancer** can provide outbound connections for virtual machines (VMs) inside your virtual network

An **internal load balancer** is used where private IPs are needed at the frontend only

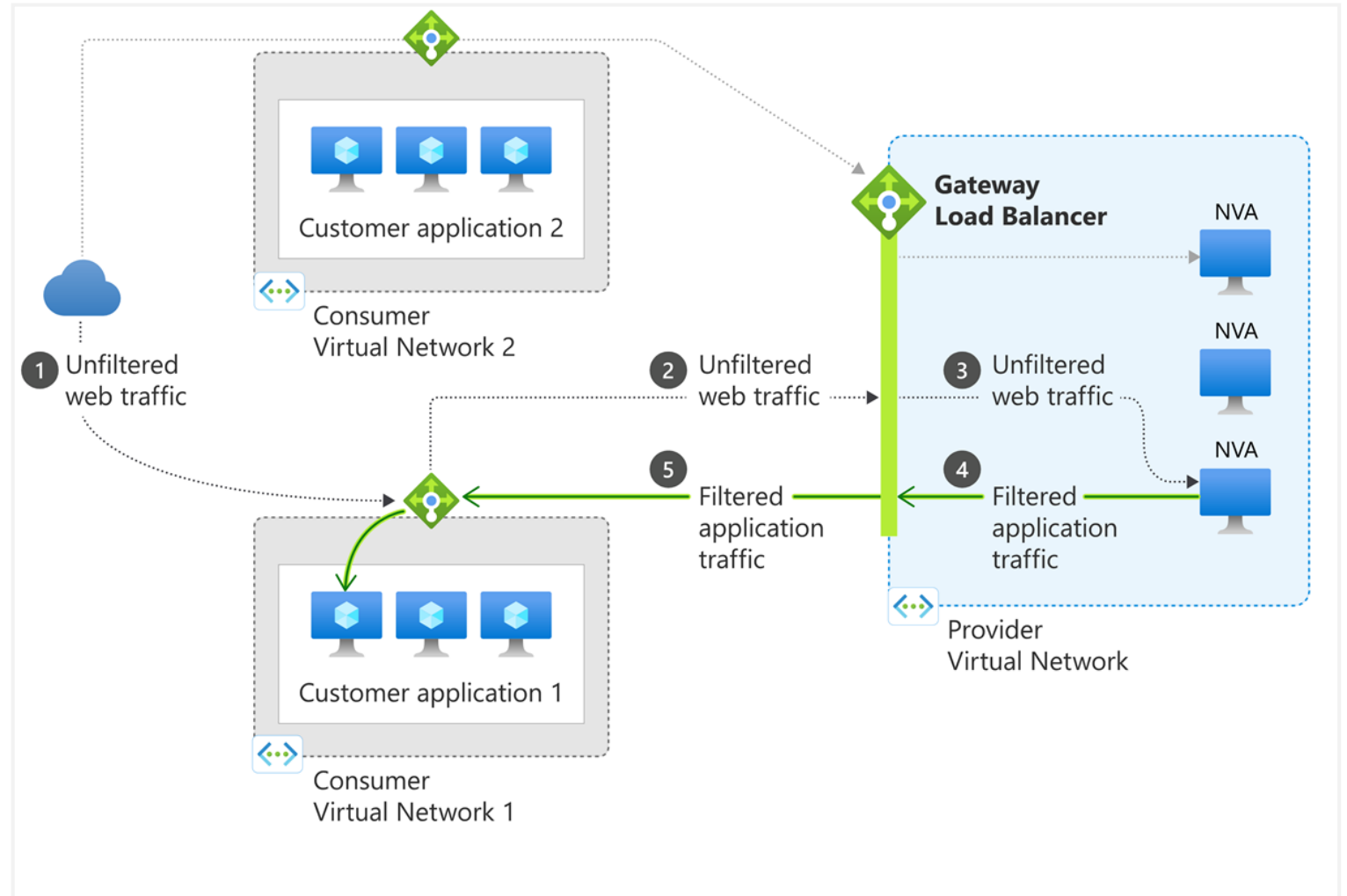


Gateway Load Balancer

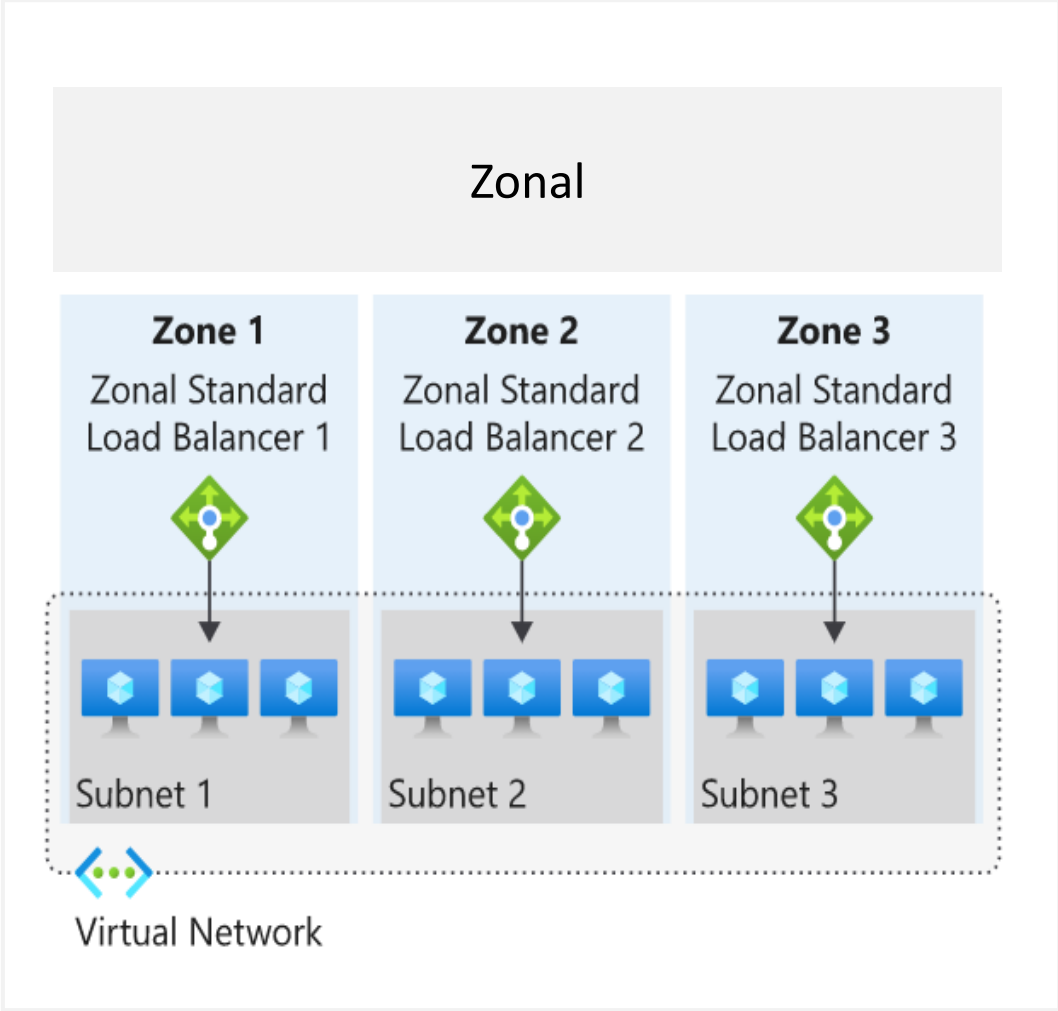
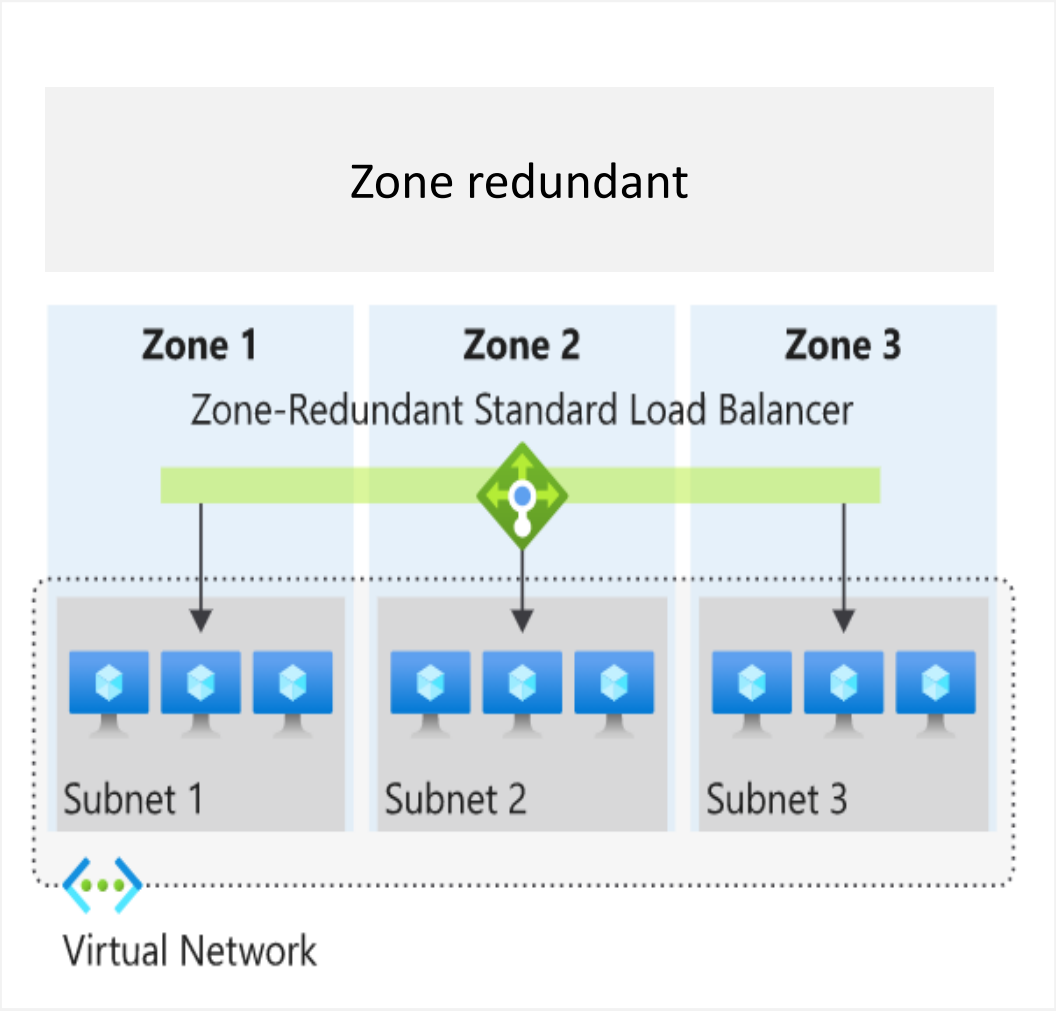
Gateway Load Balancer is a SKU of the Azure Load Balancer portfolio catered for high performance and high availability scenarios with third-party Network Virtual Appliances (NVAs)

Components to configure:

- Frontend IP
- Load-balancing rules
- Backend pool(s)
- Tunnel interfaces
- Chain



Azure Load balancer and availability zones

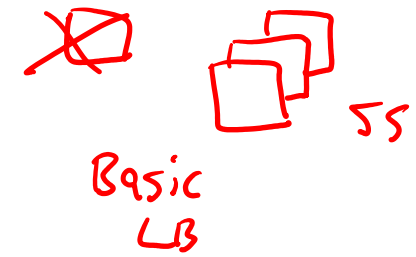


Determine Load Balancer SKUs

Free



Feature	Basic SKU	Standard SKU
Backend pool size	Up to 300 IP Configurations	Up to 5000 instances
Health probes	TCP, HTTP	TCP, HTTP, HTTPS
Availability zones	Not available	Zone-redundant and zonal frontends for inbound and outbound traffic
Multiple frontends	Inbound only	Inbound and outbound
Secure by default	Open by default. NSG optional.	Closed to inbound flows unless allowed by an NSG. Internal traffic from the virtual network to the internal load balancer is allowed.
SLA	Not available	99.99%



Instance details

Name *

Region *

SKU * ⓘ ☒ Standard ☐ Gateway ☐ Basic

Type * ⓘ ☒ Public ☐ Internal

Tier * ☒ Regional ☐ Global

Create Load balancer in the Azure portal

Subscription

Name

Region

Type

SKU

Tier

Create load balancer ...

Project details

Subscription *

Resource group *

[Create new](#)

Instance details

Name *

Region *

Type *

SKU *

Tier

Public IP address

Public IP address *

Public IP address name *

Public IP address SKU

IP address assignment *

Add a public IPv6 address

Free Trial

Contoso-ResourceGroup

Public-Basic-LB

(US) West US

☐ Internal ☒ Public

☐ Standard ☒ Basic

Microsoft recommends Standard SKU load balancer for production workloads. [Learn more about pricing differences between Standard and Basic SKU](#)

☒ Regional ☐ Global

☒ Create new ☐ Use existing

Contoso-Public-IP

Basic

☒ Dynamic ☐ Static

No Yes

Review + create

< Previous

Next : Tags >

[Download a template for automation](#)

Create Backend Pools

Add backend pool ...

Name *

cesbackendpool ✓

Virtual network * ⓘ

Associated to ⓘ

Unassociated ▼

Unassociated

Virtual machines

Virtual machine scale set

IP Version

SKU	Backend pool endpoints
Basic SKU	VMs in a single availability set or VM scale set
Standard SKU	Any VM in a single virtual network, including a blend of VMs, availability sets, and VM scale sets

To distribute traffic, a back-end address pool contains the IP addresses of the virtual NICs that are connected to the load balancer

Create Load Balancer Rules

Maps a frontend IP and port combination to a set of backend pool and port combination

Rules can be used in combination with NAT rules

A NAT rule is explicitly attached to a VM (or network interface) to complete the path to the target

Add load balancing rule ✕

lbr01

Name *
lbr01 ✓

IP Version *
☒ IPv4 ☐ IPv6

Frontend IP address * ⓘ
10.1.0.4 (LoadBalancerFrontEnd) ✓

Protocol
☒ TCP ☐ UDP

Port *
80

Backend port * ⓘ
80

Backend pool ⓘ
bep01 ✓

Health probe ⓘ
hp01 (HTTP:80) ✓

Session persistence ⓘ
None

Idle timeout (minutes) ⓘ
 4

Floating IP (direct server return) ⓘ
 Disabled Enabled

Configure Session Persistence

sticky

Session persistence ⓘ

None

None

Client IP

Client IP and protocol

The diagram illustrates the session persistence configuration. A Client (laptop icon) sends three connections (Connection 1, Connection 2, Connection 3) to the Internet (cloud icon). The Internet connects to a Load balancer (blue diamond icon). The Load balancer routes traffic to three Virtual machines (VMs) within a Cloud service or virtual machines (dashed blue box). The VMs are labeled Virtual machine 1, Virtual machine 2, and Virtual machine 3. The Load balancer routes traffic to Virtual machine 1 (DIP 1, local port), Virtual machine 2 (DIP 2, local port), and Virtual machine 3 (DIP 3, local port). A red dot is shown on the arrow to Virtual machine 1.

5-tuple hash:

- Source IP
- Source port
- Destination IP (Cloud service VIP)
- Destination port (Public port)
- Protocol

Session persistence specifies how client traffic is handled

None (default) requests can be handled by any virtual machine

Client IP requests will be handled by the same virtual machine

Client IP and protocol specifies that successive requests from the same address and protocol will be handled by the same virtual machine

Create Health Probes

Allows the load balancer to monitor the status of an app

Dynamically adds or removes VMs from the load balancer rotation based on their response to health checks

HTTP custom probe

TCP custom probe tries to establish a successful TCP session

Add health probe

LB700×

i Health probes are used to check the status of a backend pool instance. If the health probe fails to get a response from a backend instance then no new connections will be sent to that backend instance until the health probe succeeds again.

Name * ✓

Protocol * ▼

Port * ⓘ

Path * ⓘ ✓

Interval * ⓘ seconds

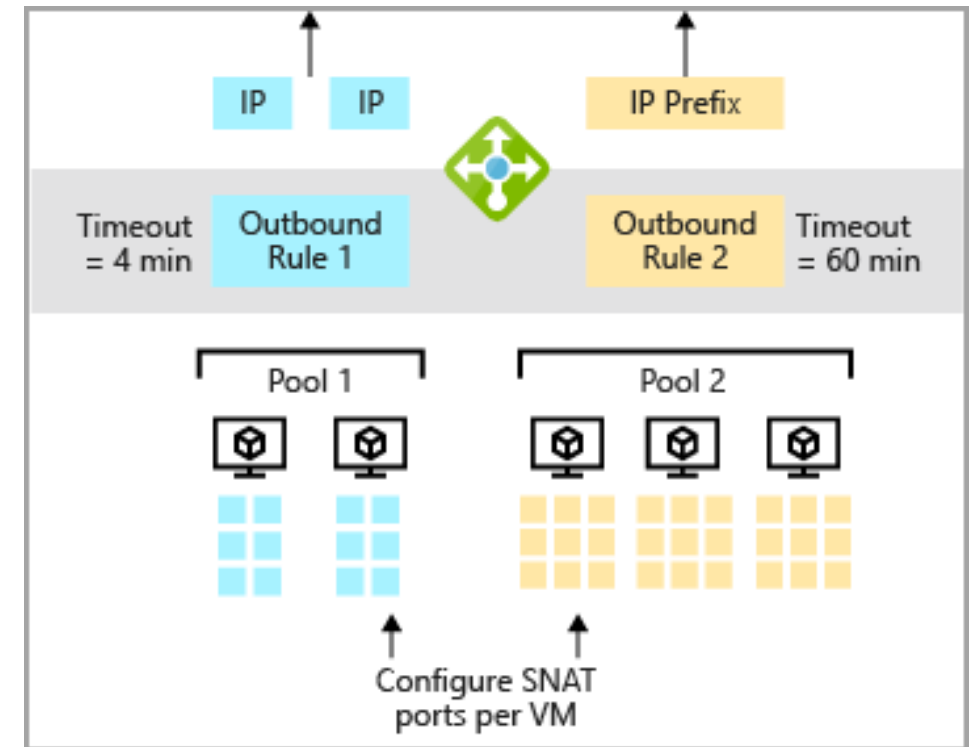
Configure outbound traffic with Standard load balancer

~~Basic~~

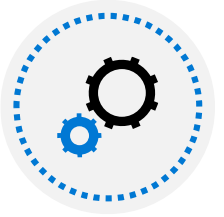
source network address translation
(SNAT)

Outbound rules allow you to
explicitly define SNAT

- IP masquerading
- Simplifying your allow lists
- Reduces the number of public IP resources for deployment.



Demonstration



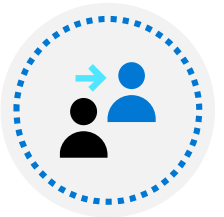
Create the virtual network



Create public load balancer



Create backend pool



Create a health probe

Review – Design and implement Azure Load Balancer

Check your knowledge

Microsoft Learn Modules (docs.microsoft.com/Learn)



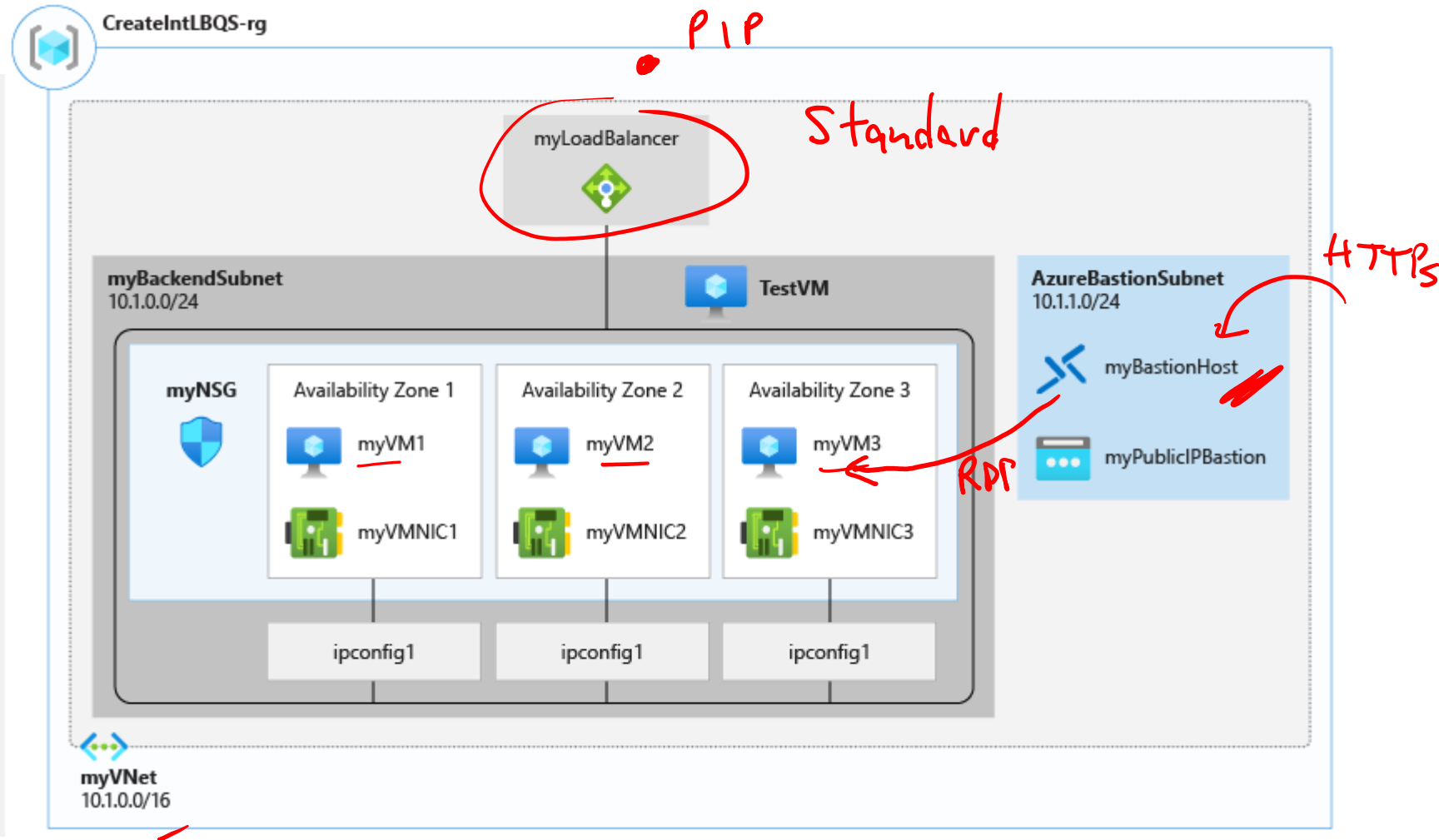
[What is Azure Load Balancer? - Azure Load Balancer | Microsoft Docs](#)

Exercise - Create and configure an internal load balancer using the Azure portal



Exercise - Create and configure an Azure load balancer

- Task 1: Create the virtual network
- Task 2: Create the load balancer
- Task 3: Create load balancer resources
- Task 4: Create backend servers
- Task 5: Test the load balancer



Review – Exercise create and configure an internal load balancer using the Azure portal

Check your knowledge



Microsoft Learn Modules (docs.microsoft.com/Learn)

[Quickstart: Create a public load balancer - Azure portal - Azure Load Balancer | Microsoft Docs](#)

Explore Azure Traffic Manager



Explore Azure Traffic Manager overview



Use cases for Azure Traffic Manager



How Traffic manager works



Traffic routing methods



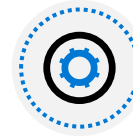
Traffic manager endpoints



Configuring traffic manager profiles



Configure Endpoint monitoring



Demonstration



Review

Use cases for Azure Traffic Manager

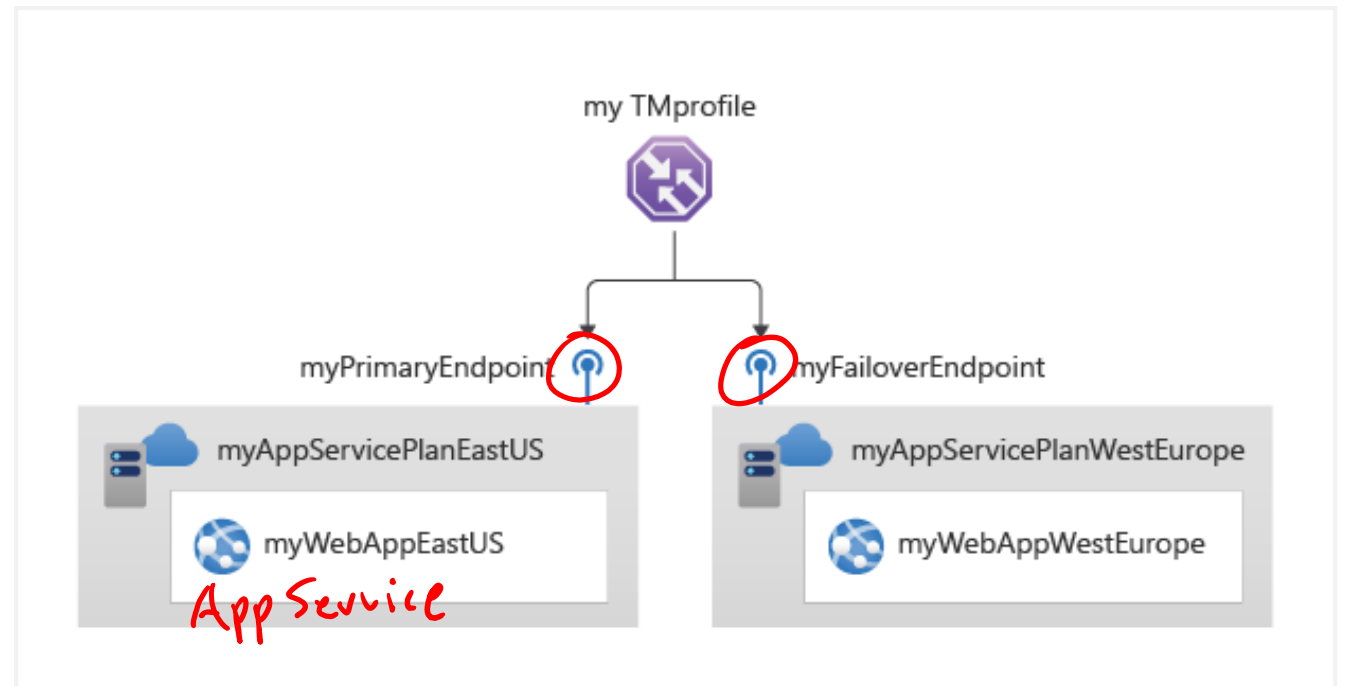
Increase application availability

Improve application performance

Service maintenance without downtime

Combine hybrid applications

Distribute traffic for complex deployments

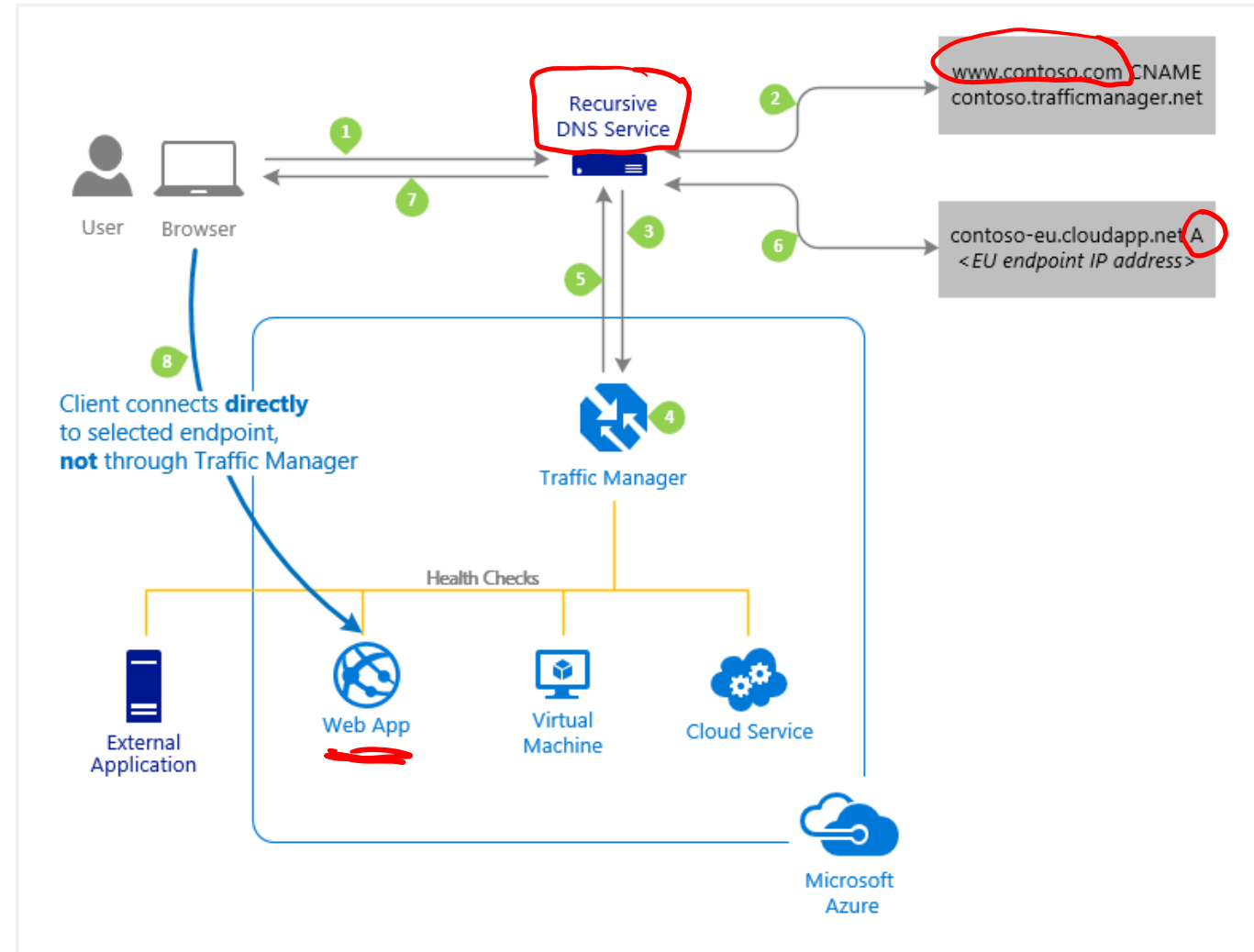


VM
IP

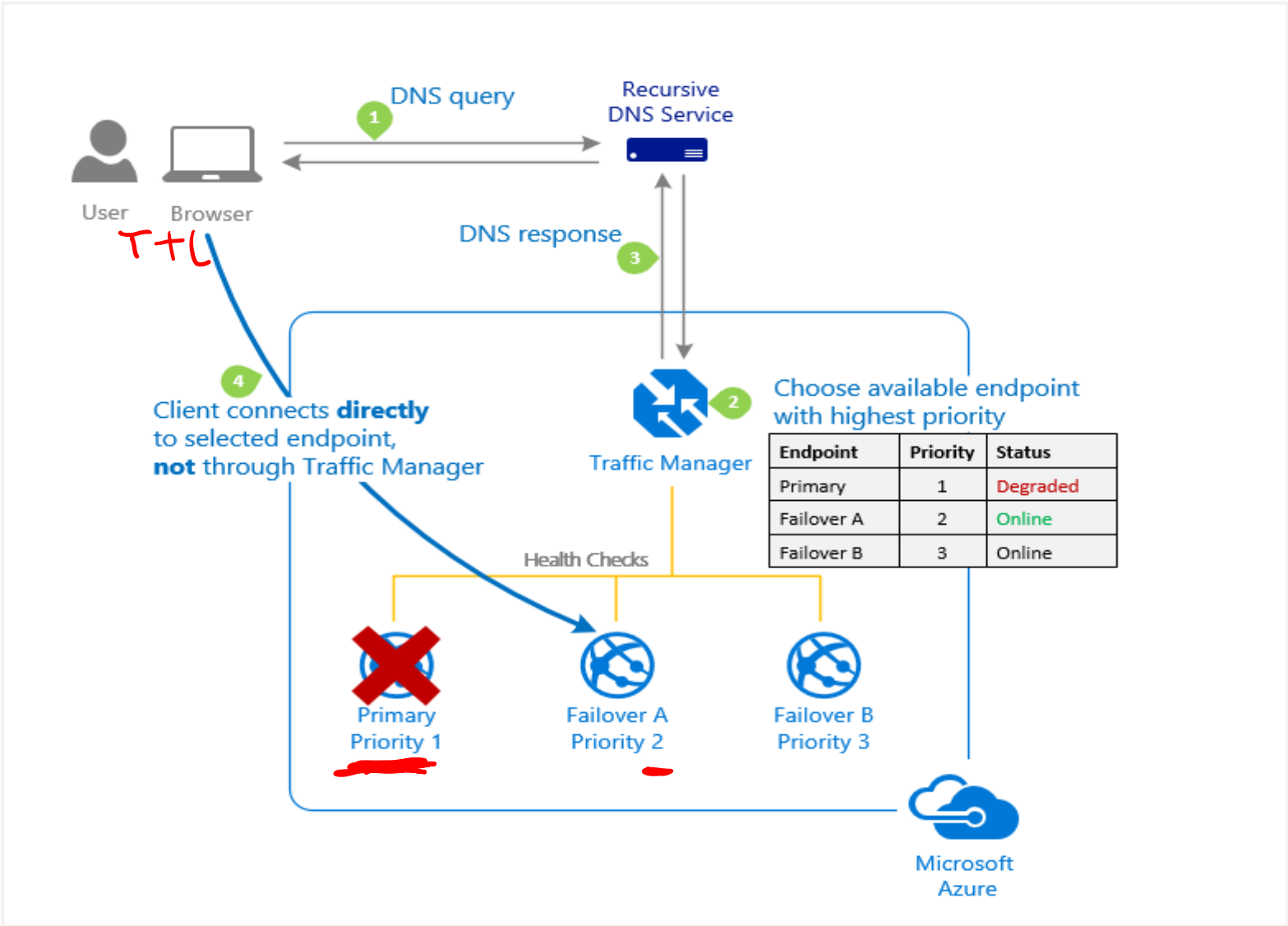
How Traffic manager works

The Traffic Manager name servers receive the request. They choose an endpoint based on:

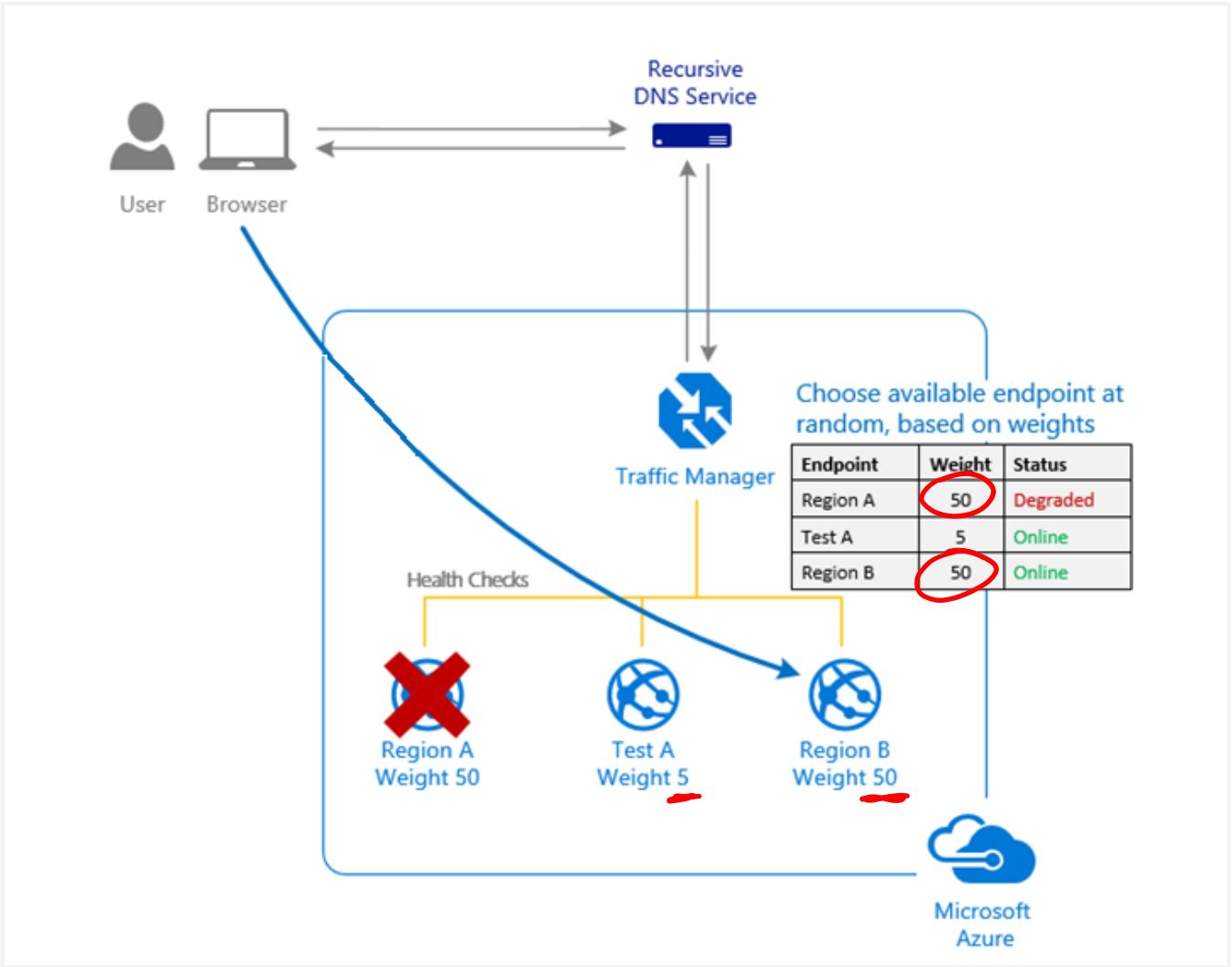
- The configured state of each endpoint
- The current health of each endpoint, as determined by the Traffic Manager health checks
- The chosen traffic-routing method
- Final connection is not going through Traffic Manager



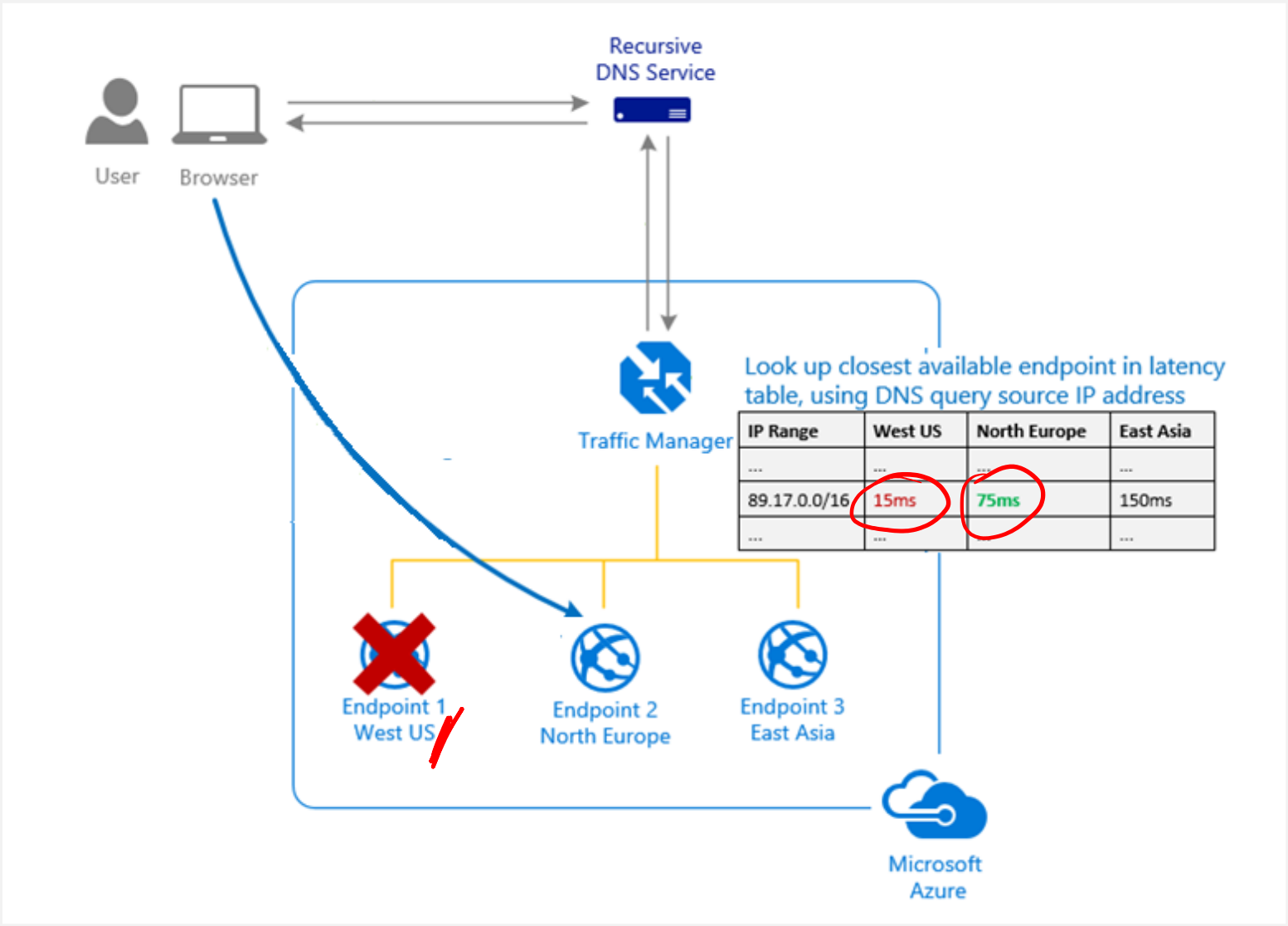
Traffic routing methods – Priority



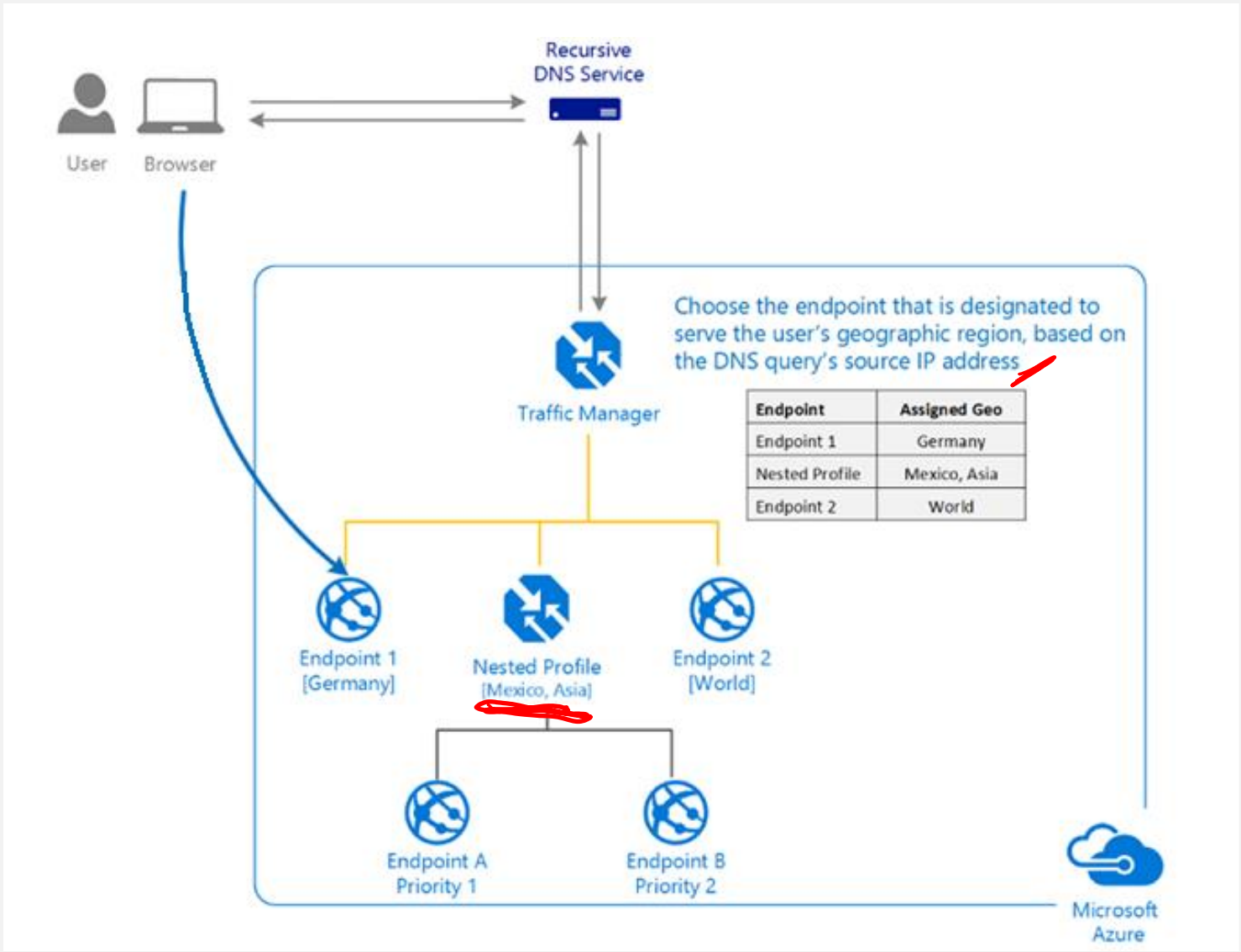
Traffic routing methods – Weighted



Traffic routing methods – Performance



Traffic routing methods - Geographic

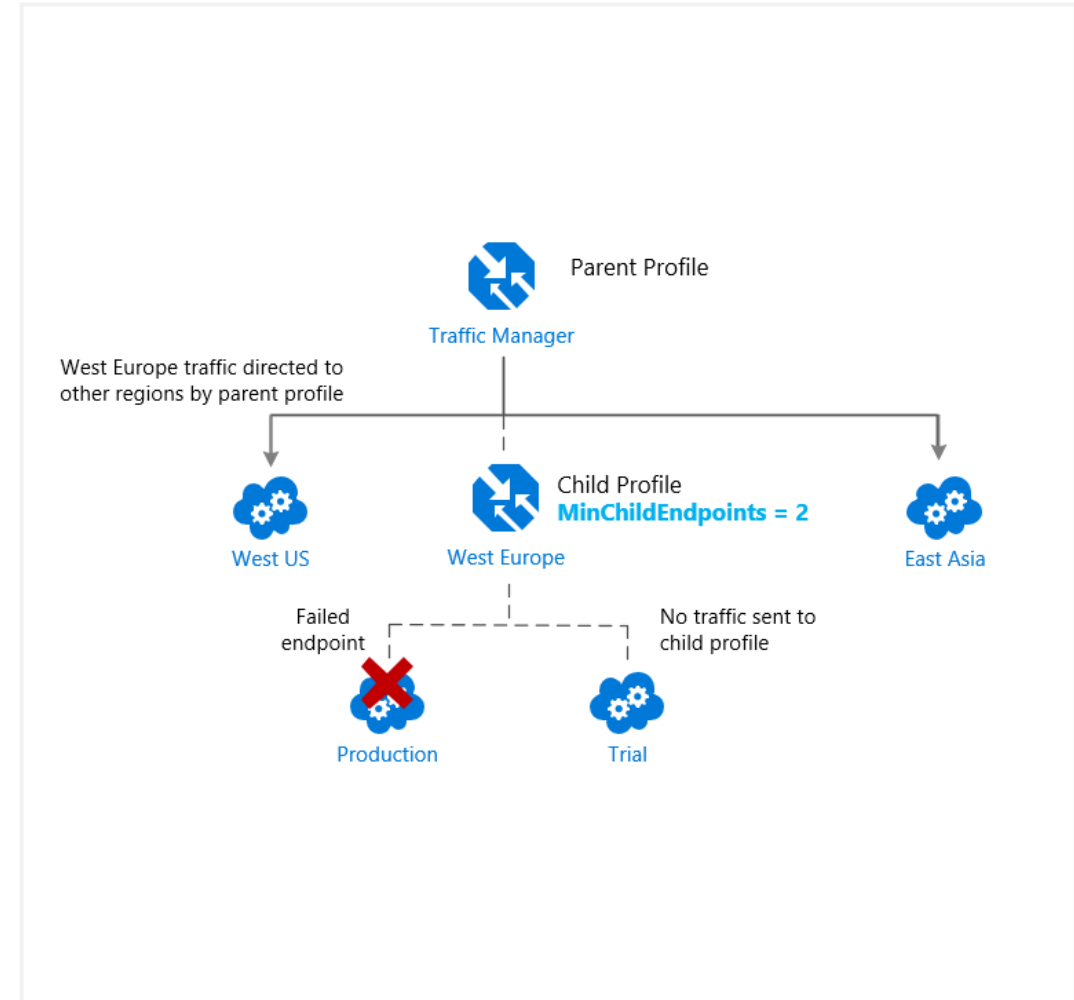


Traffic manager endpoints

Azure endpoints – load balance traffic to a cloud service, web app, or public IP address in the same subscription within Azure.

External endpoints - load balance traffic for IPv4/IPv6 addresses, FQDNs, or for services hosted outside Azure. These services can either be on-premises or with a hosting provider.

Nested endpoints - combine Traffic Manager profiles to create more flexible traffic-routing schemes to support the needs of larger, more complex deployments.



Configuring traffic manager profiles

Home > Create a resource > Traffic Manager profile >

Create Traffic Manager profile ...

Name *
Contoso-TMprofile ✓
.trafficmanager.net

Routing method
Priority

Subscription *
Free Trial

Resource group *
Contoso-ResourceGroup
[Create new](#)

Resource group location ⓘ
West US

Name *
Cotoso-TMprofile ✓
.trafficmanager.net

Routing method
Performance
Performance
Weighted
Priority
Geographic
MultiValue
Subnet

Create Automation options

Configure Endpoint monitoring

Open the **Configuration** page for the Traffic Manager profile

Select **Endpoint monitor** settings section, and specify the following settings:

Protocol

Port

Path

Custom header settings

Expected status code ranges

Probing interval

tolerated number of failures

probe timeout

Contoso-TMprofile-SR | Configuration

Traffic Manager profile

Search (Ctrl+/)

Save Discard

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Configuration

Real user measurements

Traffic view

Endpoints

Properties

Locks

Monitoring

Alerts

Metrics

Diagnostic settings

Logs

Automation

Tasks (preview)

Export template

Routing method ⓘ

Priority

DNS time to live (TTL) * ⓘ

60 seconds

Endpoint monitor settings ⓘ

Protocol

HTTP

Port *

80

Path *

/

Custom Header settings ⓘ

Expected Status Code Ranges (default: 200) ⓘ

200-299

Fast endpoint failover settings

Probing interval ⓘ

30

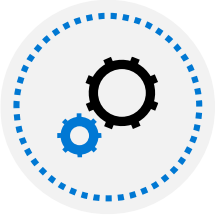
Tolerated number of failures * ⓘ

3

Probe timeout * ⓘ

10 seconds

Demonstration – Azure Traffic Manager



Create a Traffic Manager profile



Add Traffic Manager endpoints



Test Traffic Manager profile

Summary – Azure Traffic Manager

Check your knowledge



Microsoft Learn Modules (docs.microsoft.com/Learn)

[Azure Traffic Manager | Microsoft Docs](#)

[Tutorial - Improve website response with Azure Traffic Manager | Microsoft Docs](#)

Exercise- create a traffic manager profile using the Azure portal



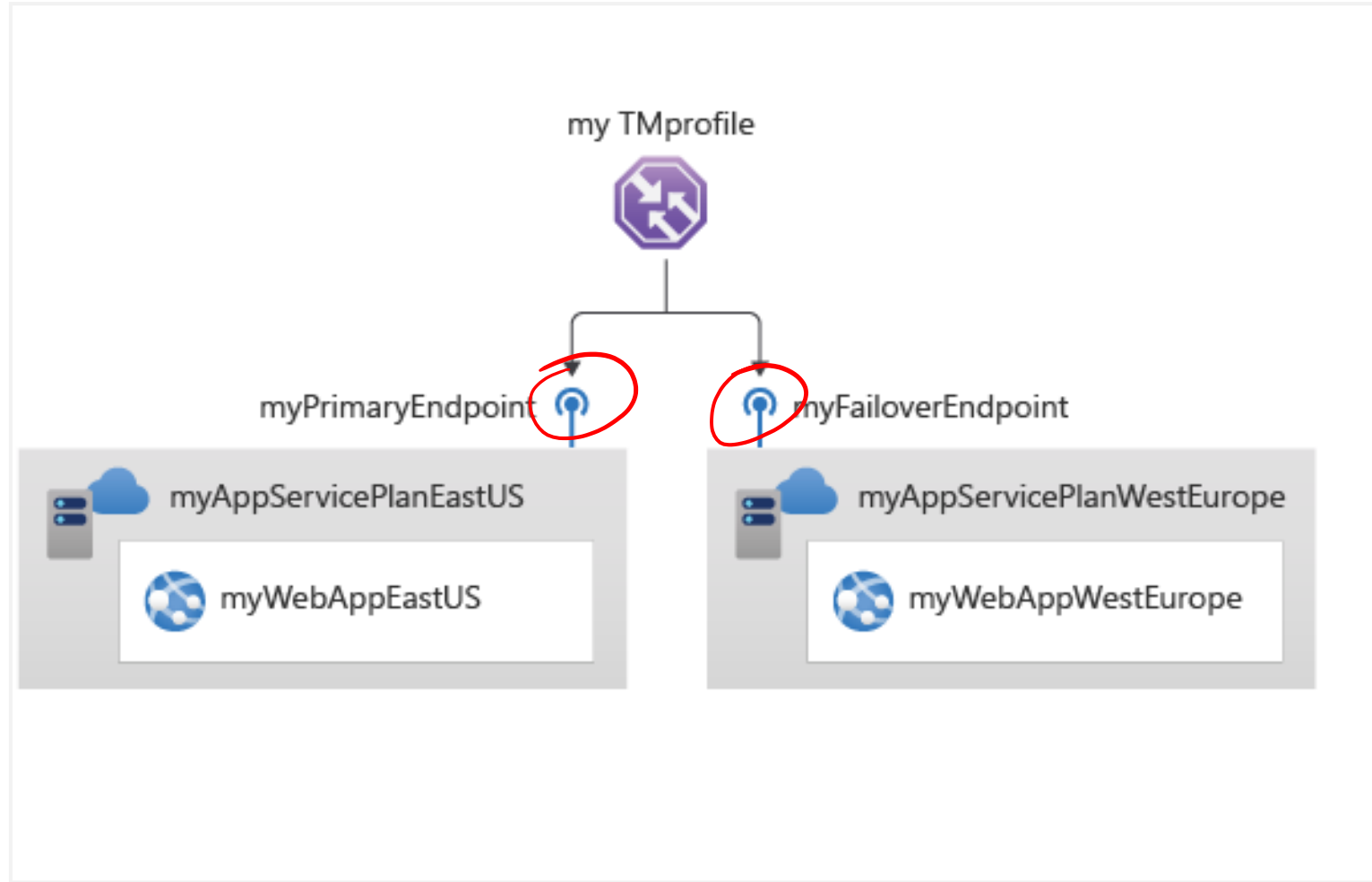
Exercise- create a traffic manager profile using the Azure portal

Task 1: Create the web apps

Task 2: Create a Traffic Manager profile

Task 3: Add Traffic Manager endpoints

Task 4: Test the Traffic Manager profile



End of presentation

