



# AZ-104

## Administer Network Traffic

# AZ-104 Course Outline

01: Administer Identity

02: Administer Governance and Compliance

03: Administer Azure Resources

04: Administer Virtual Networking

05: Administer Intersite Connectivity

06: Administer Network Traffic Management

07: Administer Azure Storage

08: Administer Azure Virtual Machines

09: Administer PaaS Compute Options

10: Administer Data Protection

11: Administer Monitoring

# Learning Objectives - Administer Network Traffic

- Configure Azure Load Balancer ←
- Configure Application Gateway ←
- Configure Network Watcher
- Lab 06 – Implement Traffic Management

Traffic  
Manager  
(DNS) ←

# Configure Azure Load Balancer



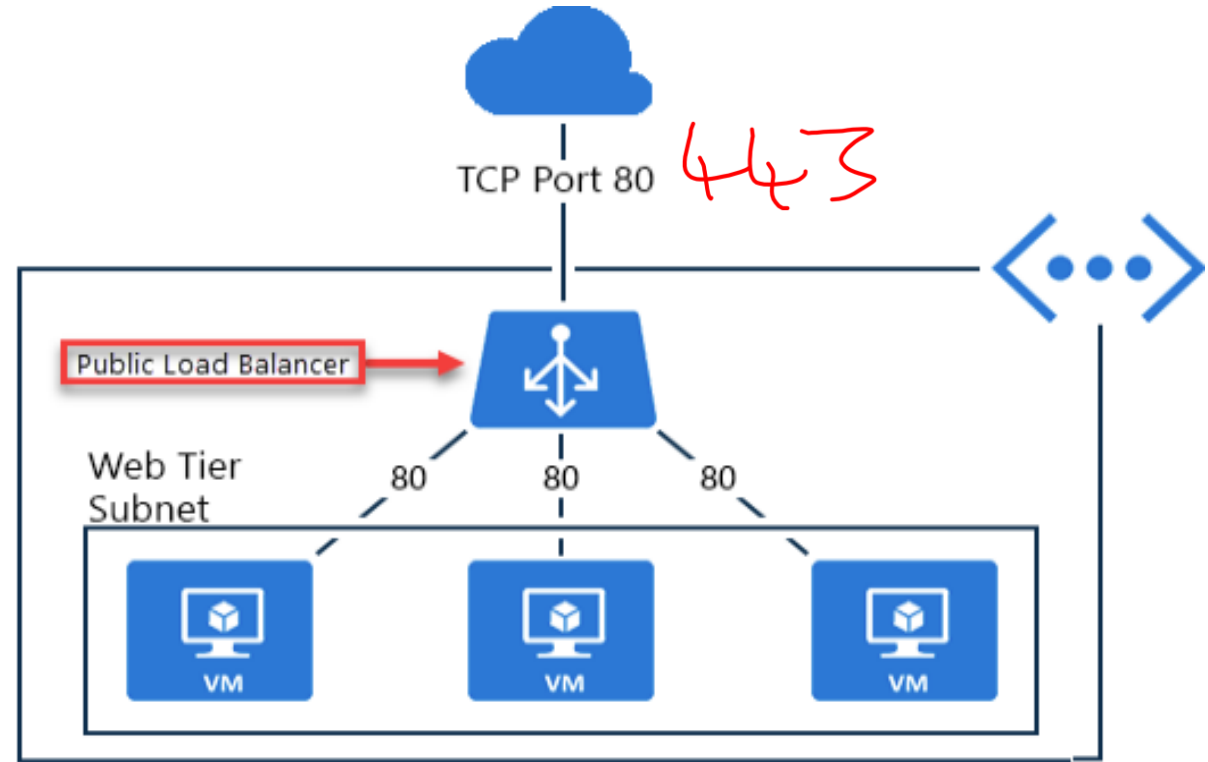
# Choose a Load Balancer Solution



Feature	Application Gateway	Front Door	Load Balancer	Traffic Manager
Usage	Optimize delivery from application server farms while increasing application security with web application firewall.	Scalable, security-enhanced delivery point for global, micro service-based web applications.	Balance inbound and outbound connections and requests to your applications or server endpoints.	Distribute traffic to services across global Azure regions, while providing high availability and responsiveness.
Protocols	HTTP, HTTPS, HTTP2	HTTP, HTTPS, HTTP2	TCP, UDP	Any
Private (regional)	Yes		Yes	
Global		Yes		Yes
Env	Azure, non-Azure cloud, on premises	Azure, non-Azure cloud, on premises	Azure	Azure, non-Azure cloud, on premises
Security	WAF	WAF, NSG	NSG	

# Implement a Public Load Balancer

- Maps public IP addresses and port number of incoming traffic to the VM's private IP address and port number, and vice versa
- Apply load balancing rules to distribute traffic across VMs or services



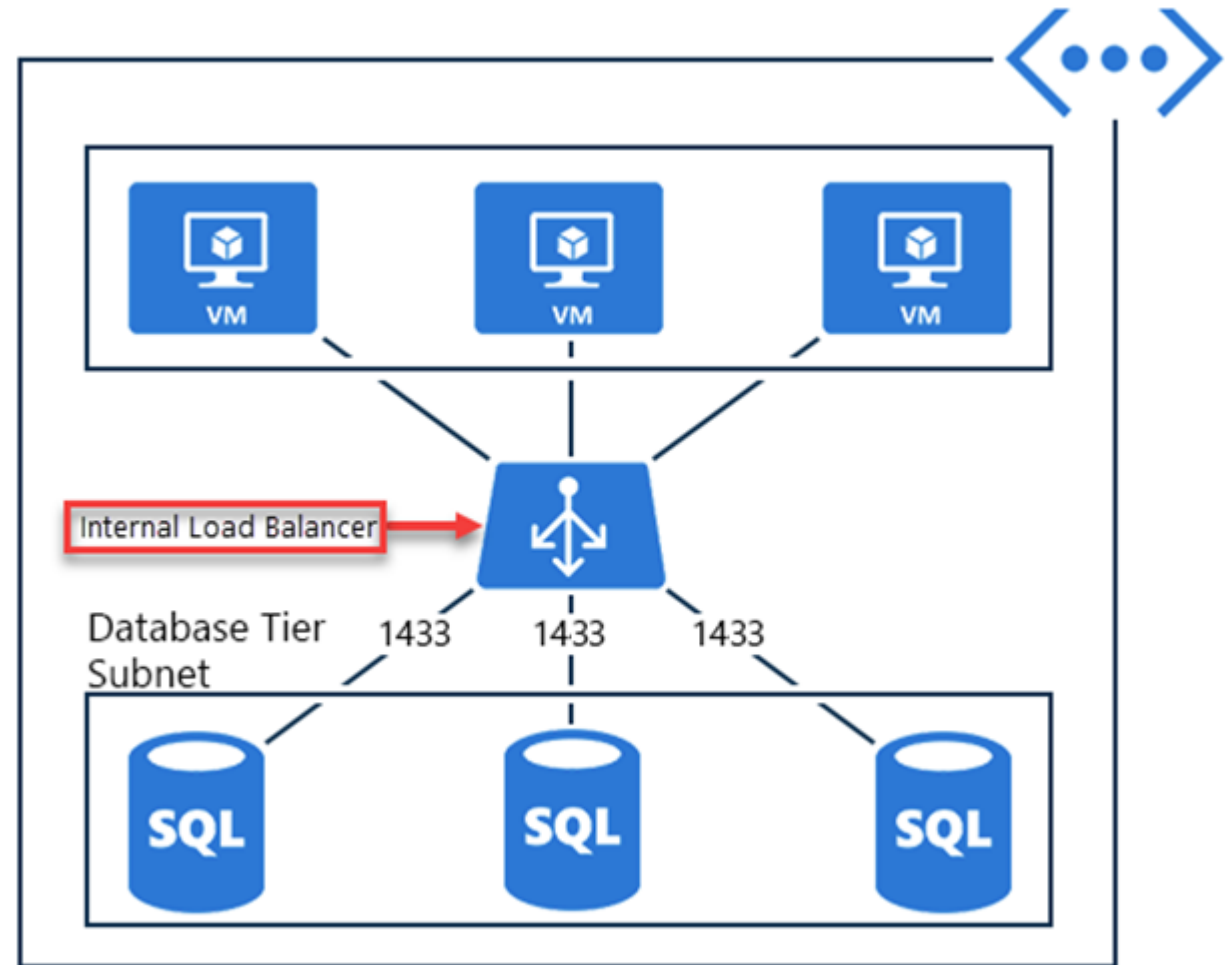
# Implement an Internal Load Balancer

VM  
VMSS

Directs traffic only to resources inside a virtual network or that use a VPN to access Azure infrastructure

Frontend IP addresses and virtual networks are never directly exposed to an internet endpoint

Enables load balancing within a virtual network, for cross-premises virtual networks, for multi-tier applications, and for line-of-business applications



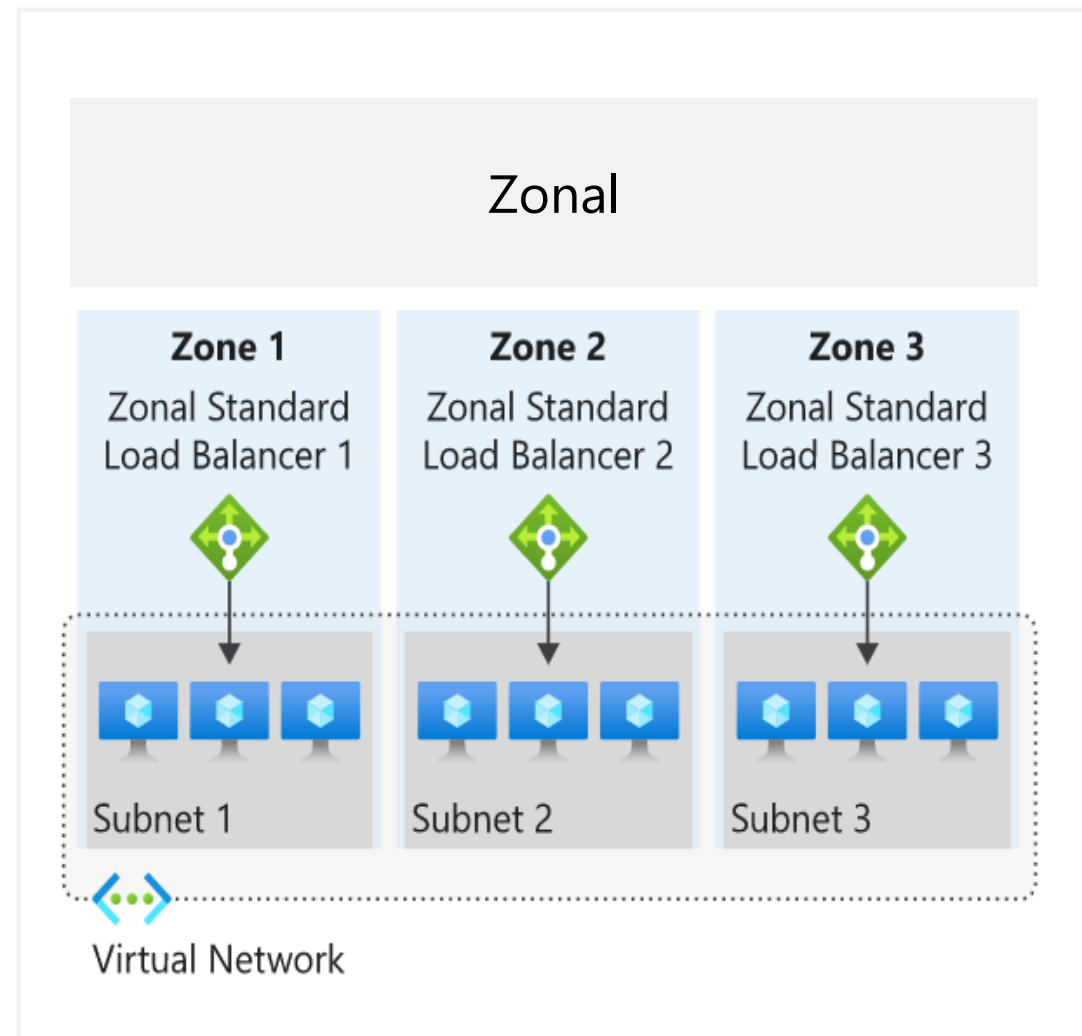
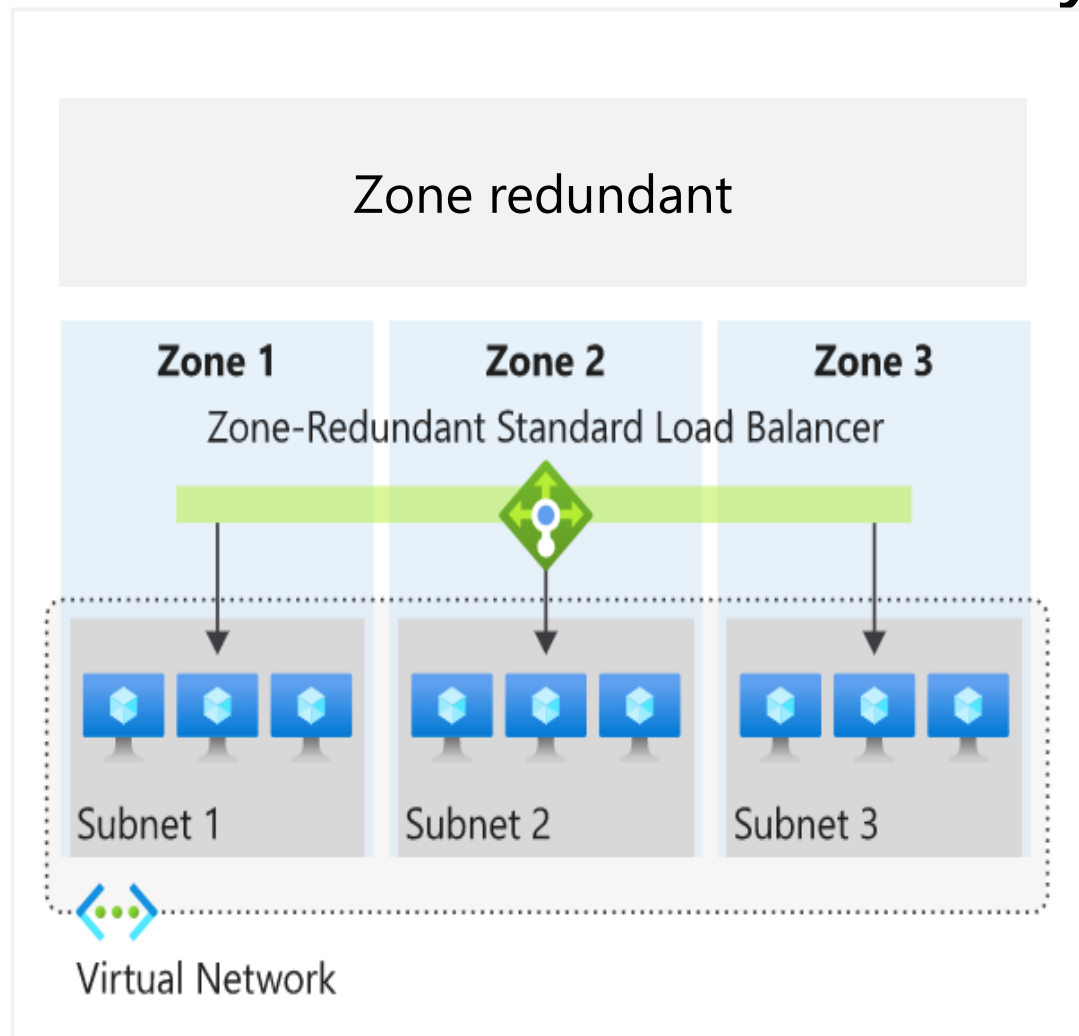
# Determine Load Balancer SKUs

Feature	Basic SKU	Standard SKU
Backend pool size	300 IP configurations, single availability set	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	By default, open to the internet	Closed to inbound connections unless opened by NSGs
SLA	Not available	99.99%

OE

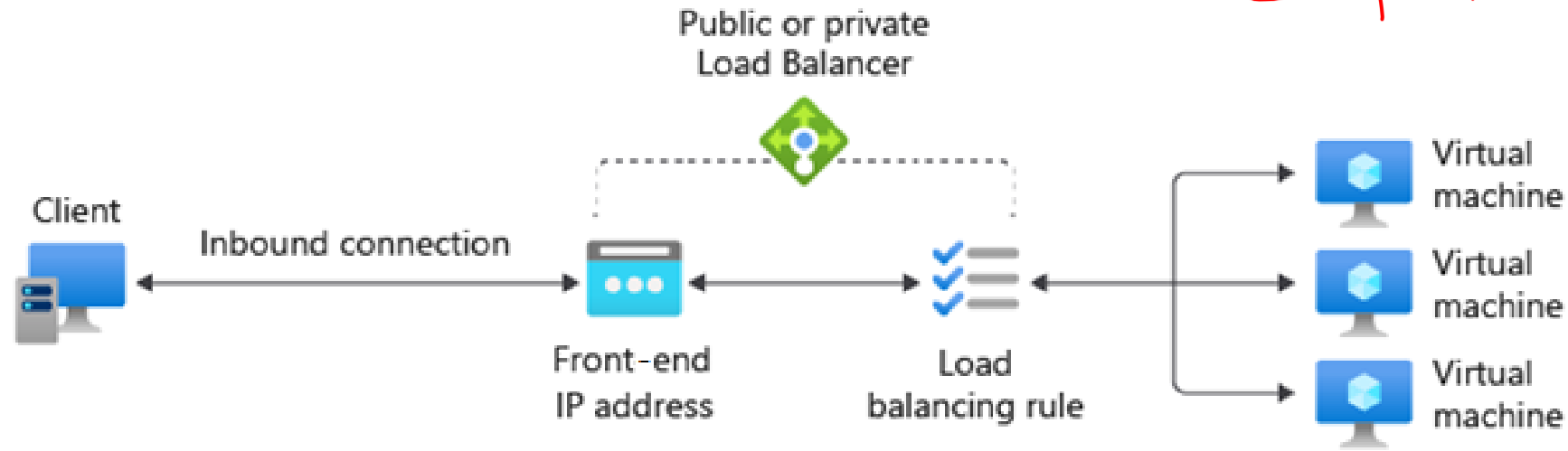


# Azure Load balancer and availability zones



# Create load balancer rules

Sticky



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

Rules can be combined with NAT rules

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

# Learning Recap – Configure Azure Load Balancer



**Check your  
knowledge  
questions and  
additional  
study**

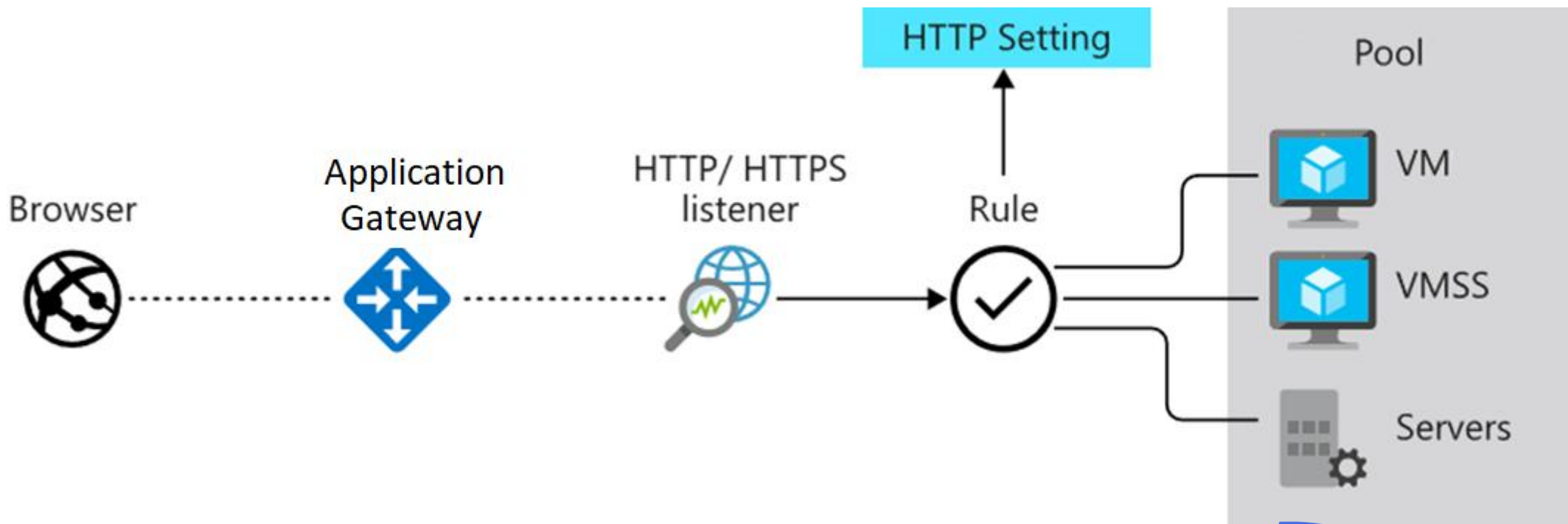
- Improve application scalability and resiliency by using Azure Load Balancer
- Load balance non-HTTP(S) traffic in Azure
- Introduction to Azure Load Balancer

# Configure Azure Application Gateway



# Implement Application Gateway

+ WAF



App Service

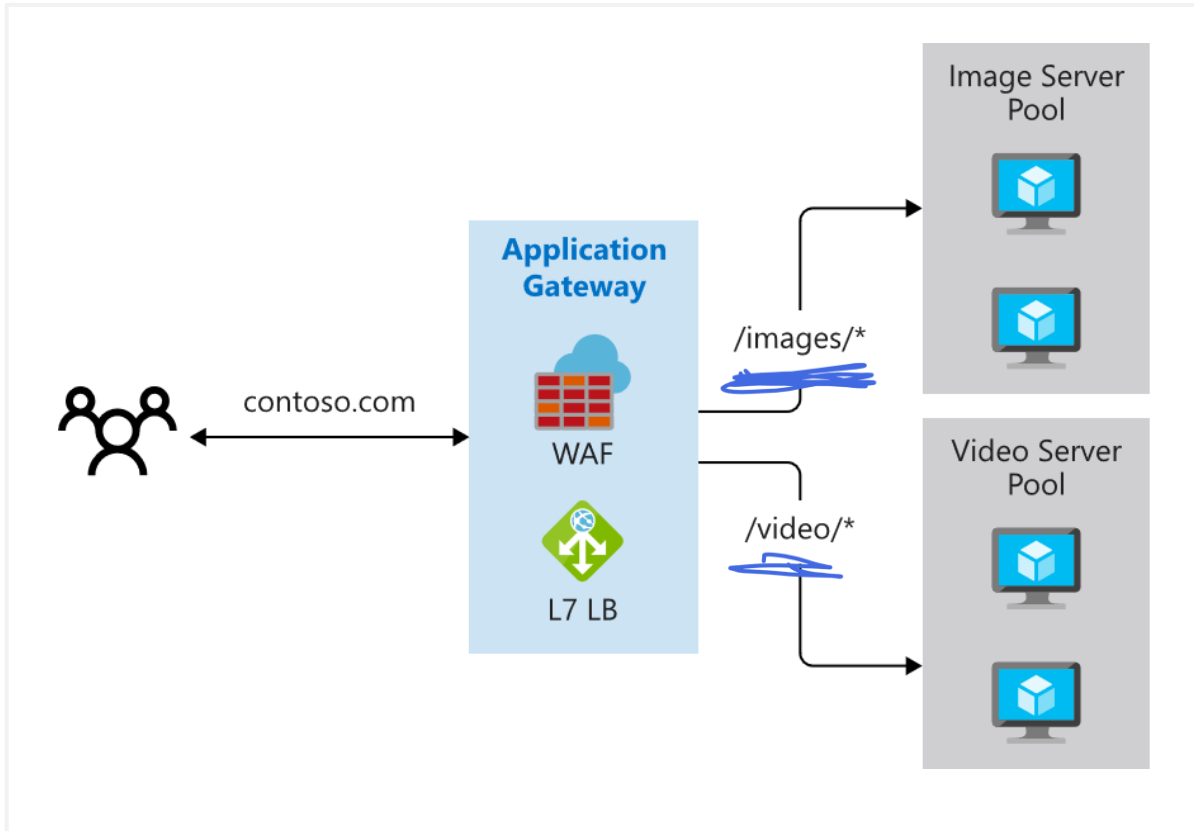
Manages web app requests

Routes traffic to a pool of web servers based on the URL of a request

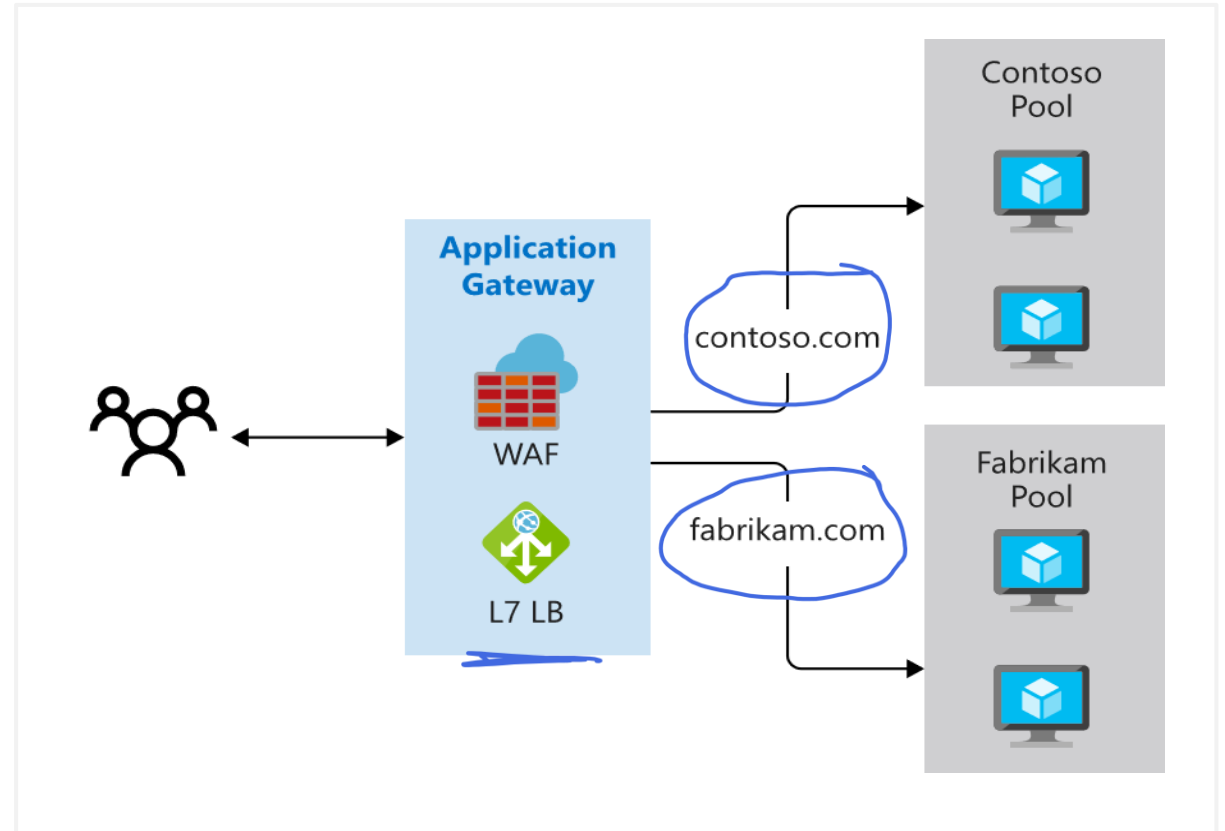
The web servers can be Azure virtual machines, Azure virtual machine scale sets, Azure App Service, and even on-premises servers

# Determine Application Gateway Routing

## Path-based routing



## Multiple-site routing



# Learning Recap – Configure Azure Application Gateway



**Check your  
knowledge  
questions and  
additional  
study**

- Introduction to Azure Application Gateway
- Load balance your web service traffic with Application Gateway
- Load balance HTTP(S) traffic in Azure
- Encrypt network traffic end to end with Azure Application Gateway

# Explore Azure Traffic Manager

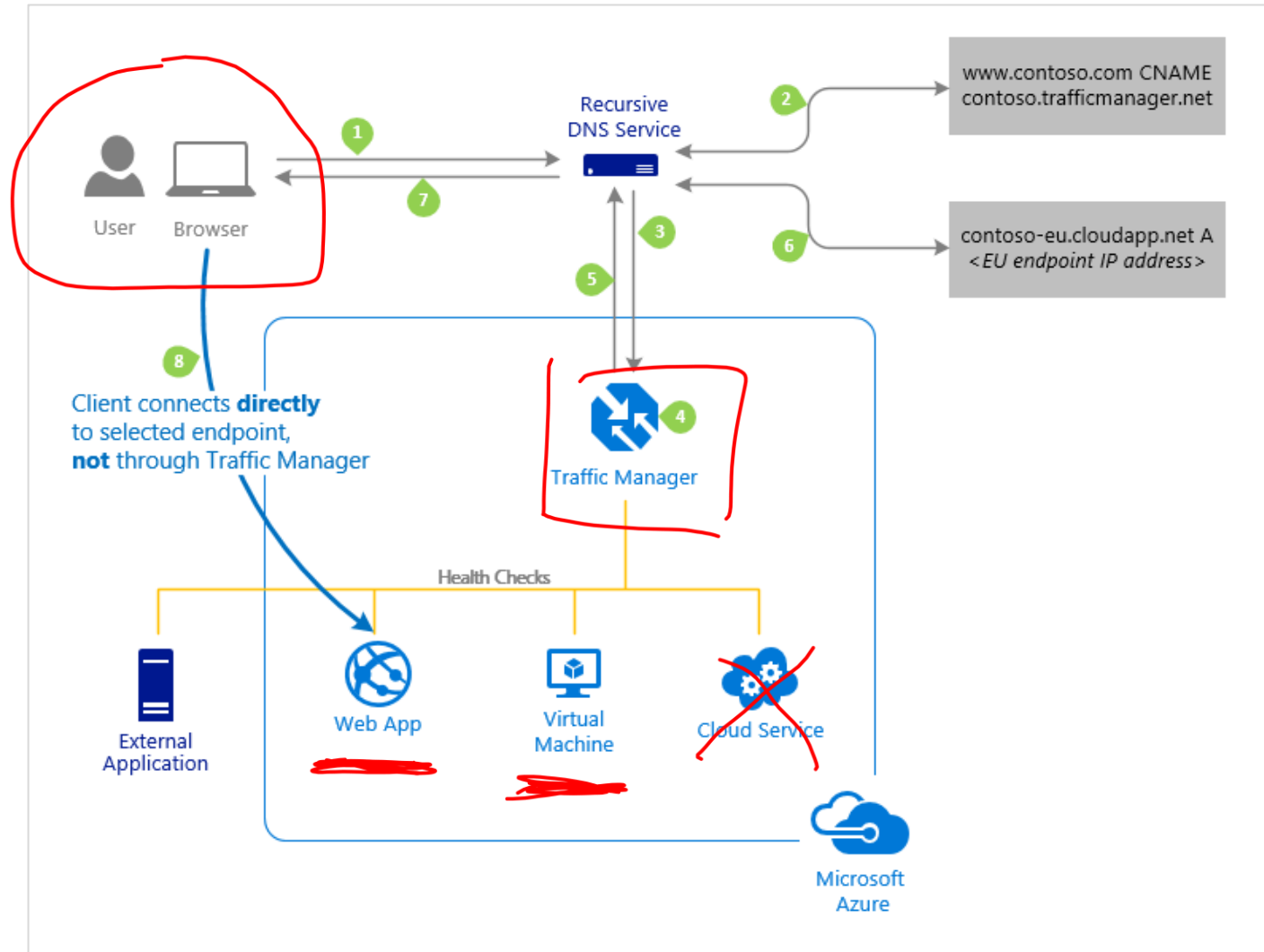




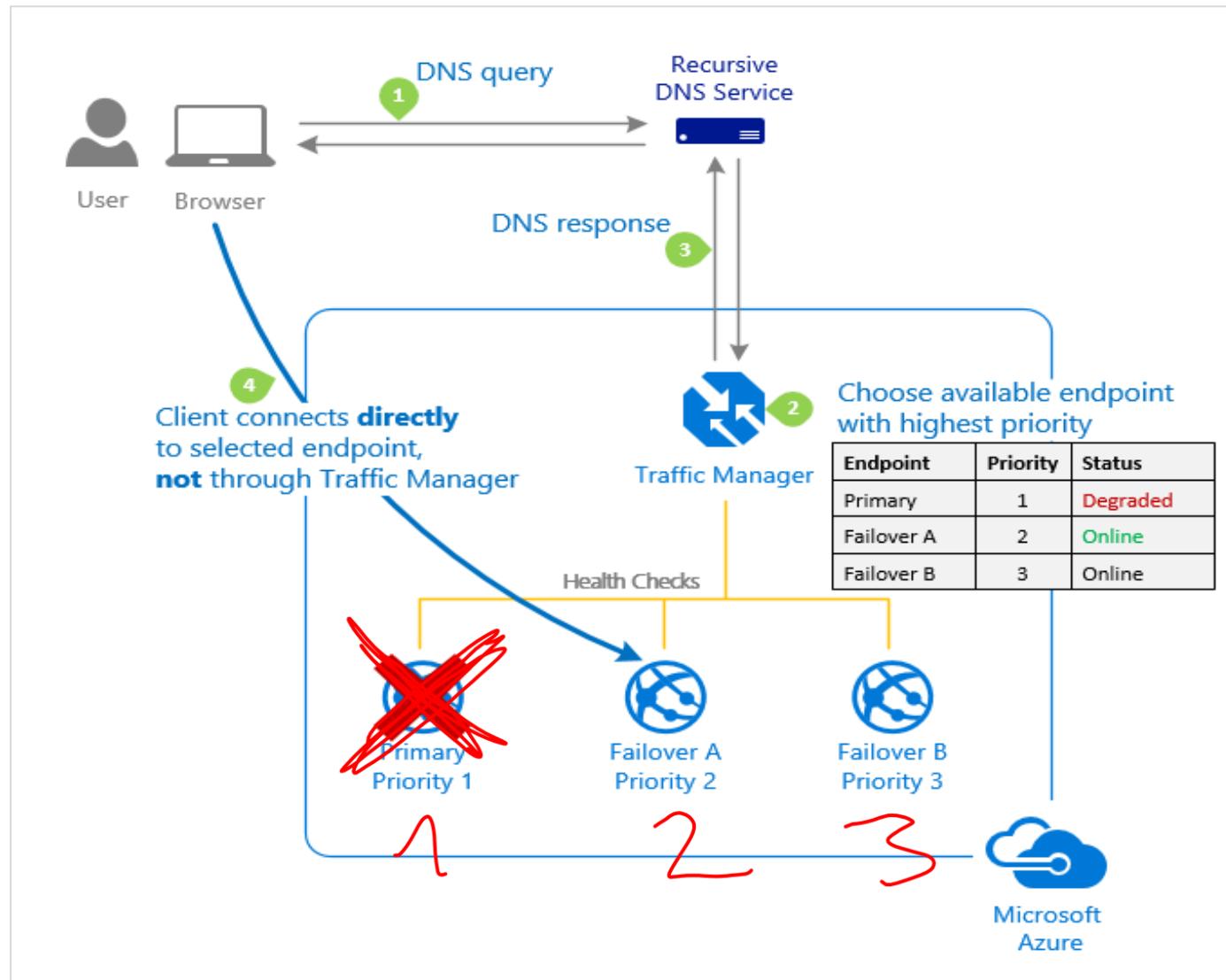
# How Traffic manager works

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

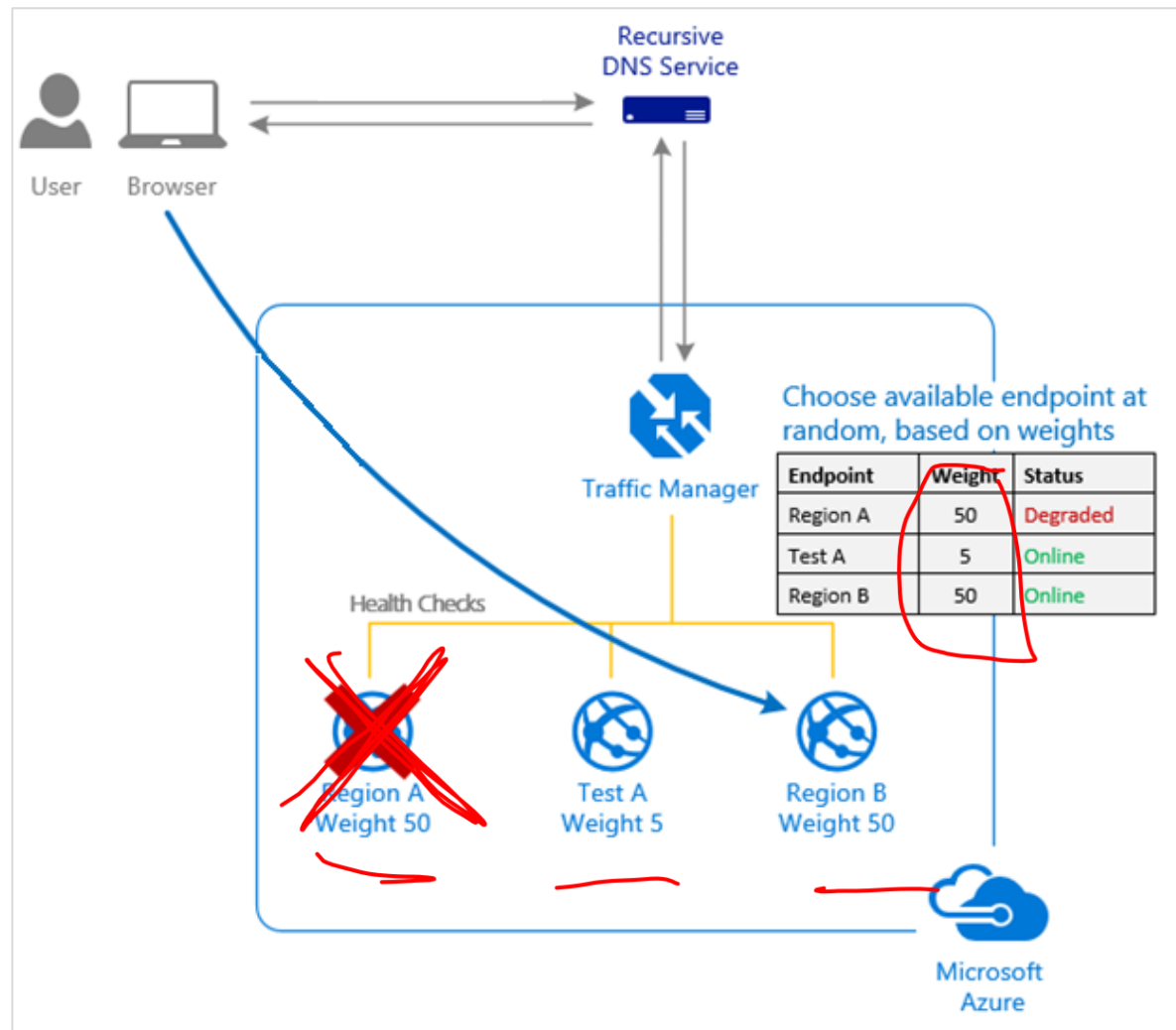
- The configured state of each endpoint
- The current health of each endpoint, as determined by the Traffic Manager health checks
- The chosen traffic-routing method
- Final connection is not going through Traffic Manager



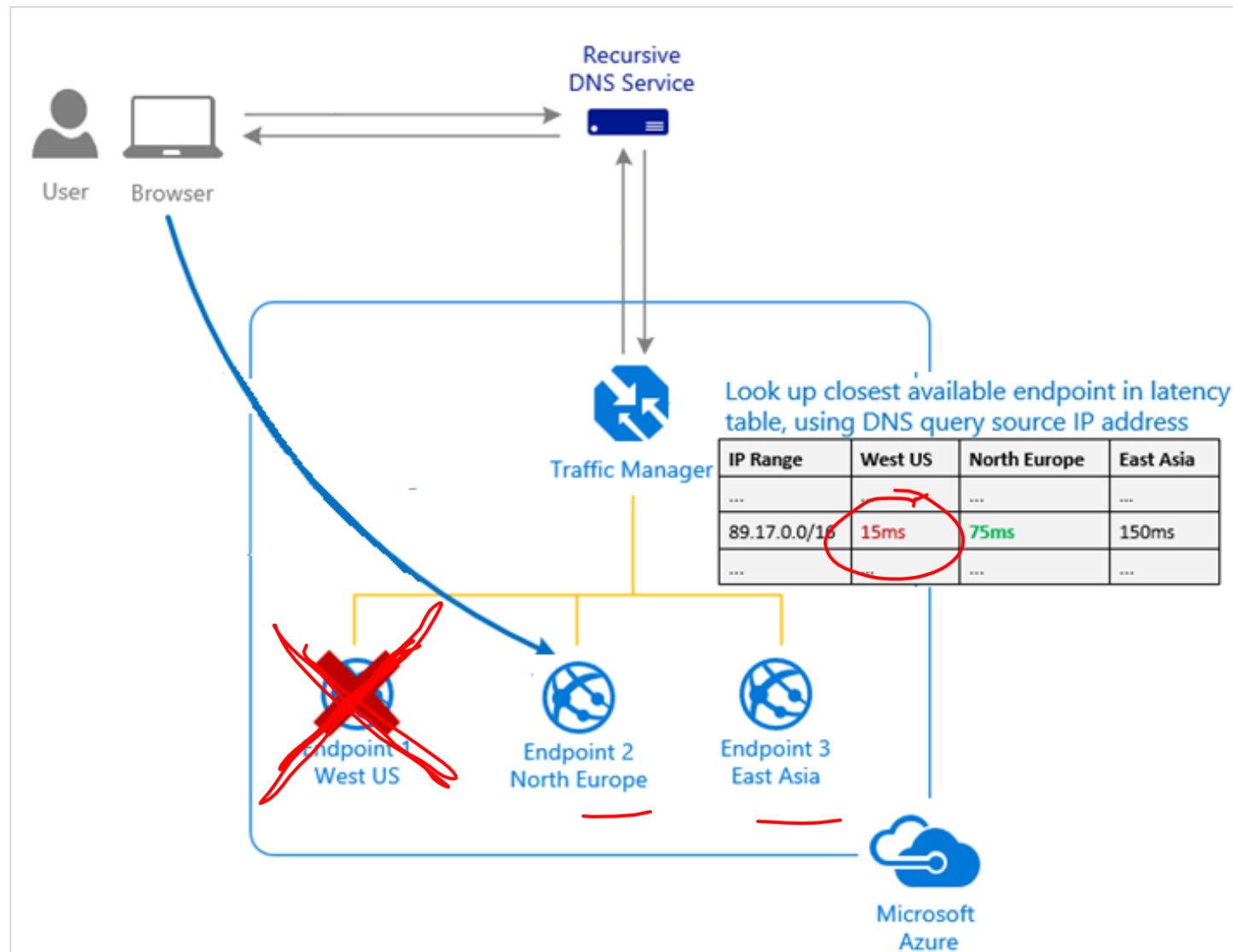
# Traffic routing methods – Priority



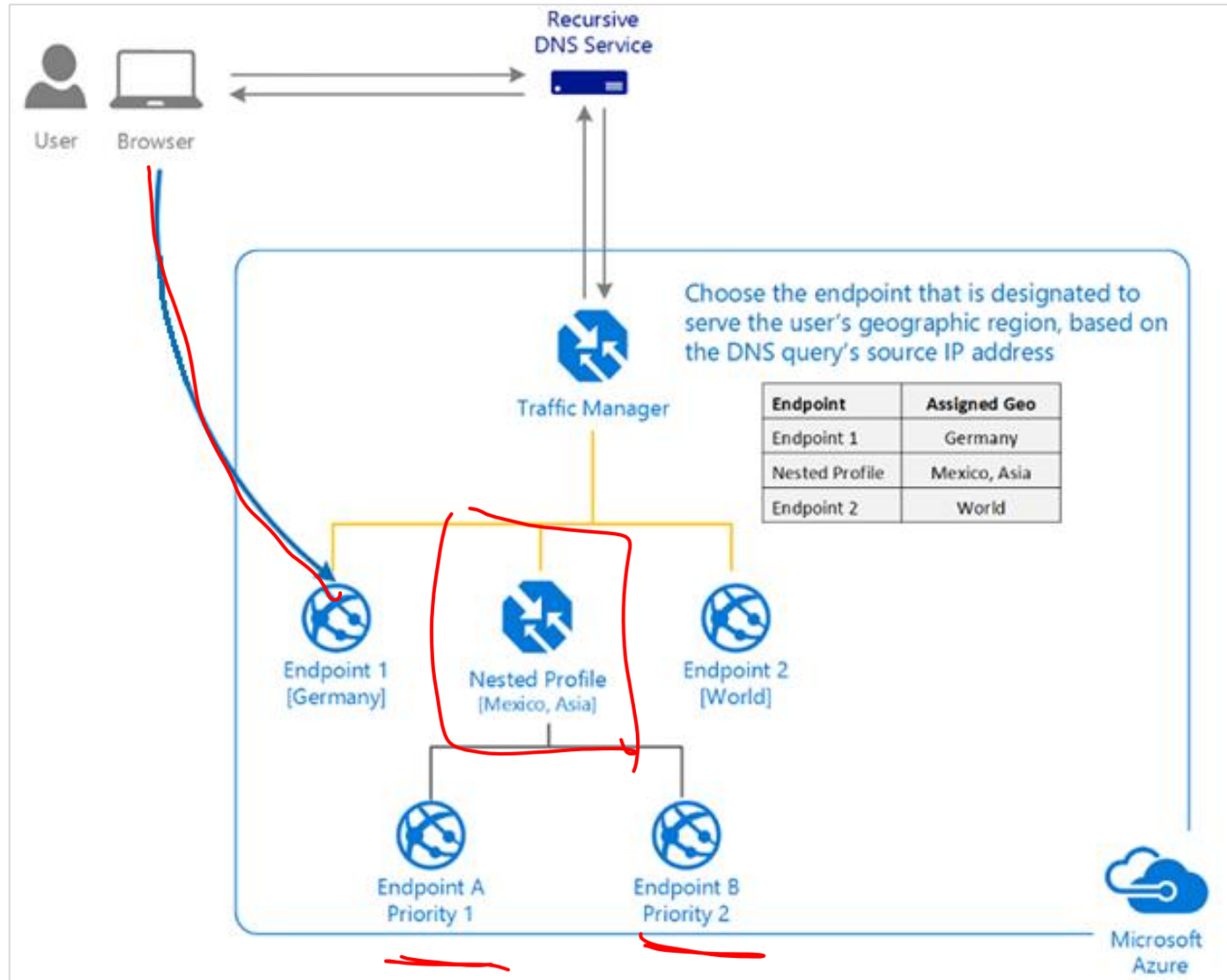
# Traffic routing methods – Weighted



# Traffic routing methods – Performance



# Traffic routing methods - Geographic

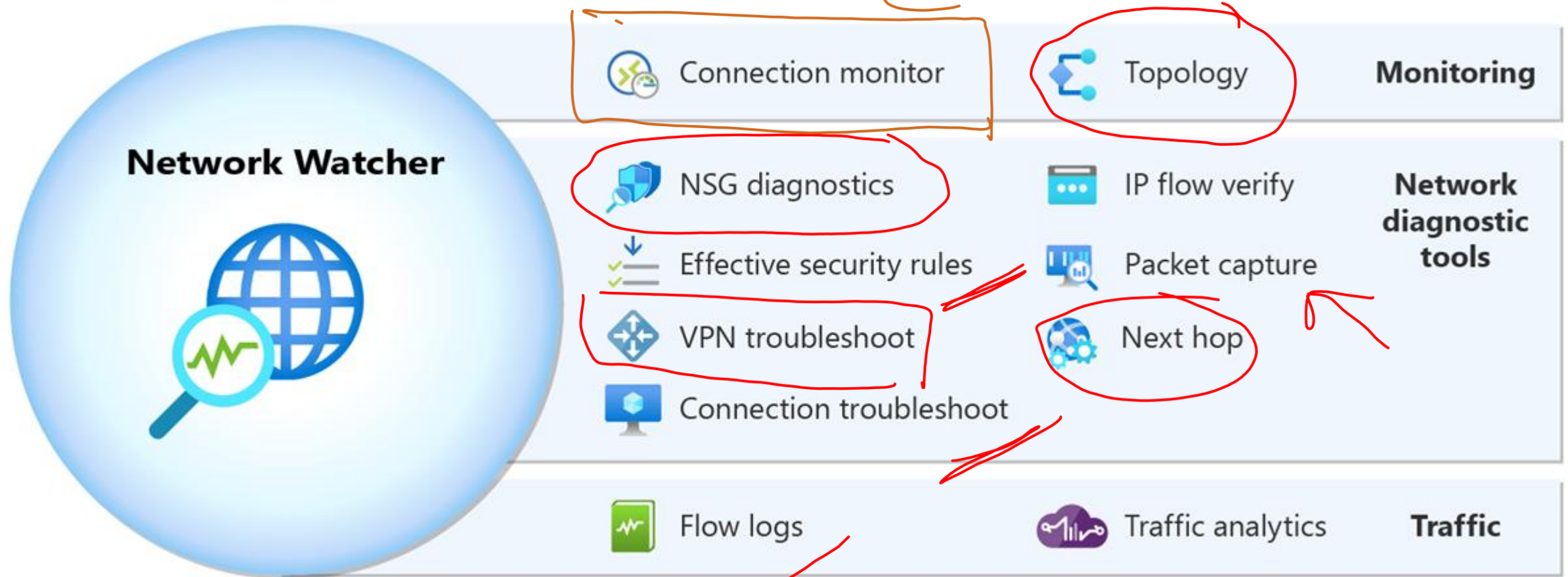


# Configure Network Watcher



# Describe Network Watcher Features

A regional service with various network diagnostics



# Review IP Flow Verify Diagnostics

Checks if a packet is allowed or denied to or from a virtual machine

Network diagnostic tools

IP flow verify

Next hop

Effective security rules

VPN troubleshoot

Packet capture

Connection troubleshoot

Metrics

Usage + quotas

Logs

NSG flow logs

Diagnostic logs

Traffic Analytics

Packet details

Protocol

☒ TCP ☐ UDP

Direction

☒ Inbound ☐ Outbound

Local IP address \* ⓘ

10.1.1.4

Local port \* ⓘ

3389

Remote IP address \* ⓘ

13.24.35.46

Remote port \* ⓘ

3389

Check

ⓧ Access denied

Security rule

DenyAllInBound



# Review Next Hop Diagnostics

Helps with determining whether traffic is being directed to the intended destination by showing the next hop

Subscription \* ⓘ

MSDN Platforms Subscription

Resource group \* ⓘ

Demo

Virtual machine \* ⓘ

vm01

Network interface \*

vm01165

Source IP address \* ⓘ

10.1.1.4

Destination IP address \* ⓘ

13.24.35.46

Next hop

Result


Next hop type

None

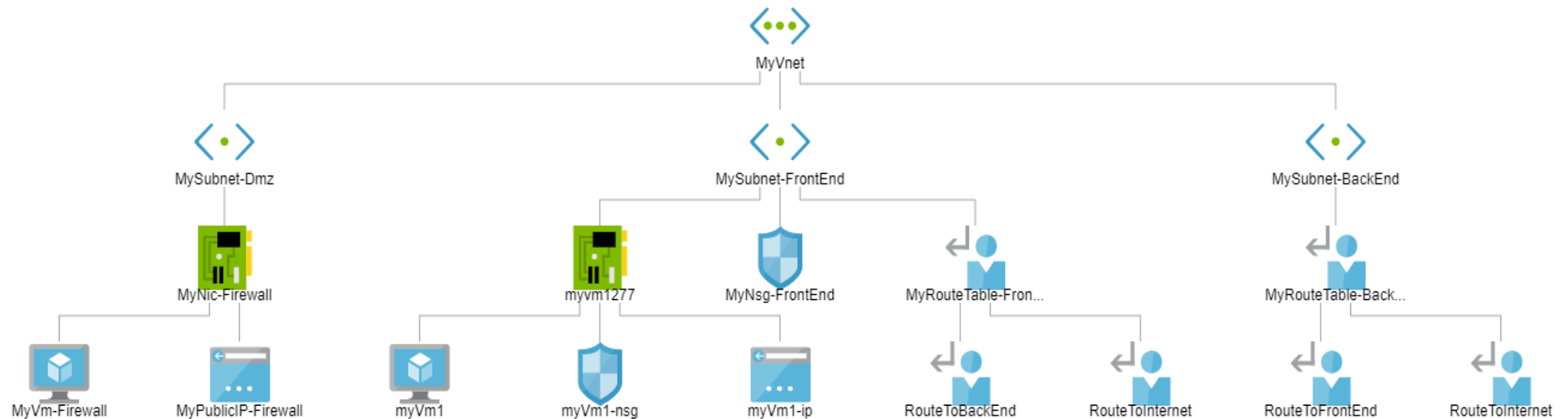
IP address

10.1.1.100

Route table ID

/subscriptions/2301e3a0-8420-... 

# Visualize the Network Topology



Provides a visual representation of your networking elements

View all the resources in a virtual network, resource to resource associations, and relationships between the resources

The Network Watcher instance in the same region as the virtual network

# Learning Recap – Configure Network Watcher



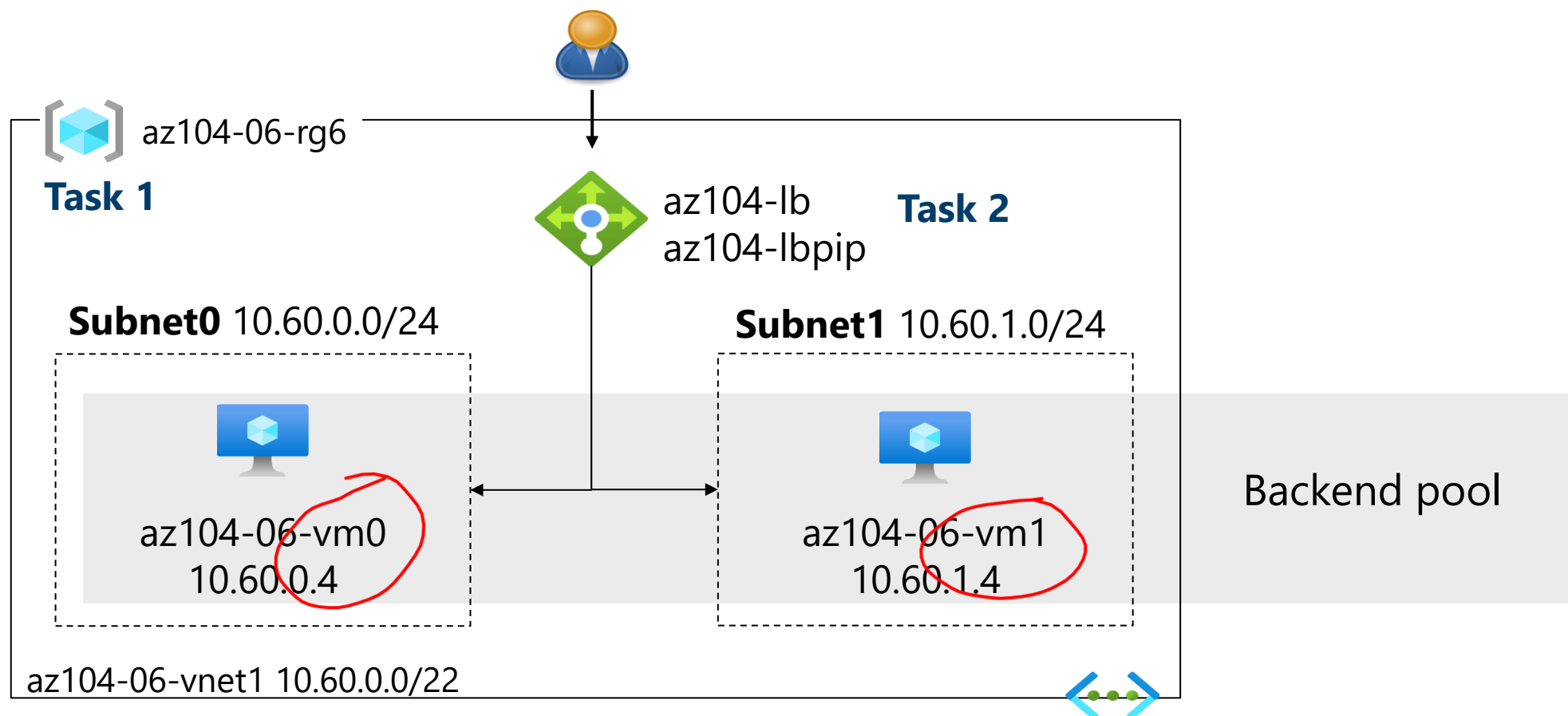
**Check your  
knowledge  
questions and  
additional  
study**

- Introduction to Azure Network Watcher
- Monitor and troubleshoot your end-to-end Azure network infrastructure by using network monitoring tools
- Analyze your Azure infrastructure by using Azure Monitor logs

# Lab – Implement Traffic Management

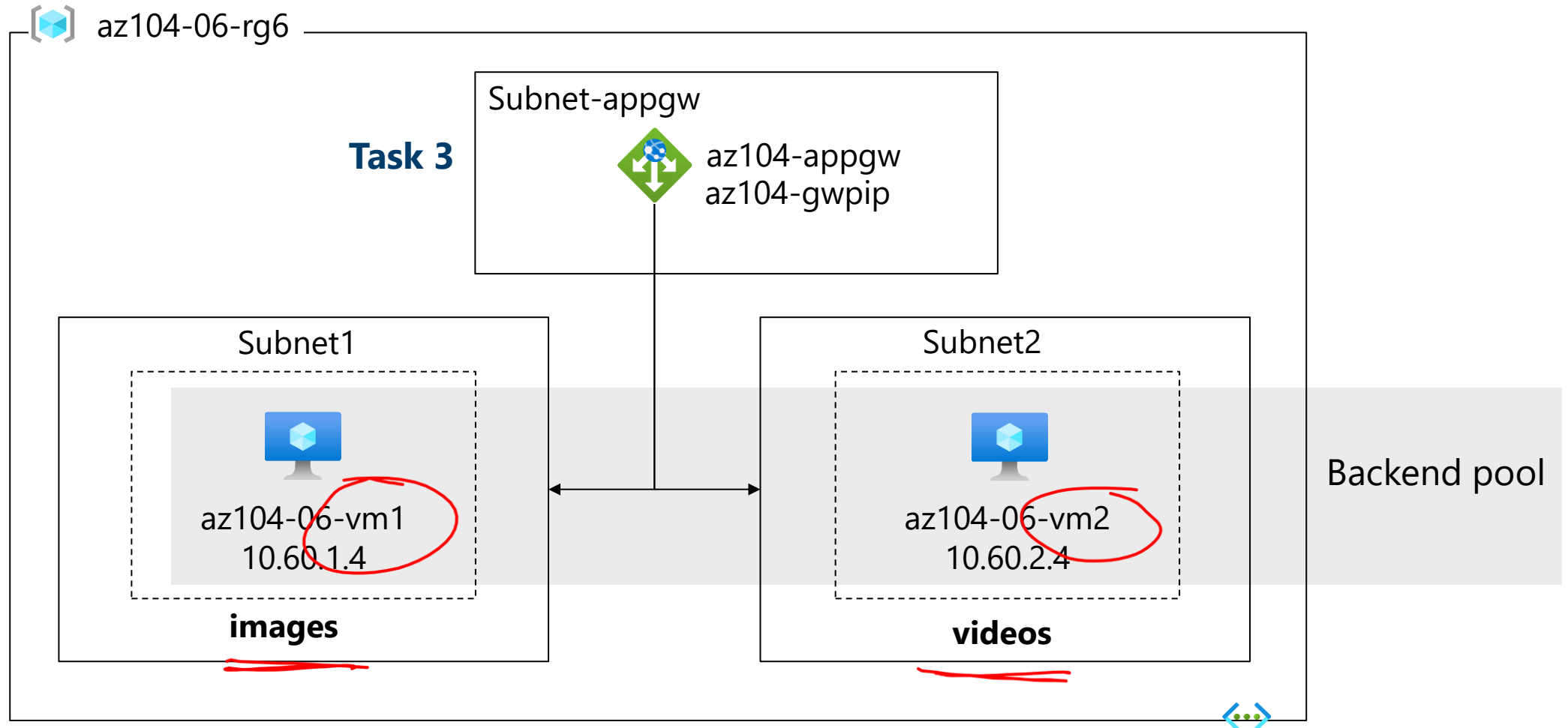


# Lab 06 – Architecture Diagram (Load Balancer)



Next slide for an application gateway 

# Lab 06 – Architecture Diagram (Application Gateway)



# End of presentation

