



AZ-700

Module 05

Load balancing HTTP(S) traffic in Azure



AZ-700 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

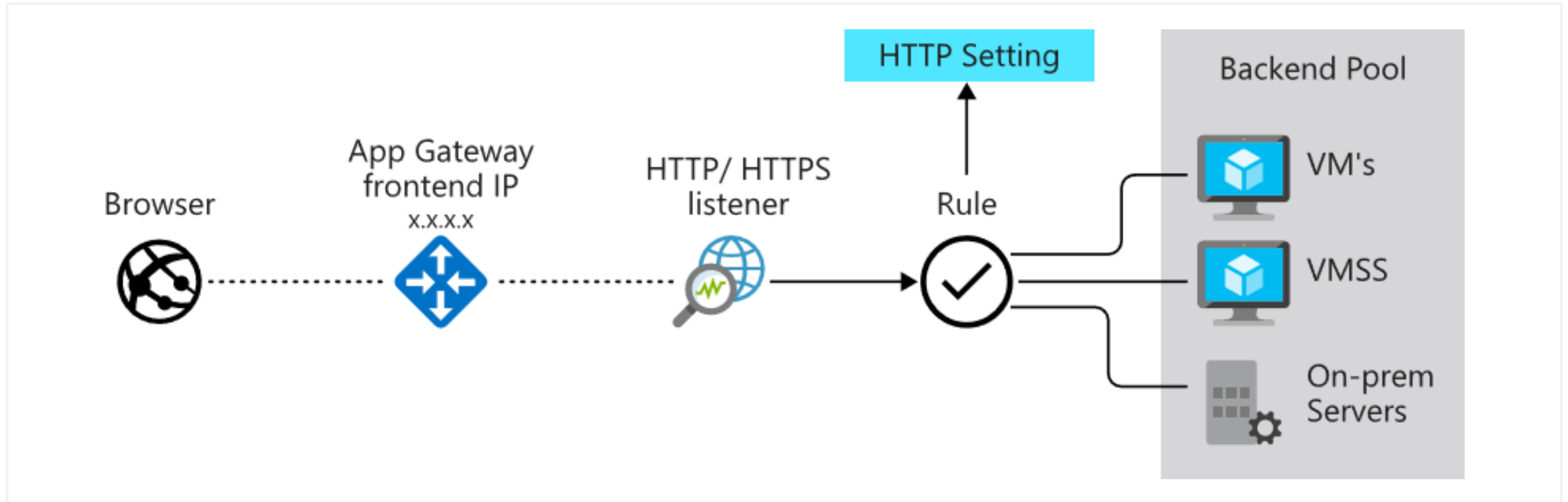
Module Overview

- Design Azure Application Gateway
- Configure Azure Application Gateway
- Design and configure Azure Front Door
- Exercise: Deploy Azure Application Gateway
- Exercise: Create a Front Door for highly available web application using the Azure portal

Design Azure Application Gateway



Application Gateway features



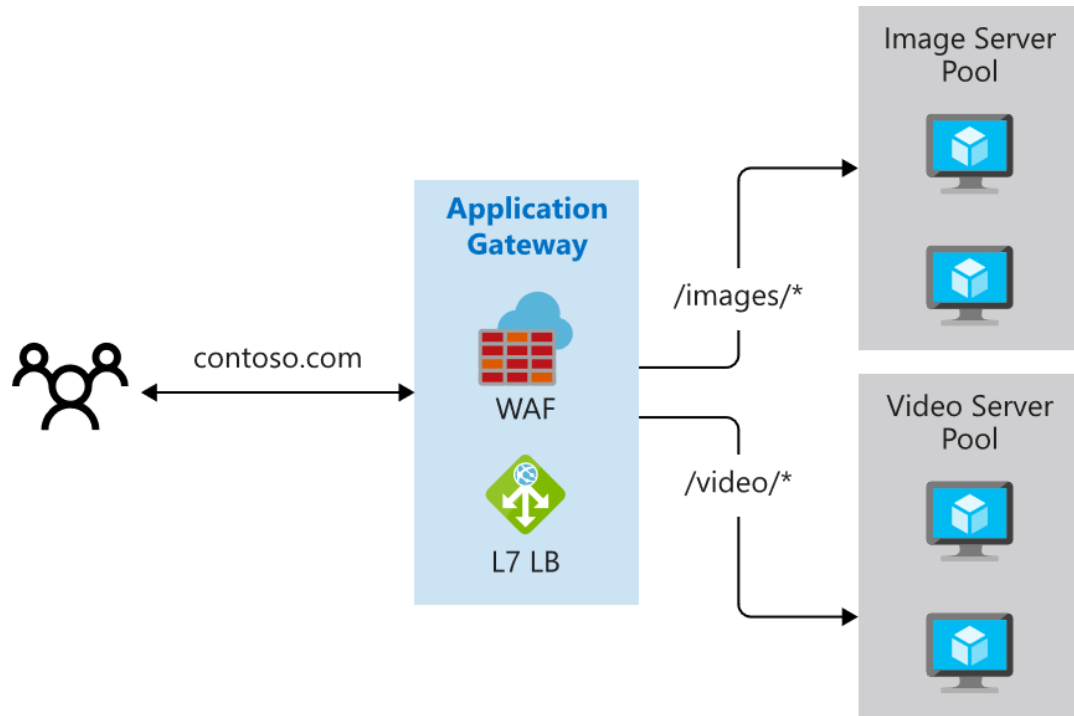
Manages web
app requests

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

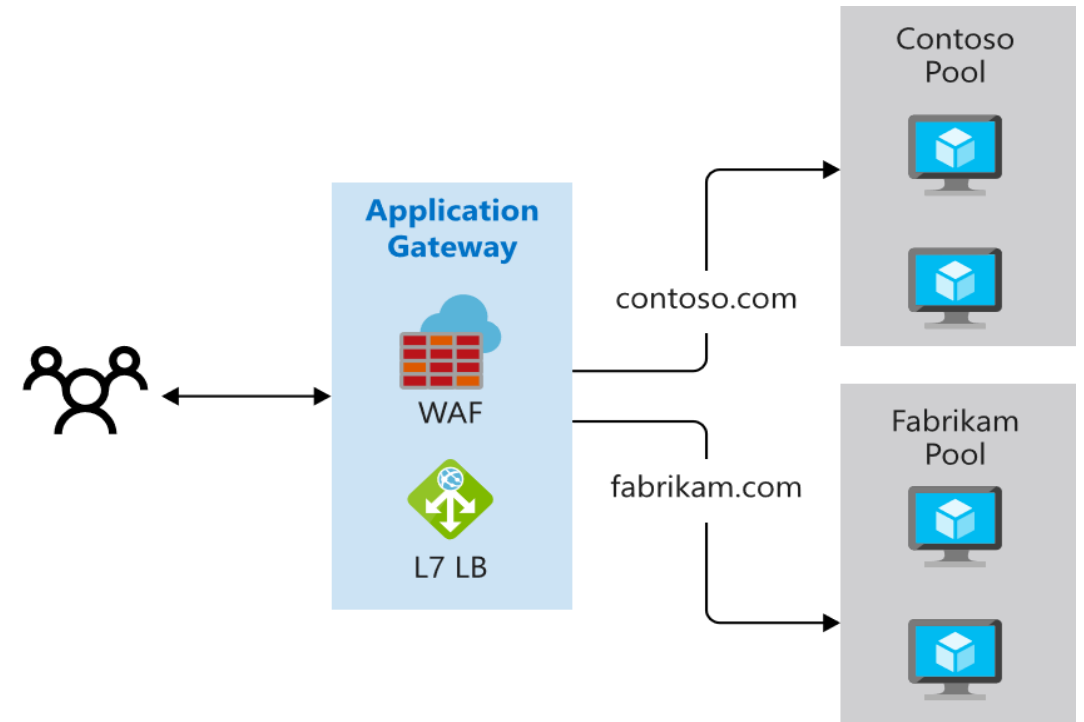
The web servers can be Azure virtual
machines, Azure virtual machine scale
sets, Azure App Service, and even
on-premises servers

Determine Application Gateway Routing

Path-based routing



Multiple-site routing



Choosing an Azure App Gateway SKU

Application Gateway Standard (V2) can be configured for **autoscaling** or **fixed size** deployments. The v2 SKU doesn't offer different instance sizes

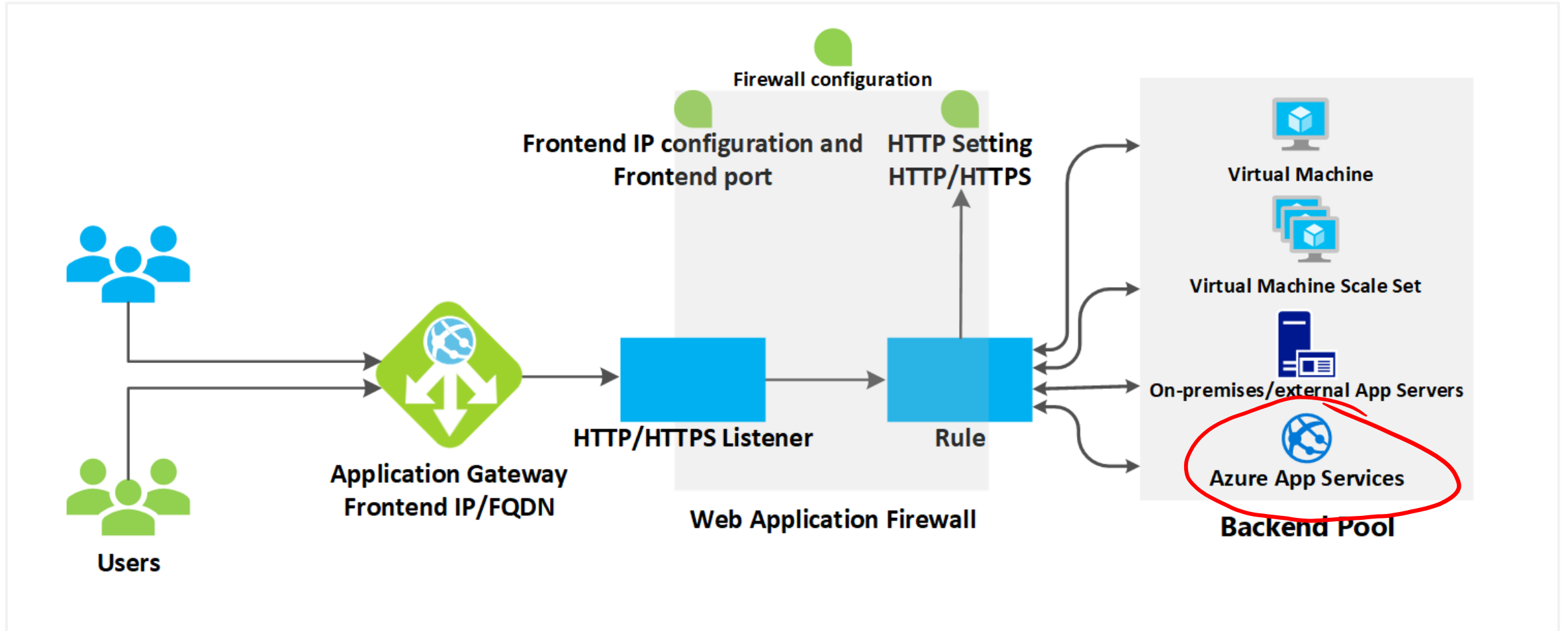
For a complete list of application gateway limits, see Application Gateway service limits

The **Application Gateway Standard (V1)** is offered in three sizes: **Small**, **Medium**, and **Large**. Small instance sizes are intended for development and testing scenarios.

ed.

Average back-end page response size	Small	Medium	Large
6 KB	7.5 Mbps	13 Mbps	50 Mbps
100 KB	35 Mbps	100 Mbps	200 Mbps

Application Gateway configuration planning

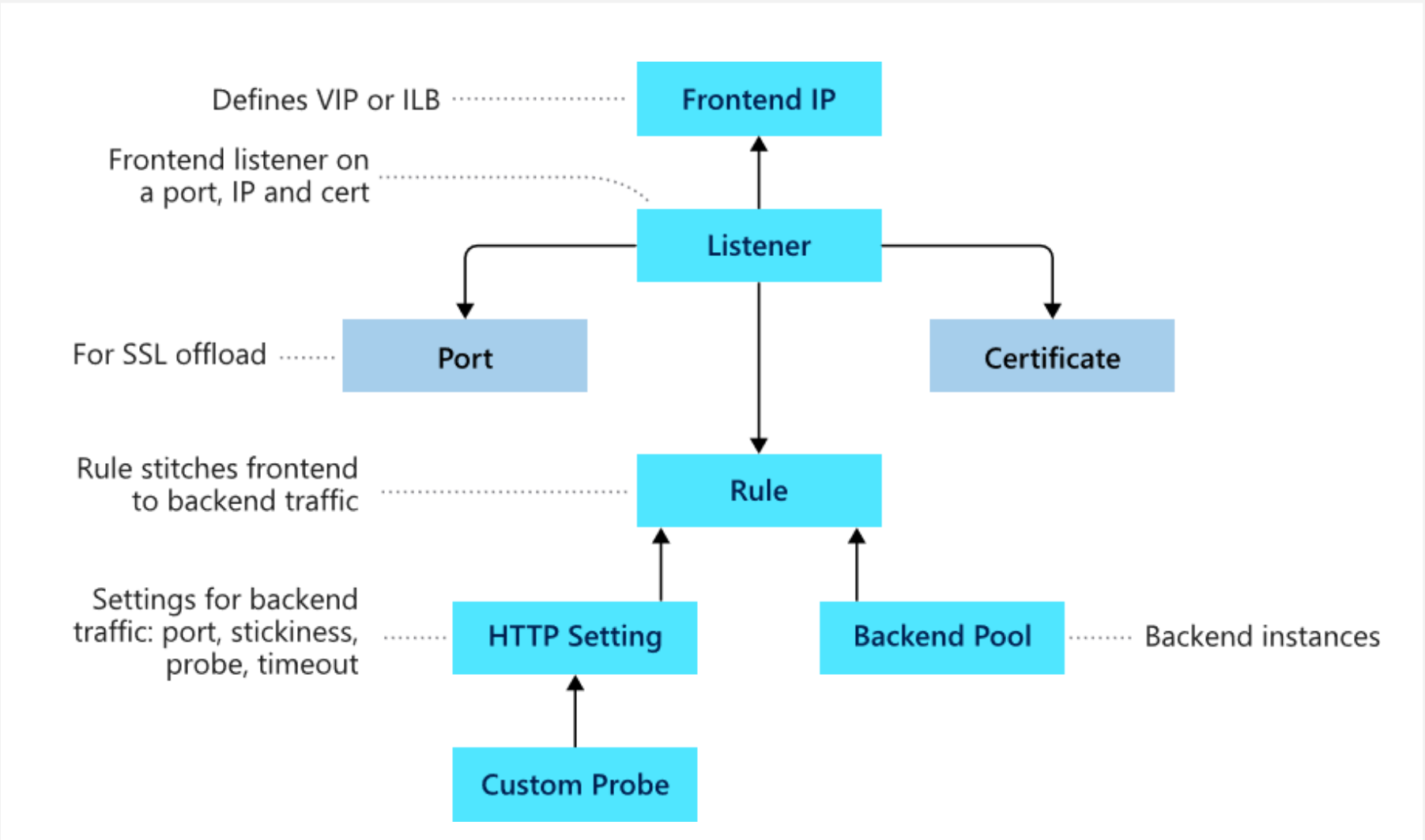


Configure Azure Application Gateway



Configure Application Gateway

- Frontend IP
- Listeners
- Routing rules
- Backend pools
- Web application firewall (optional) *WAF*
- Health probes



Configure health probes

Default health probe

Custom health probe

Probe matching

Add health probe

App-Gateway

Name *

Protocol * ☒ HTTP ☐ HTTPS

Host * ⓘ

Pick host name from backend HTTP settings ☐ Yes ☒ No

Pick port from backend HTTP settings ☒ Yes ☐ No

Path * ⓘ

Interval (seconds) * ⓘ

Timeout (seconds) * ⓘ

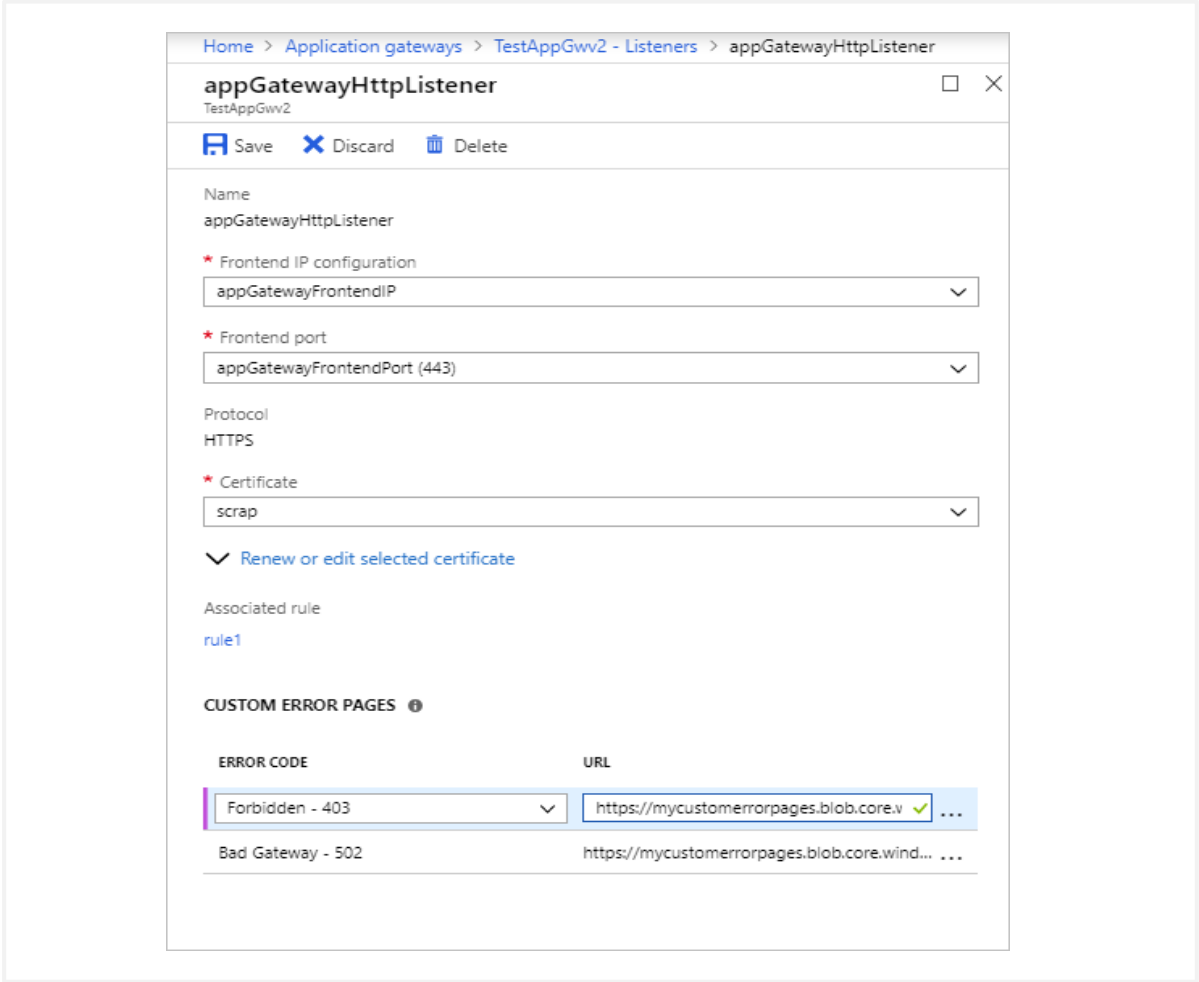
Unhealthy threshold * ⓘ

Use probe matching conditions ⓘ ☐ Yes ☒ No

HTTP settings ⓘ ▼

Configure listeners

- Basic or Multi Site
- Order of Processing Listeners
- Frontend IP address
- Frontend Port
- Protocol HTTP or HTTPS



Redirection overview

Global redirection: Redirects from one listener to another listener on the gateway. This enables HTTP to HTTPS redirection on a site

Path-based redirection: Enables HTTP to HTTPS redirection only on a specific site area, for example a shopping cart area denoted by /cart/*.

Redirect to external site: Requires a new redirect configuration object, which specifies the target listener or external site to which redirection is desired

The following types of redirection are supported:

- 301 Permanent Redirect
- 302 Found
- 303 See Other
- 307 Temporary Redirect

Application Gateway Request routing rules

Rule Types:

Basic

Path-based

Order of processing rules

For the v1 and v2 SKU, pattern matching of incoming requests is processed in the order that the paths are listed in the URL path map of the path-based rule.

Associated listener

Associate a listener to the rule so that the request-routing rule that's associated with the listener is evaluated to determine the back-end pool to route the request to.

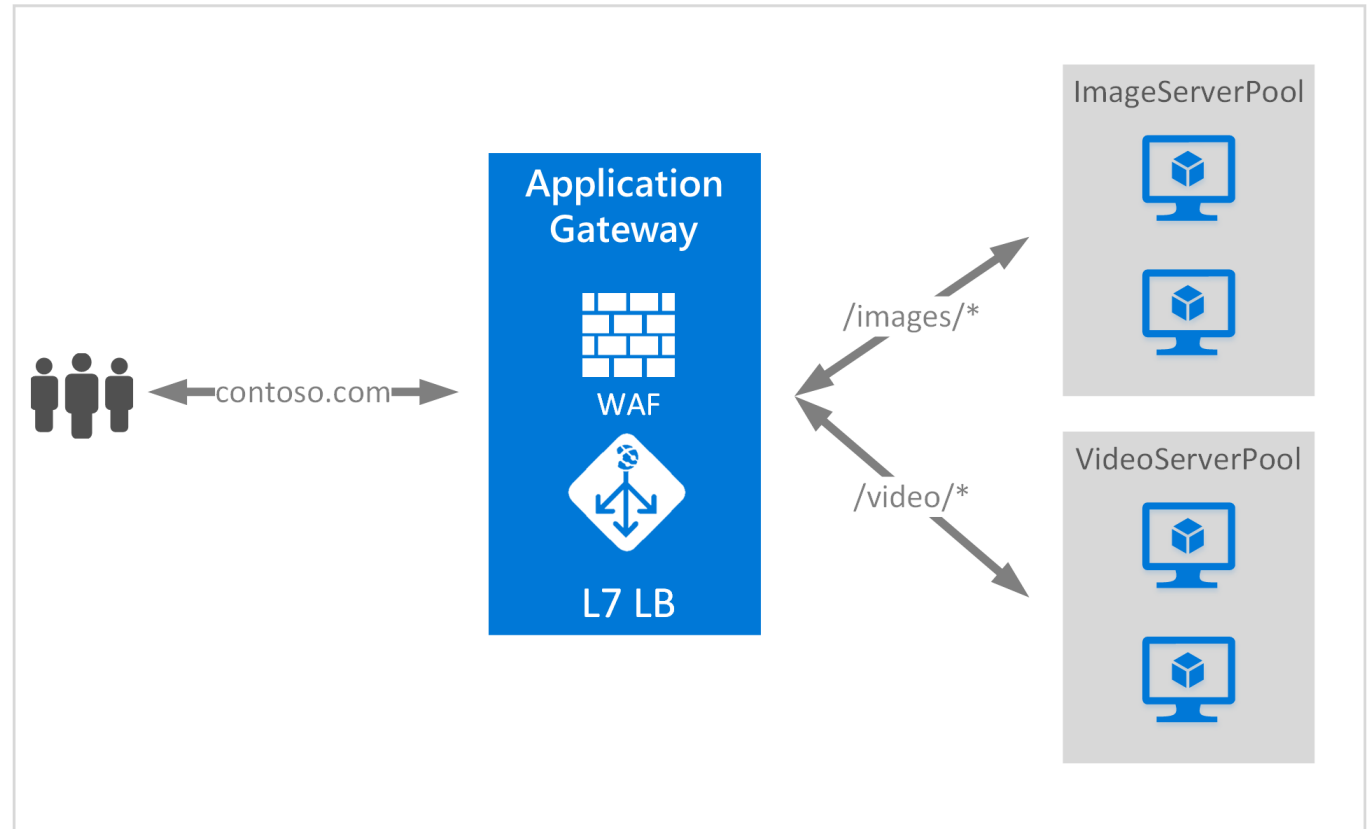
Associated back-end pool

basic rule: only one back-end pool is allowed. All requests on the associated listener are forwarded to that back-end pool.

path-based rule: add multiple back-end pools that correspond to each URL path. The requests that match the URL path that's entered are forwarded to the corresponding back-end pool.

Configure URL Path-based routing

URL Path Based Routing allows you to route traffic to back-end server pools based on URL Paths of the request



A rewrite rule set contains:

- Request routing rule association**
- Rewrite Condition**
- Rewrite type**
 - Rewriting request headers
 - Rewriting response headers
 - Rewriting URL components:
 - **URL path**
 - **URL Query String**
 - **Re-evaluate path map**

Create rewrite set

1 Name and Association

2 Rewrite rule configuration

+ Add rewrite rule

Rewrite rules (Rule sequence)

Click add rewrite rule button.

< [] >

+ Add condition + Add action Delete rewrite rule

Rewrite rule name	Rule sequence ⓘ
Rewrite rule name	100

Design and configure Azure Front Door



What is Azure Front Door

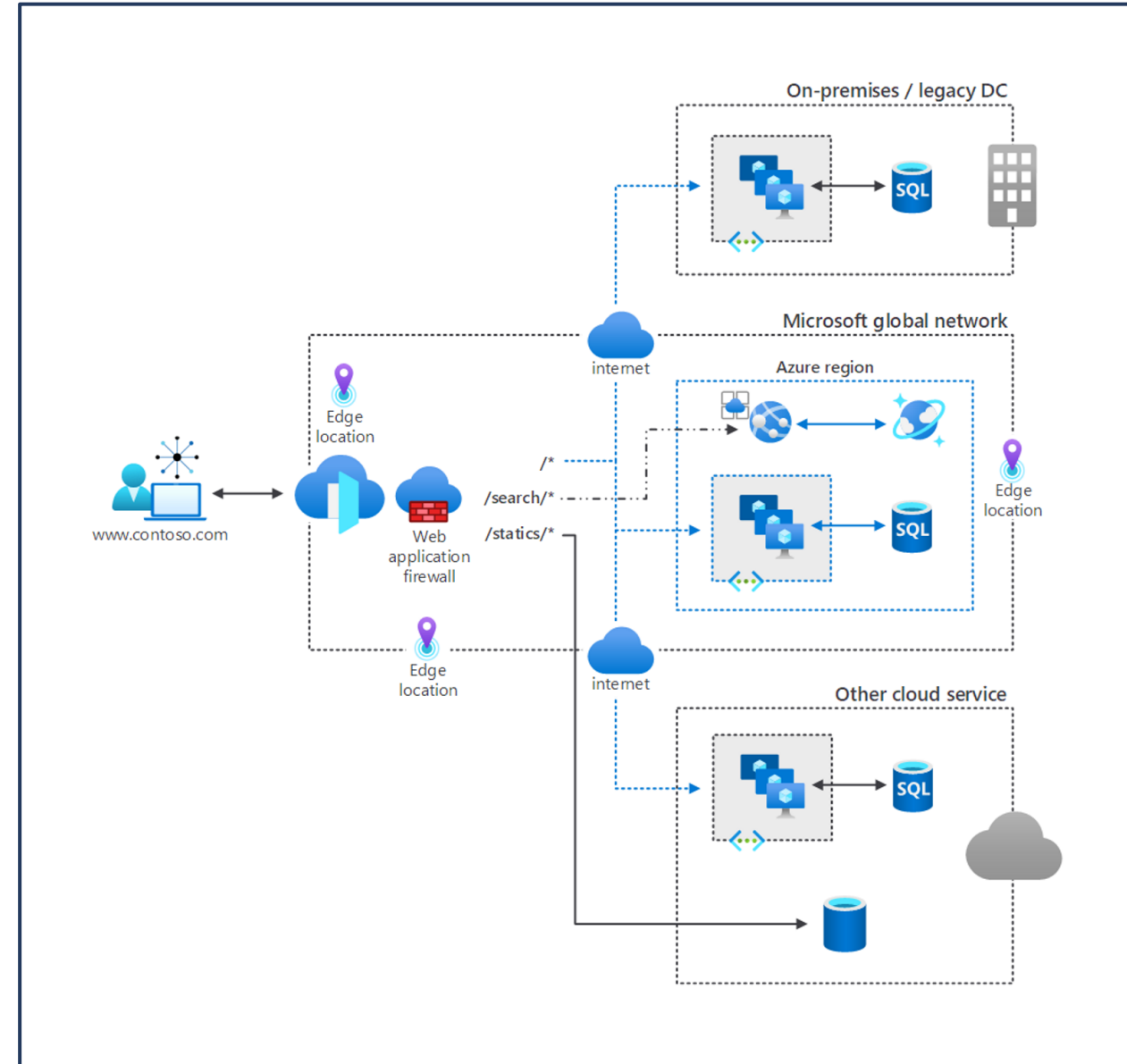
Global, scalable entry-point that uses the Microsoft global edge network to create fast, secure, and widely scalable web applications

Accelerated application performance by using split TCP-based anycast protocol

Intelligent health probe monitoring for backend resources

URL-path based routing for requests

Enables hosting of multiple websites for efficient application infrastructure



Azure Front Door Standard and Premium



Azure Front Door Standard SKU is:

- Content delivery optimized
- Offering both static and dynamic content acceleration
- Global load balancing
- SSL offload
- Domain and certificate management
- Enhanced traffic analytics
- Basic security capabilities

Azure Front Door Premium SKU builds on capabilities of Standard SKU, and adds:

- Extensive security capabilities across WAF
- Bot protection
- Private Link support
- Integration with Microsoft Threat Intelligence and security analytics.

Create a Front Door in the Azure portal

Quick Create or Custom Create

Select between Standard and Premium tier

Globally unique endpoint name

Select Origin type, for example: App service or App Gateway

Compare offerings

Microsoft Azure

Choose between Azure Front Door and other offerings.

Azure Front Door ☒

Azure Front Door is a secure cloud CDN which provides static and dynamic content acceleration, global load balancing and protection of your apps, APIs and websites with intelligent threat protection.

Explore other offerings ☐

See offerings for our Azure Front Door and Azure CDN Standard from Microsoft, along with our partner offerings.

Choose between Azure Front Door options

Quick create ☒

Get started with a simplified web application deployment using default settings.

Define one endpoint with one origin and one WAF policy to get your front door up and running quickly.

Configure advanced settings and add endpoints as your needs evolve.

Custom create ☐

Leverage powerful configuration options to deploy a custom solution.

Design an endpoint with multiple domains and origin groups. Define routes to connect them, and add WAF

Add endpoints to scale your deployment as your needs evolve.

[Continue to create a front door](#)

Configure routing and redirection rules

Routing architecture overview

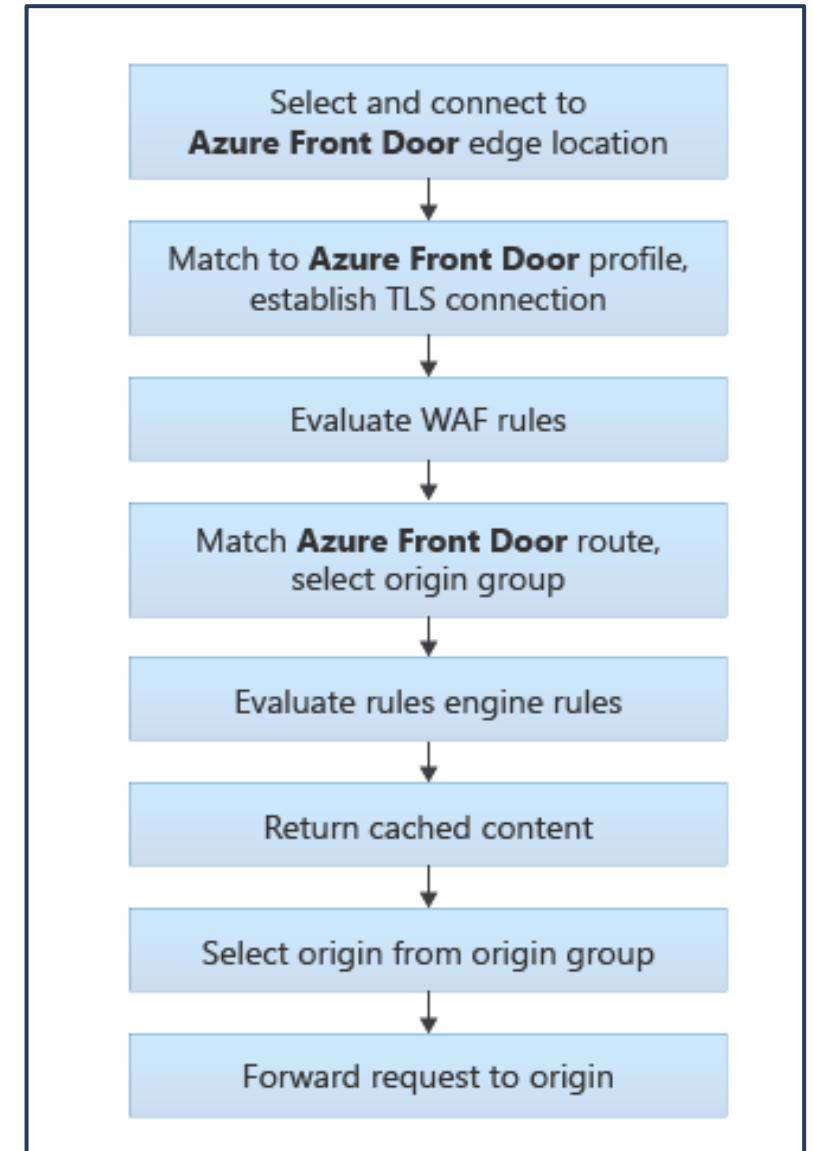
Front Door matches the incoming request to the left-hand side of the route. The right-hand side defines how Front Door processes the request

Incoming match (left-hand side)

- HTTP Protocols (HTTP/HTTPS)
- Hosts (for example, www.foo.com, *.bar.com)
- Paths (for example, /*, /users/*, /file.gif)

Route data (right-hand side)

The decision of how to process the request, depends on whether caching is enabled or not for the specific route



Configure an Origin (Backend)

Origin type

Host name

Origin host header

HTTP & HTTPS port

Add an origin

Microsoft Azure

Origins are your application servers. Front door will route your client requests to origins, based on the type, ports, priority, and weight you specify here. [Learn more](#)

[← Go back to origin group](#)

Name *

EP027

Origin type *

App services

Host name *

webappaz700.azurewebsites.net

Origin host header

webappaz700.azurewebsites.net

Certificate subject name validation ⓘ

☒ Enable the validation

HTTP port *

80

HTTPS port *

443

Priority * ⓘ

1

Weight * ⓘ

1000

Private link

☐ Enable private link service

Private link connections from Azure Front Door must be approved at the Azure origin.

[Learn more](#)

Status

☒ Enable this origin

Configure health probes

Front Door supports the following HTTP methods for sending the health probes:

GET: The GET method means retrieve whatever information (in the form of an entity) is identified by the Request-URI.

HEAD: The HEAD method is identical to GET except that the server **MUST NOT** return a message-body in the response. For new Front Door profiles, by default, the probe method is set as HEAD.

Health probes

If enabled, front door will send periodic requests to each of your origins to determine their proximity and health for load balancing purposes. [Learn more](#)

Status ⓘ

☒ Enable health probes

Path *

Protocol * ⓘ

☒ HTTP

☐ HTTPS

Probe method *

HEAD

▼

Interval (in seconds) * ⓘ

100

seconds

Secure Front Door with SSL and end-to-end SSL encryption

Create HTTP to HTTPS redirect rule

Create a routing rule for HTTP to HTTPS redirect

Add routing rule to handle the HTTPS traffic

On the Route Details section, set the Route Type to Forward.

Update route

default-route

Patterns to match ⓘ

/*

/path

Accepted protocols *

HTTP and HTTPS

Redirect

☒ Redirect all traffic to use HTTPS

Origin group

Origin group *

default-origin-group

Add a new origin group

Origin path

Forwarding protocol *

☐ HTTP only

☐ HTTPS only

☒ Match incoming request

Caching

☐ Enable caching

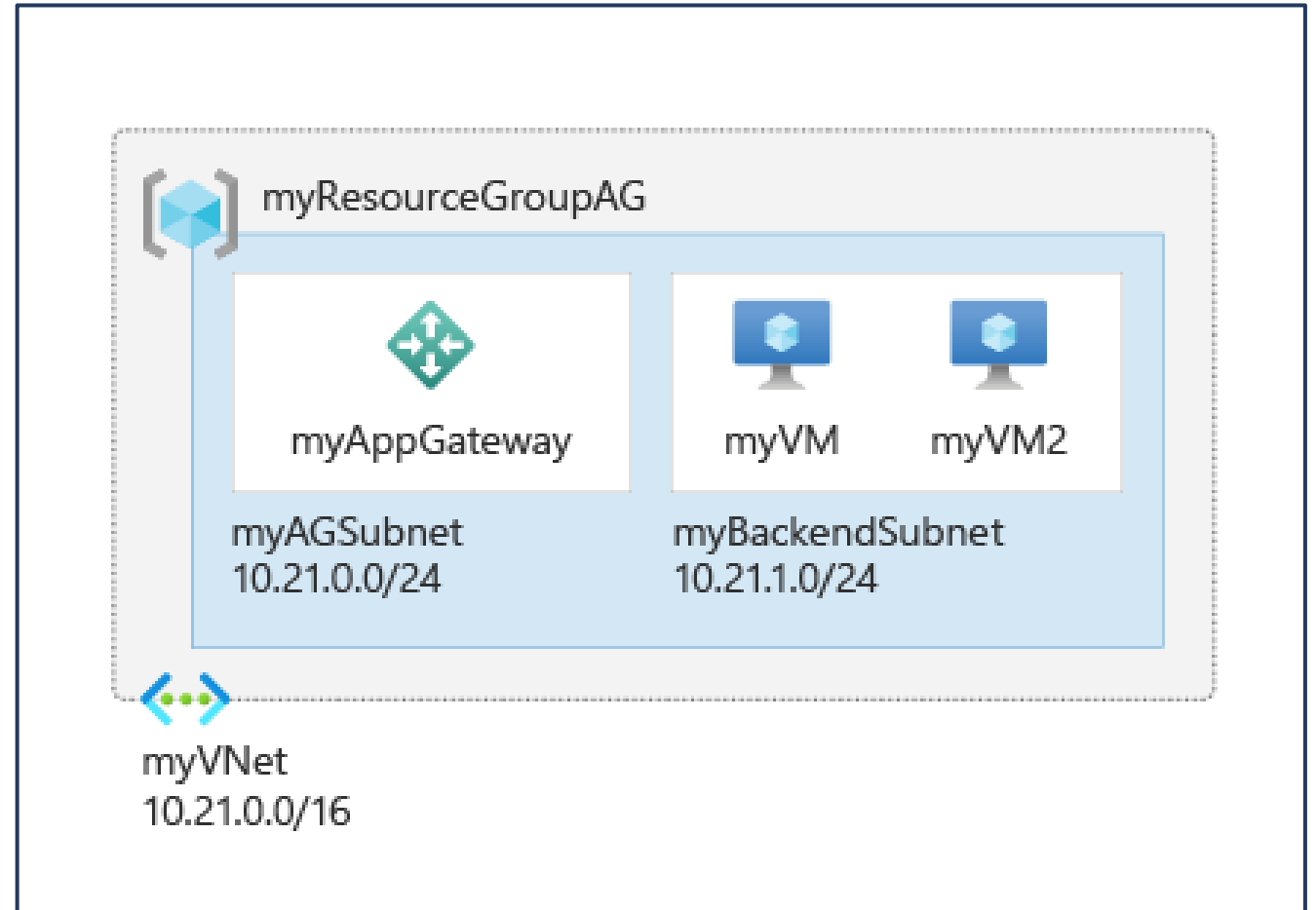
Exercise: Deploy Azure Application Gateway



Exercise – deploy Azure Application Gateway



- Task 1: Create an application gateway
- Task 2: Add backend targets
- Task 3: Add backend servers to backend pool
- Task 4: Test the application gateway



Exercise: Create a Front Door for a highly available web application



Exercise: create a Front Door for a highly available web application

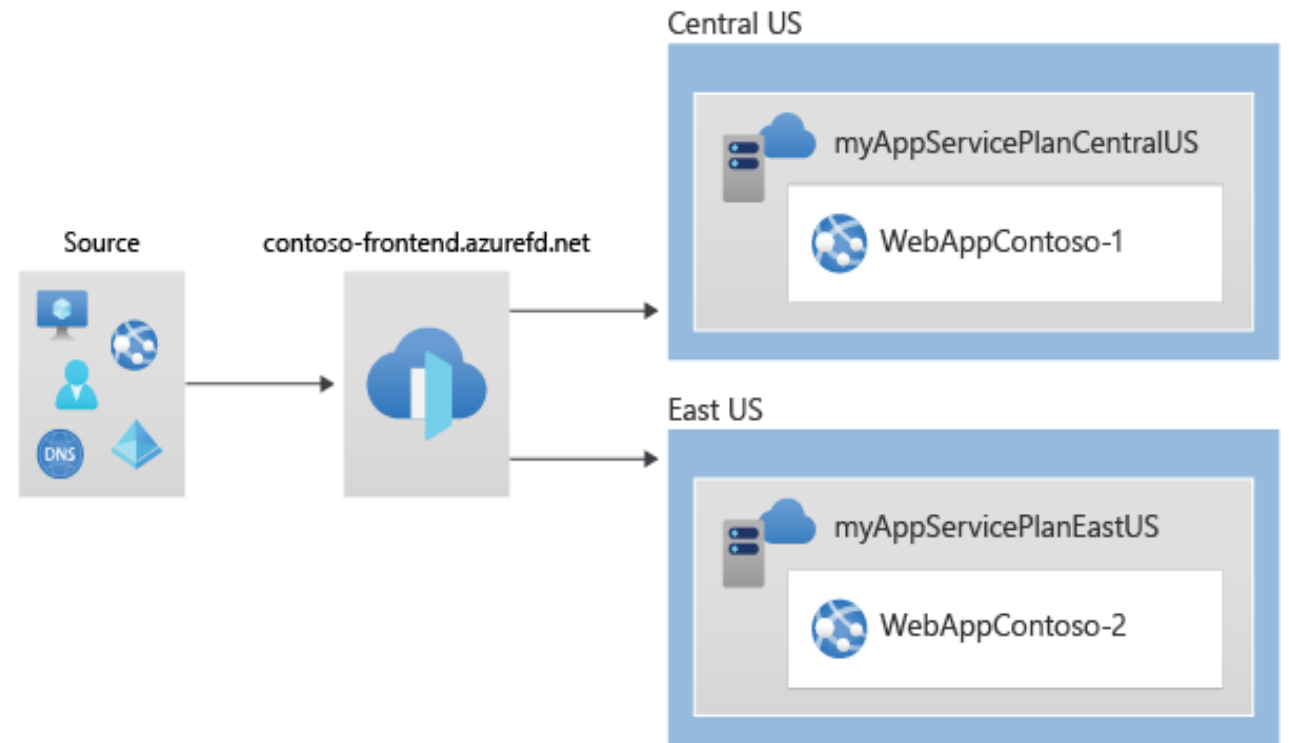


Task 1: Create two instances of a web app

Task 2: Create a Front Door for your application

Task 3: View Azure Front Door in action

Task 4: Clean up resources



End of presentation

