Designing Integration with Azure Services

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Overview

APIM & Azure Application Gateway
- Azure Application Gateway Overview
- Demo: APIM & Application Gateway

APIM & Microservices
- Azure Service Fabric Overview
- Demo: APIM & Azure Service Fabric
- Demo: APIM & AKS

APIM & Azure Functions
- Azure Functions Overview
- Demo: APIM & Azure Functions

APIM & Azure Active Directory (AAD)
- Demo: Protecting APIM operations

Integrating APIM with
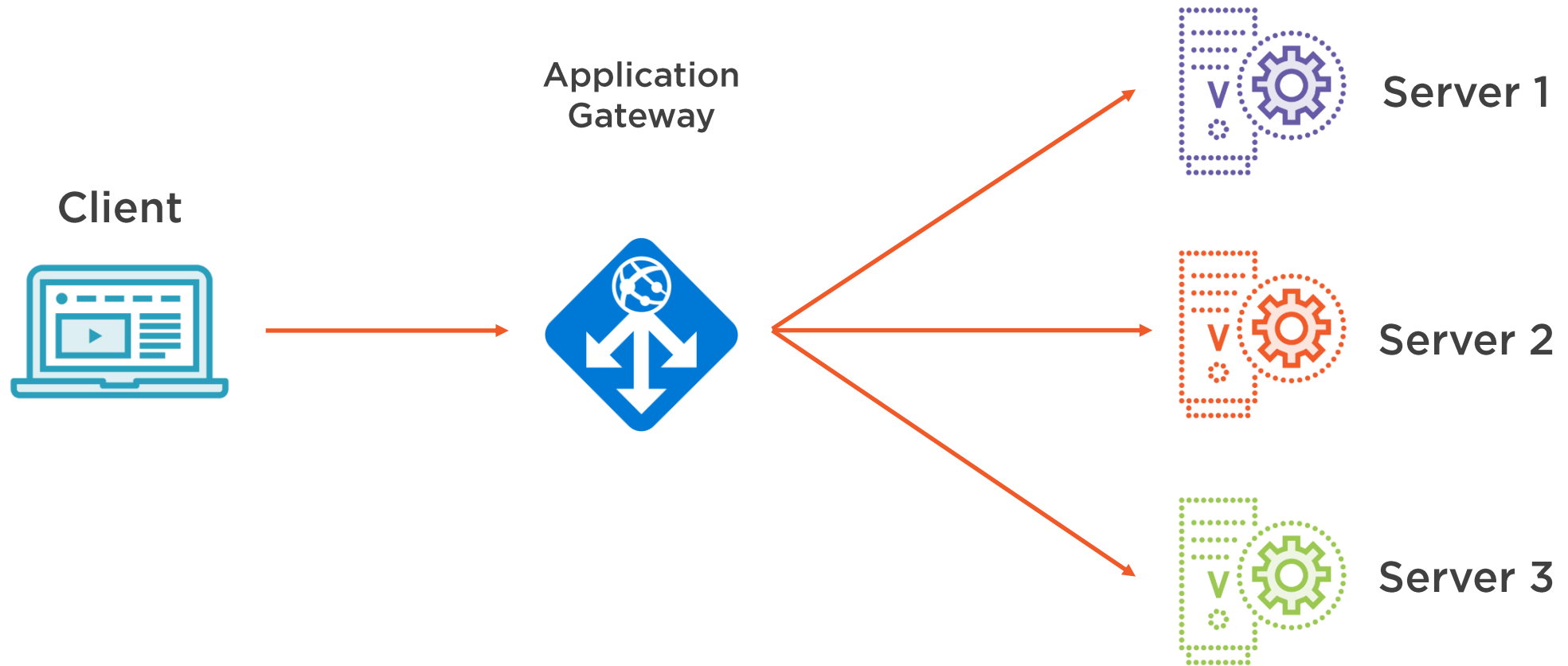# Azure Application Gateway
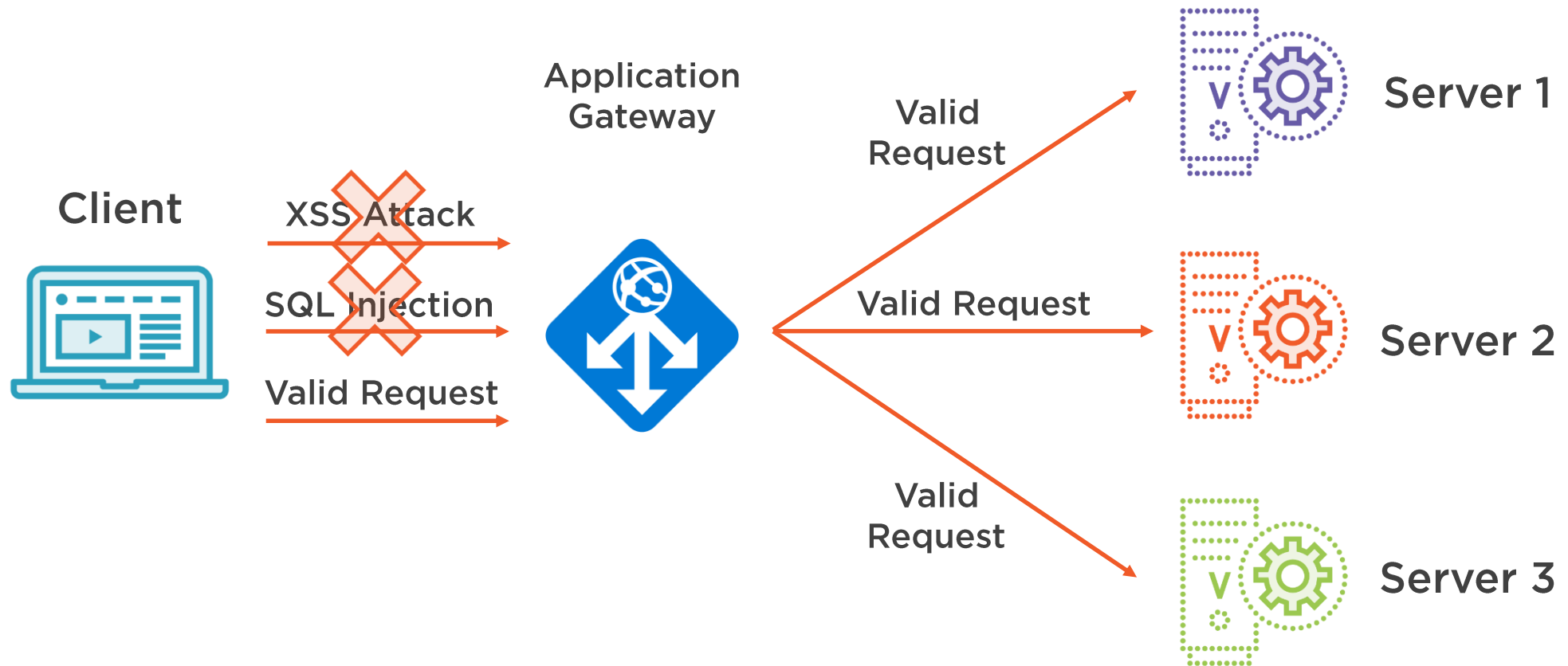
Azure Application Gateway

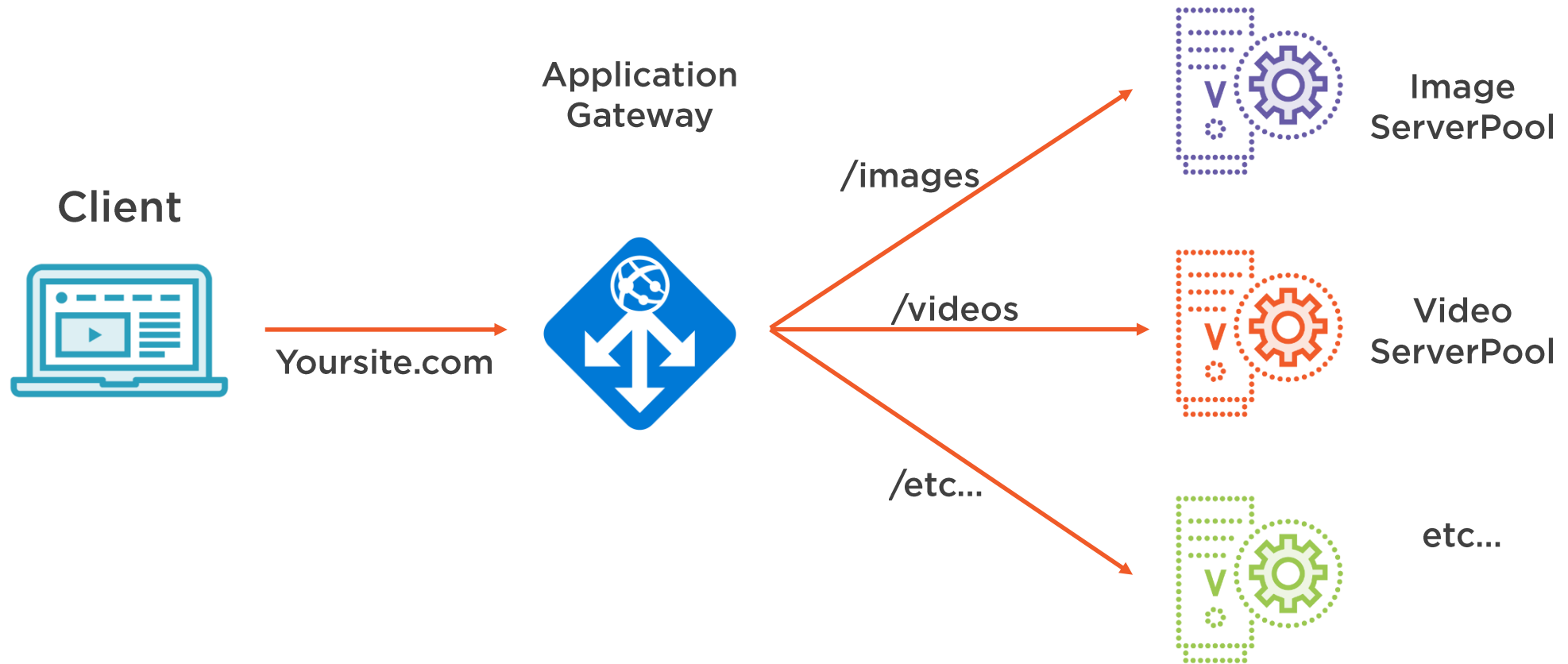A web traffic load balancer that enables you to manage traffic to your web applications.
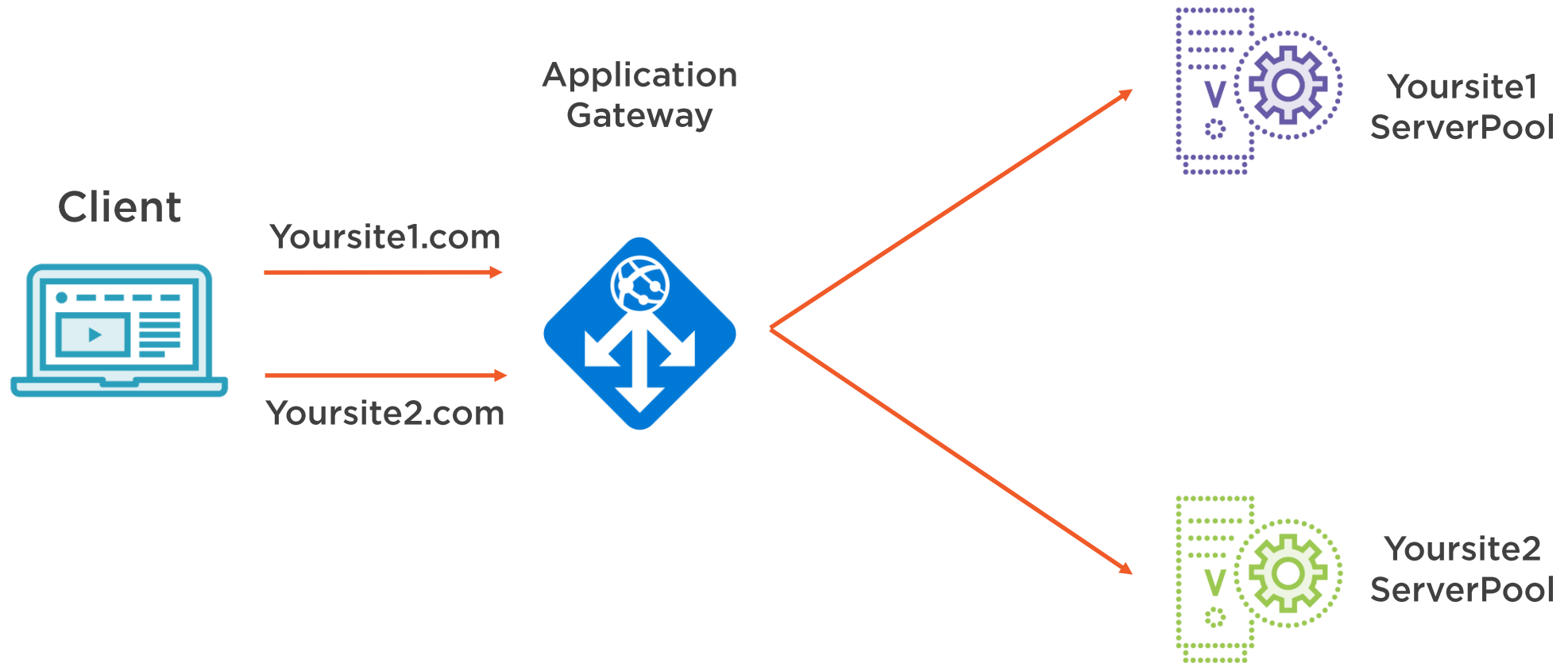
Azure Application Gateway: Load Balancing

Client

Application Gateway

Server 1

Server 2

Server 3

Azure Application Gateway: Web Application Firewall

Client

XSS Attack

SQL Injection

Valid Request

Application Gateway

Valid Request

Valid Request

Valid Request

Server 1

Server 2

Server 3

Azure Application Gateway: URL-based Routing

Client

Yoursite.com →

Application Gateway

/images →

Image ServerPool

/videos →

Video ServerPool

/etc... →

etc...

Azure Application Gateway: Multiple-site Hosting

Application Gateway

Client

Yoursite1.com

Yoursite2.com

Yoursite1 ServerPool

Yoursite2 ServerPool

Other Azure Application Gateway Features

Custom error pages:
Application Gateway allows creating custom error pages

Session affinity:
The cookie-based session affinity allows keeping a user session on the same server

Redirection:
a generic redirection mechanism, can redirect from and to any port defined by rules

Connection draining:
helps graceful removal of backend pool members during planned service updates

Integrating APIM with Azure Application Gateway

Single API Management service for both internal and external consumers

Make it act as a single frontend for both on-prem and cloud APIs

Expose only a subset of your APIs for External Consumption using routing functionality available in Application Gateway

Using the load balancer and web application firewall (WAF) features offered by Application Gateway

Demo

Integrating APIM with Azure Application Gateway

- Create a Virtual Network, subnet, and public IP for the Application Gateway
- Create the Application Gateway
- Create an API Management service inside the VNET subnet created above
- Integrate APIM & Application Gateway
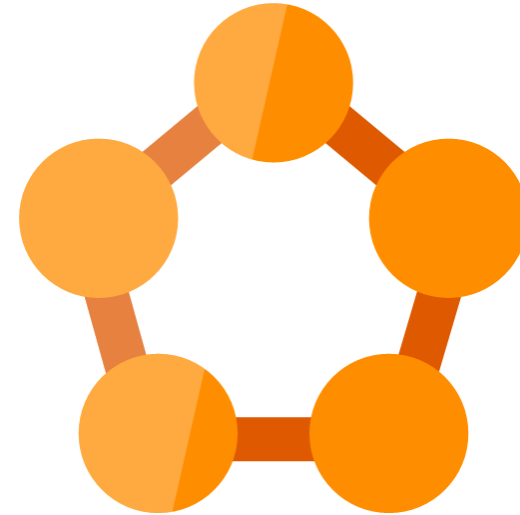
APIM and Microservices

APIM and Microservices

Azure Kubernetes Service (AKS)

Makes deploying and managing containerized applications easy

Azure Service Fabric

Build and manage applications composed of microservices

Kubernetes Cluster Architecture

Azure Kubernetes Service (AKS) – The Big Picture

by Manoj Nair

AKS offers a managed Kubernetes Platform on Microsoft Azure. This course will teach you the basics of Kubernetes; deploy an AKS Cluster; and run, scale and update application code in AKS with minimal effort.

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▶	What Is Azure Kubernetes Service (AKS)?	🔖	46m 50s	⌄
▶	AKS in Action	🔖	36m 58s	⌄
▶	Next Steps	🔖	8m 56s	⌄

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By Ivan Gavryliuk

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By Ivan Gavryliuk

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By Ivan Gavryliuk

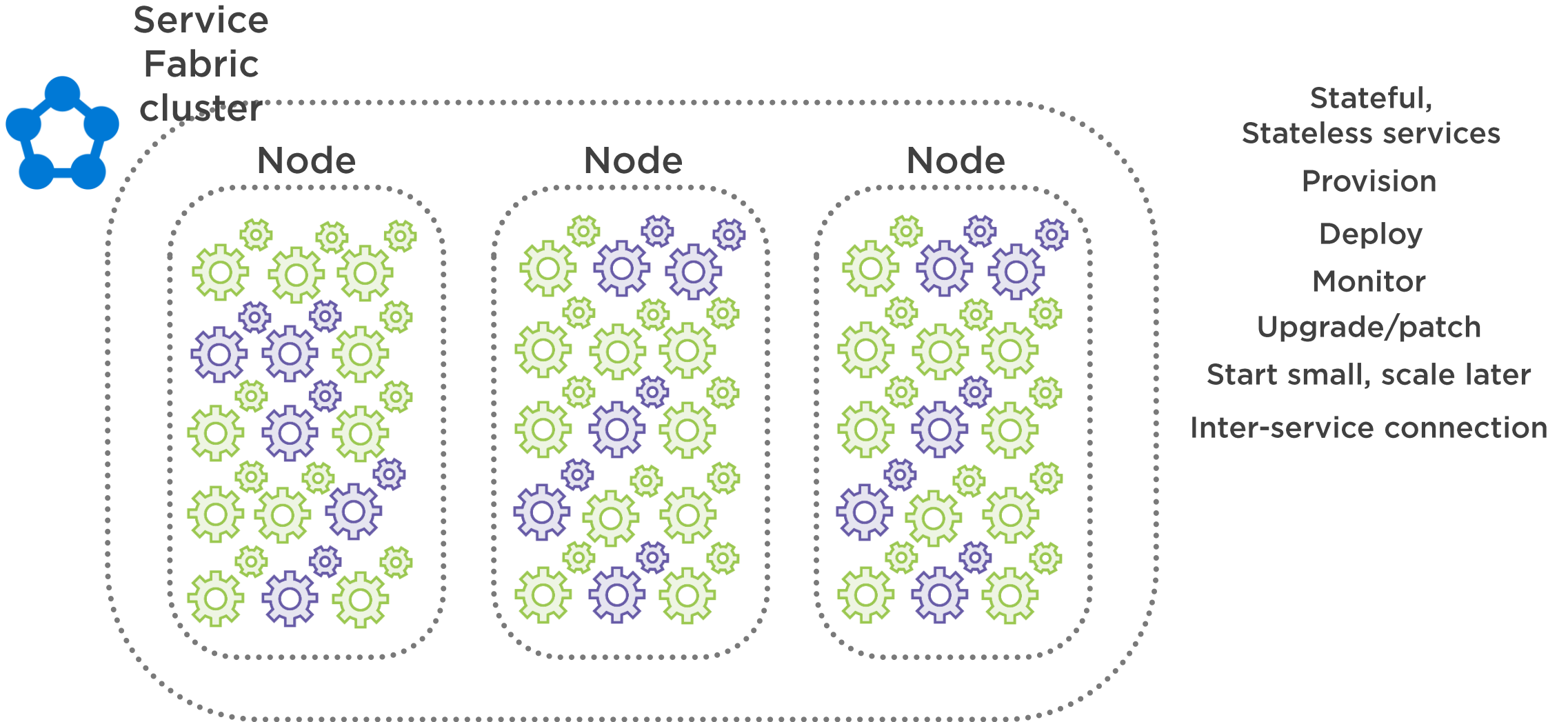Jun 19, 2019 · Beginner · 3h 41m · ★★★★⯪ (184)

Azure Service Fabric

Service Fabric enables you to build and manage scalable and reliable applications composed of microservices that run at high density on a shared pool of machines, which is referred to as a cluster.

Azure Service Fabric Overview

Service Fabric cluster

Node **Node** **Node**

Stateful, Stateless services

Provision

Deploy

Monitor

Upgrade/patch

Start small, scale later

Inter-service connection

Azure Service Fabric Overview

Build scalable and reliable applications composed of microservices

Run at high density on a shared pool of machines, which is referred to as a cluster

Stateless, and stateful microservices

Provision, deploy, monitor, upgrade/ patch, and delete deployed microservices

Start small and grow to massive scale with hundreds or thousands of machines

Abstracts-out inter-service communication from developers

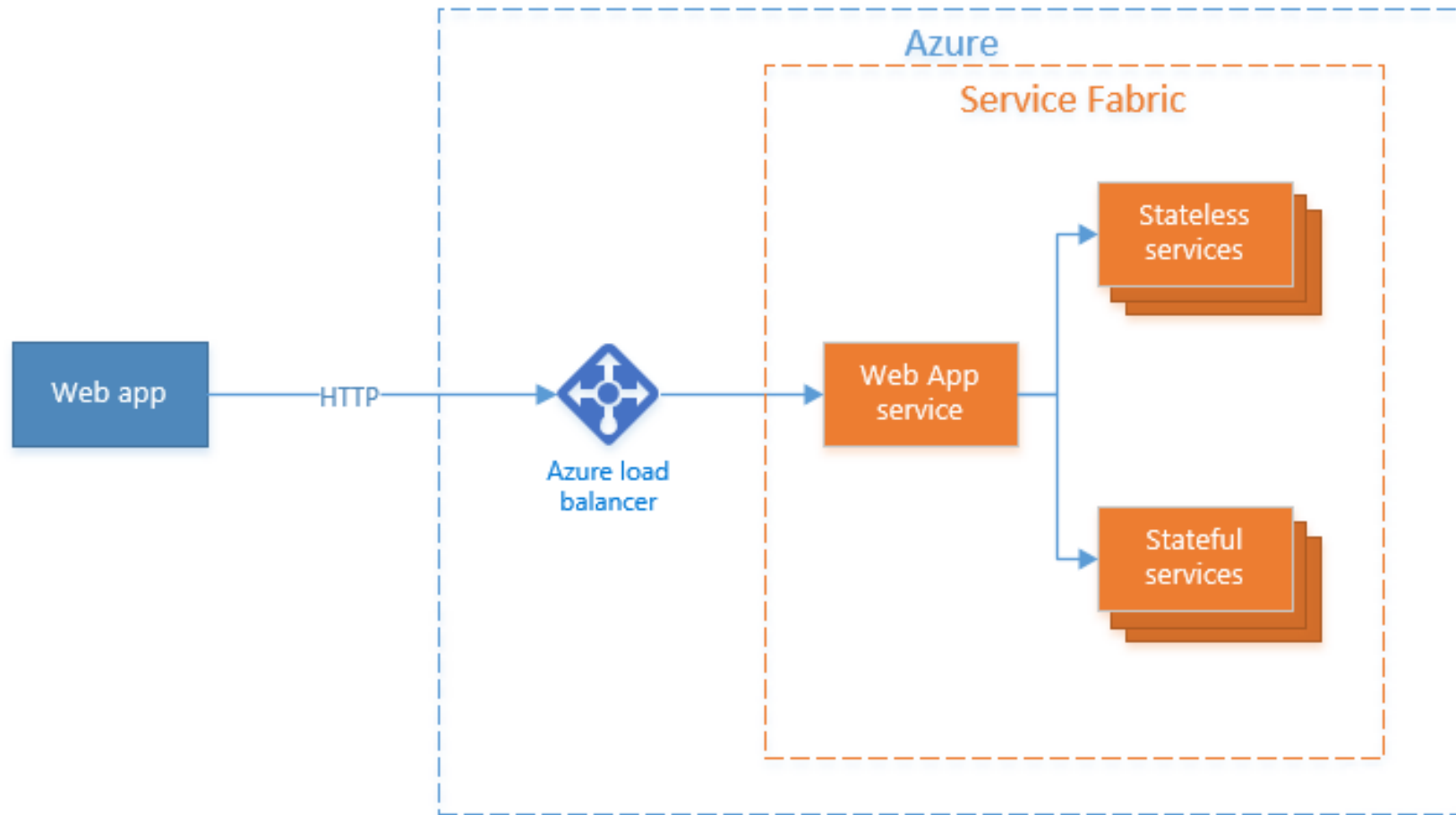# Integrating APIM with
Azure Application Gateway

Diagram by Microsoft

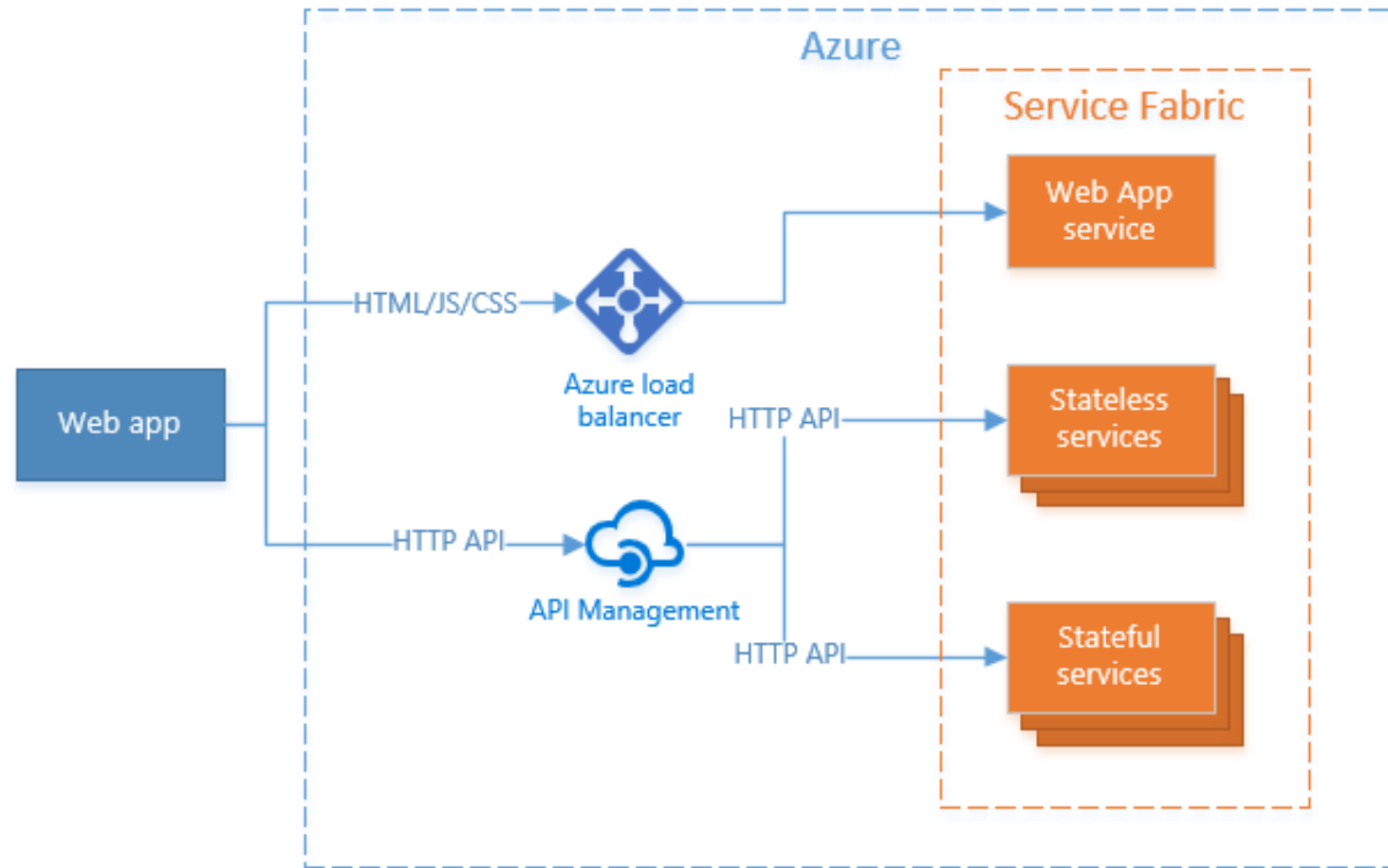# Integrating APIM with
Azure Application Gateway

Diagram by Microsoft

Demo

Deploy a Service Fabric back-end service

Deploy an APIM instance

Integrate the deployed APIM with our back-end service

Testing

Demo

Deploy a .NET Core API to AKS

- Create a Docker image

- Register it in Azure Container Registry

- Deploy from ACR to AKS

- Confirm the health of the public API

Demo

Expose AKS containers using APIM

- Deploy a private API to AKS
- Configure APIM to expose the private API

Integrating APIM with Azure Functions

Azure Functions Overview

A solution for easily running small pieces of code, or "functions," in the cloud

Write just the code you need for the problem at hand, without worrying about a whole application or the infrastructure to run it (Serverless application)
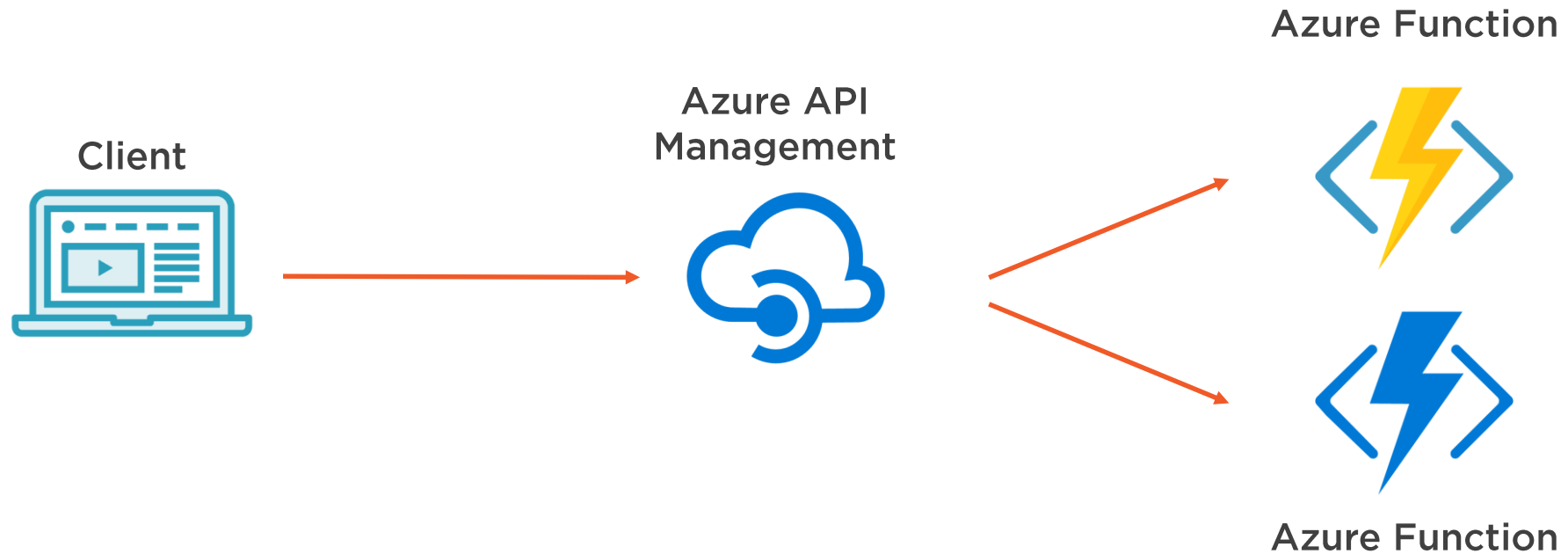
You can use your development language of choice, such as C#, F#, Node.js, Java, or PHP

Pay only for the time your code runs and trust Azure to scale as needed

Integrating APIM with Azure Functions

Client

Azure API Management

Azure Function

Azure Function

Demo

Create an Azure Function

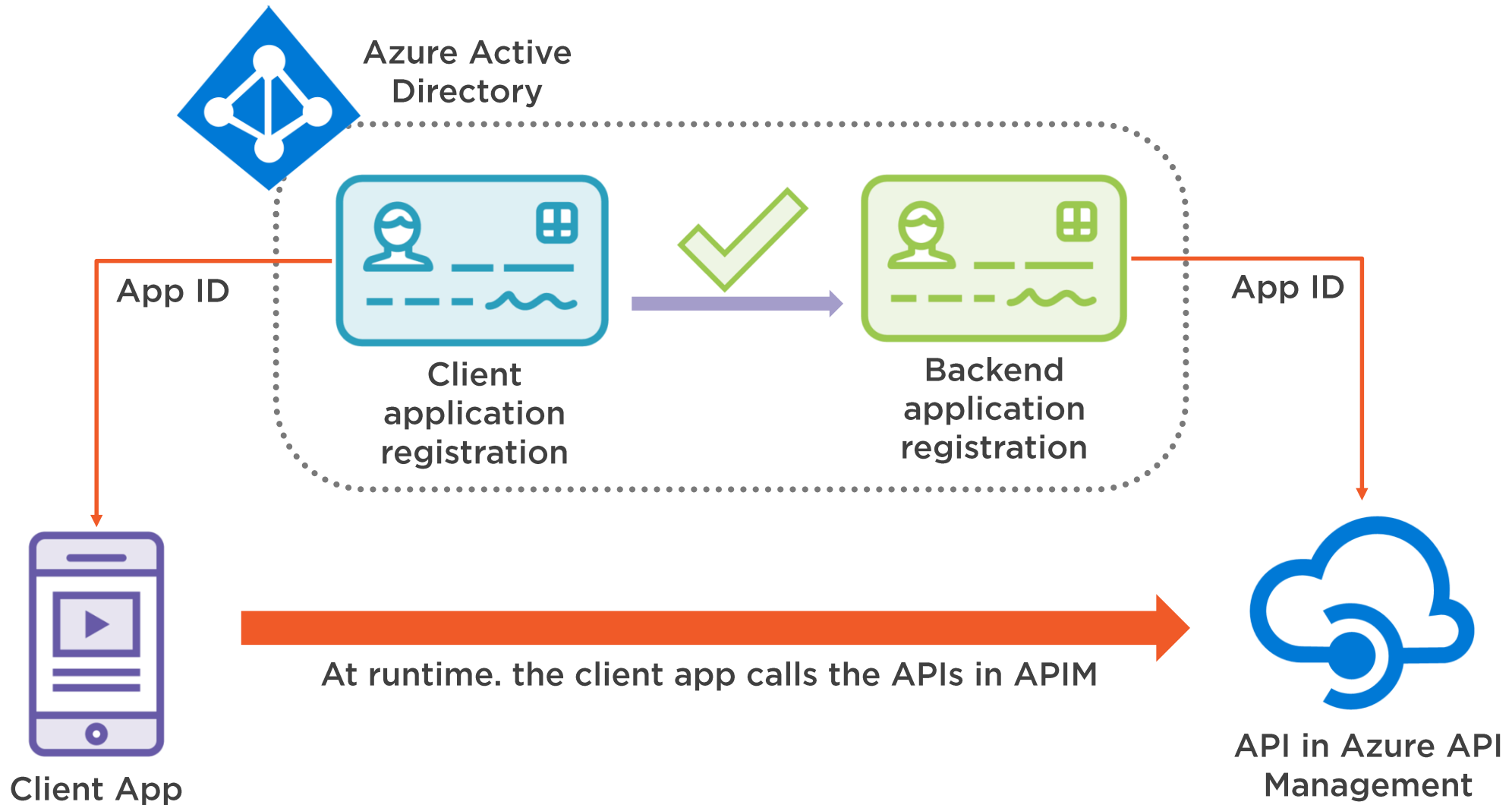Import the Azure Function into APIM as a new API

Protect APIM APIs with Azure Active Directory

The goal is to protect an API in APIM using OAuth 2.0 and Azure Active Directory

Integrating APIM with Azure Functions

AAD authentication is only available in Developer, Standard and Premium tiers of APIM.

Summary

Integrating APIM with Azure Application Gateway

Integrating APIM with Azure Service Fabric

Integrating APIM with Azure Functions