Microsoft Azure Developer: Instrument Solutions for Monitoring and Logging

INTRODUCTION TO AZURE MONITOR AND APPLICATION INSIGHTS

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Course Overview

Understand Azure Monitor structure and Application Insights capabilities

Configure instrumentation with Application Insights in the ASP .NET Core apps

Implement Application Insights Web Test and Alerts

Implement code that handles transient faults

Summary

Module Overview

Understand Azure Monitor structure

Understand Azure Application Insights capabilities

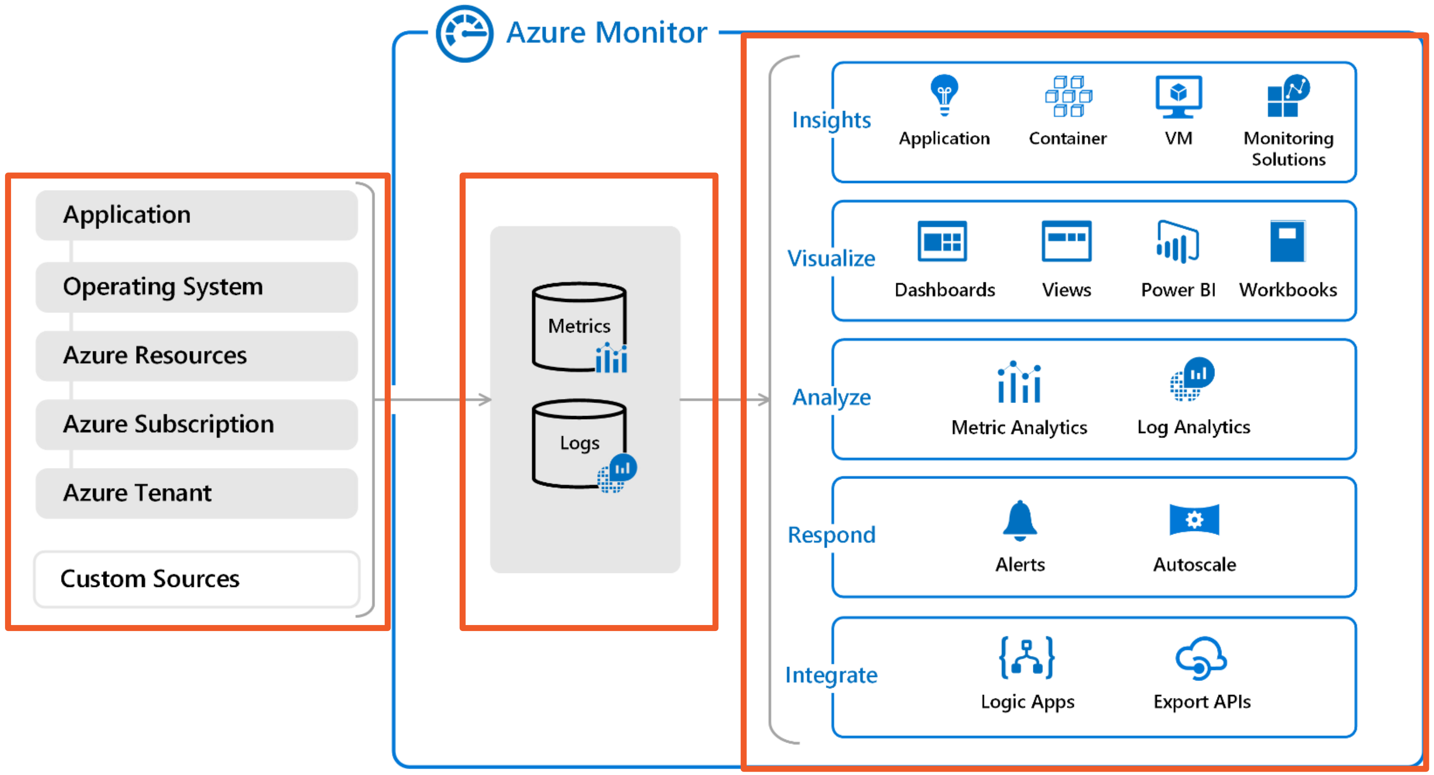
Configure Azure Application Insights in the Azure Portal

Configure instrumentation in the ASP .NET Core apps

Analyze log data and troubleshoot solutions

Azure Monitor Structure

Azure Monitor Structure



Metrics

Metrics are numerical values that describe some aspect of a system at a particular time.

Example of metrics can be CPU or memory usage value.

Logs

Logs are events that occurred within the system.

They can contain different kinds of data and may be structured or free form text with a timestamp.

Example of the logs can be information about exception thrown during application execution.

Azure Monitor capabilities

Correlate infrastructure issues

Detect and diagnose issues across applications and dependencies

Support operations with smart alerts and automated actions

Create visualizations with Azure dashboards and workbooks

What Data Does Azure Monitor Collect?

Data about the performance and functionality of the application's source code

Data about the operating system on which your application is running

Data about the operation of an Azure resources

Data about the operation of tenant-level Azure services, such as Azure Active Directory

Azure Monitor can collect log data from any REST client what allows to create custom monitoring scenarios, including on-premises solutions

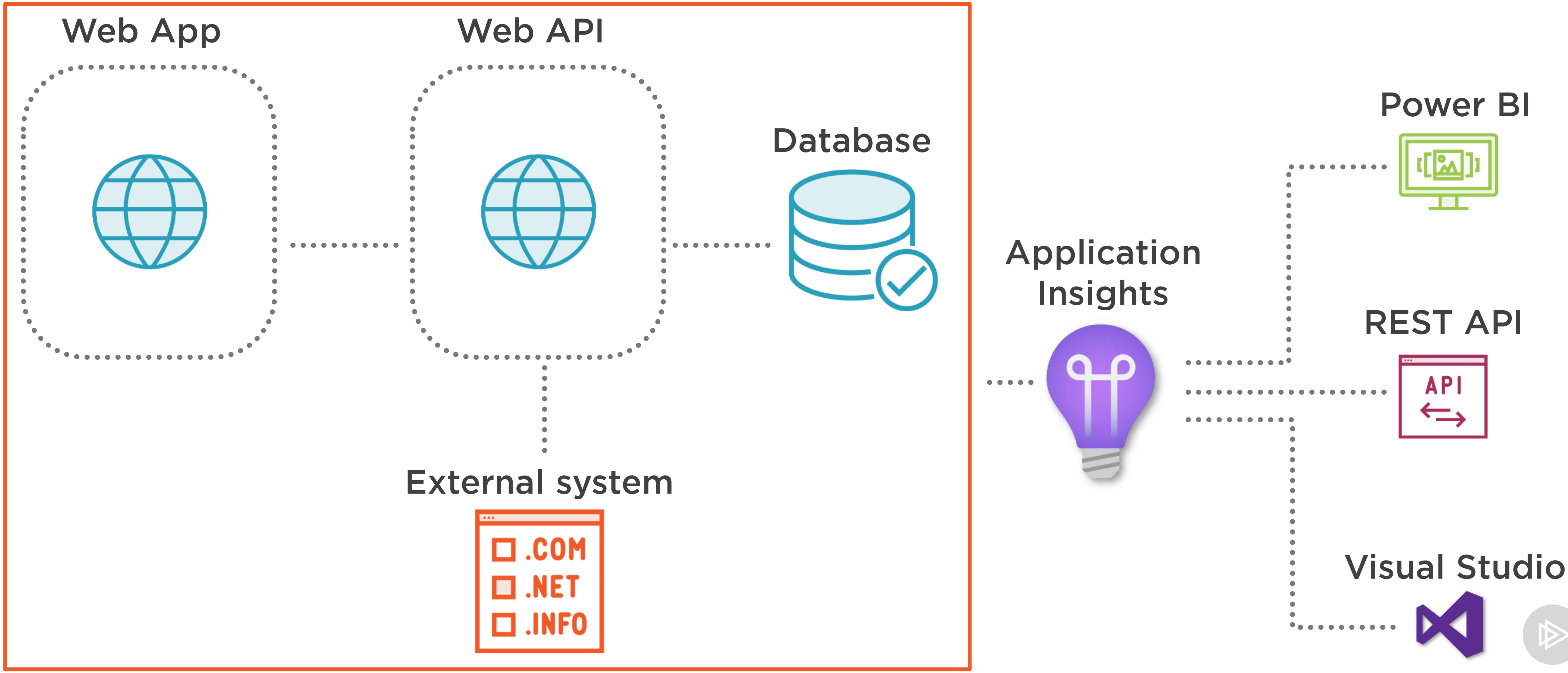
Monitoring Application Performance with Azure Application Insights

Azure Application Insights

Application Insights is an extensible Application Performance Management (APM) service for developers and DevOps professionals

It is a part of the Azure Monitor

Azure Application Insights



Application Insights Capabilities

Check performance of server machines like CPU or memory usage

Detect thrown exceptions in the application's source code

Add custom events and metrics in the client or server code, to track business events

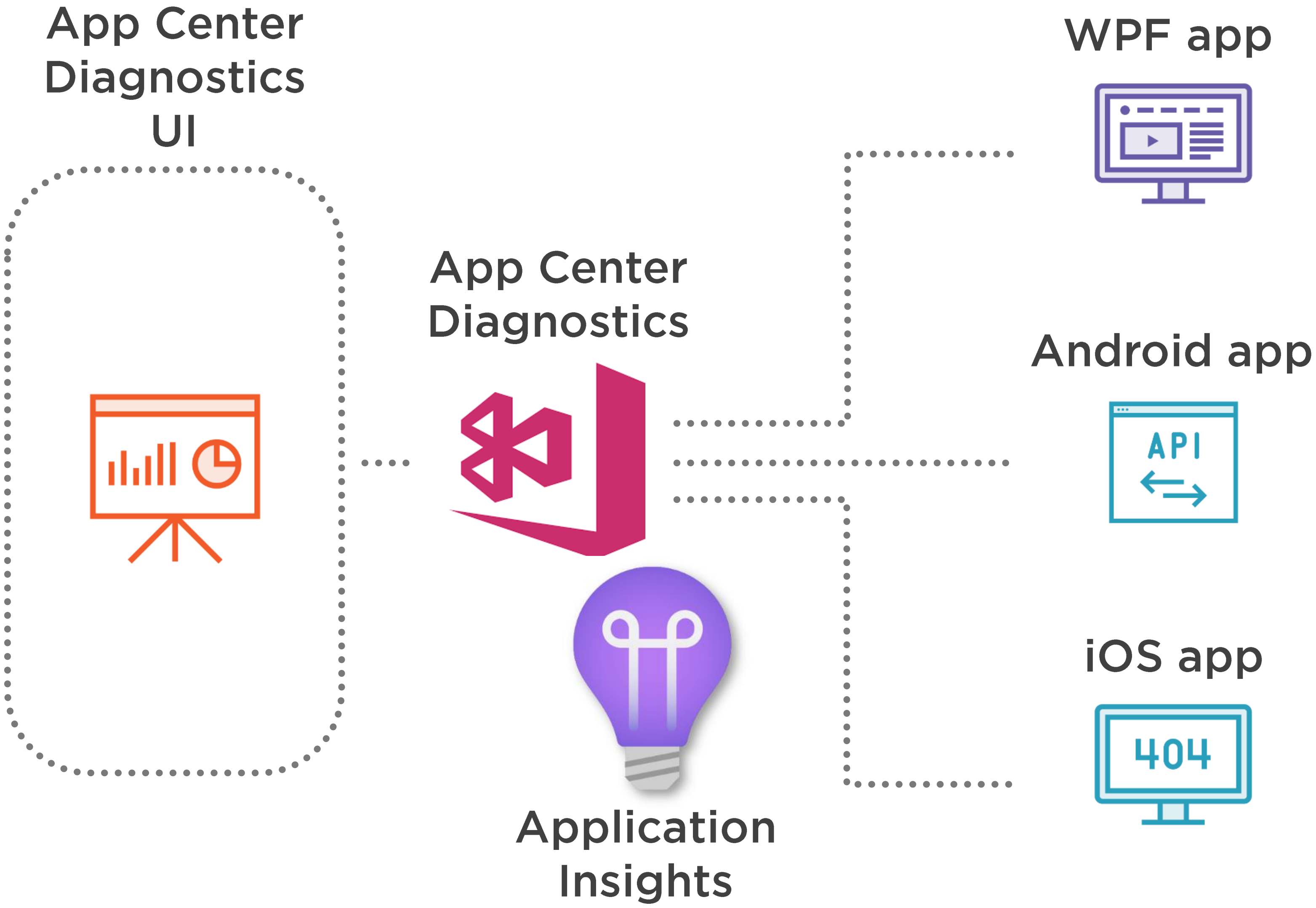
Collect request rates, response times, and failure rates

Collect page views and load performance - reported by the user's browser

Application Insights SDKs

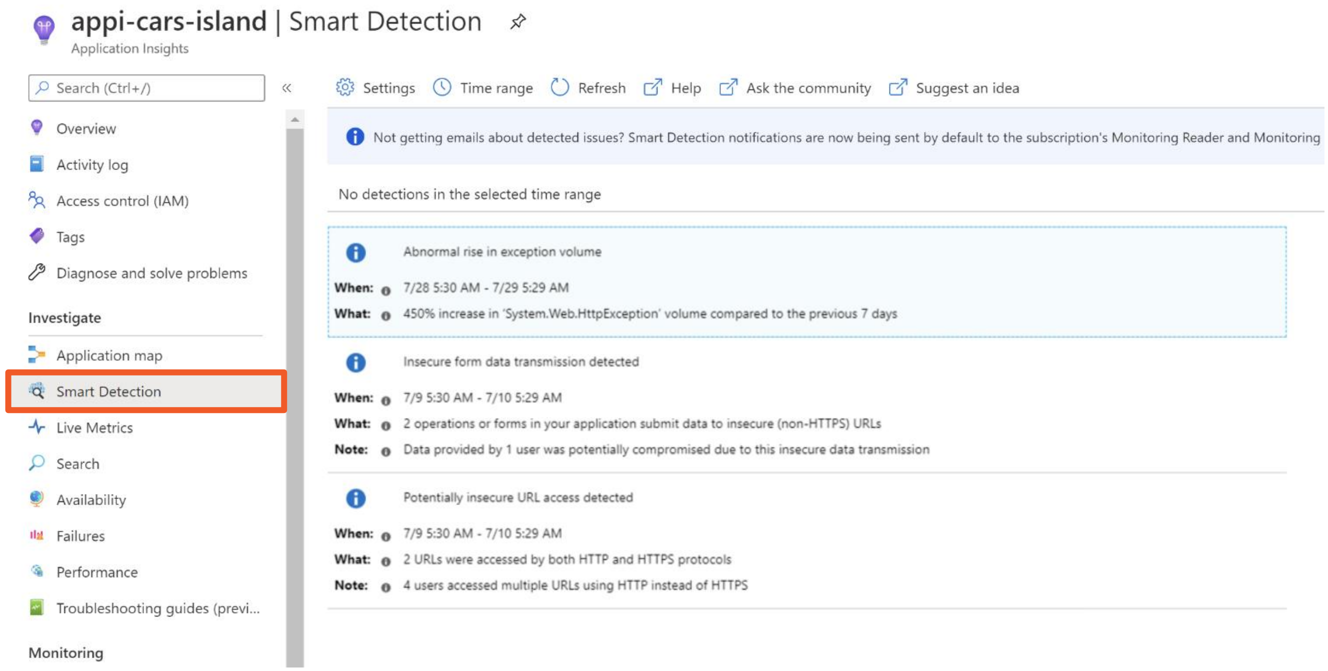
ASP.NET	ASP.NET Core	Java EE
Node.JS	React	Python

Mobile and Desktop Apps Support



How can I see collected telemetry from my applications?

Smart Detection automatically warns you of potential performance problems and failure anomalies in your web applications



Not getting emails about detected issues? Smart Detection notifications are now being sent by default to the subscription's Monitoring Reader and Monitoring

No detections in the selected time range

Abnormal rise in exception volume

When: 7/28 5:30 AM - 7/29 5:29 AM

What: 450% increase in 'System.Web.HttpException' volume compared to the previous 7 days

Insecure form data transmission detected

When: 7/9 5:30 AM - 7/10 5:29 AM

What: 2 operations or forms in your application submit data to insecure (non-HTTPS) URLs

Note: Data provided by 1 user was potentially compromised due to this insecure data transmission

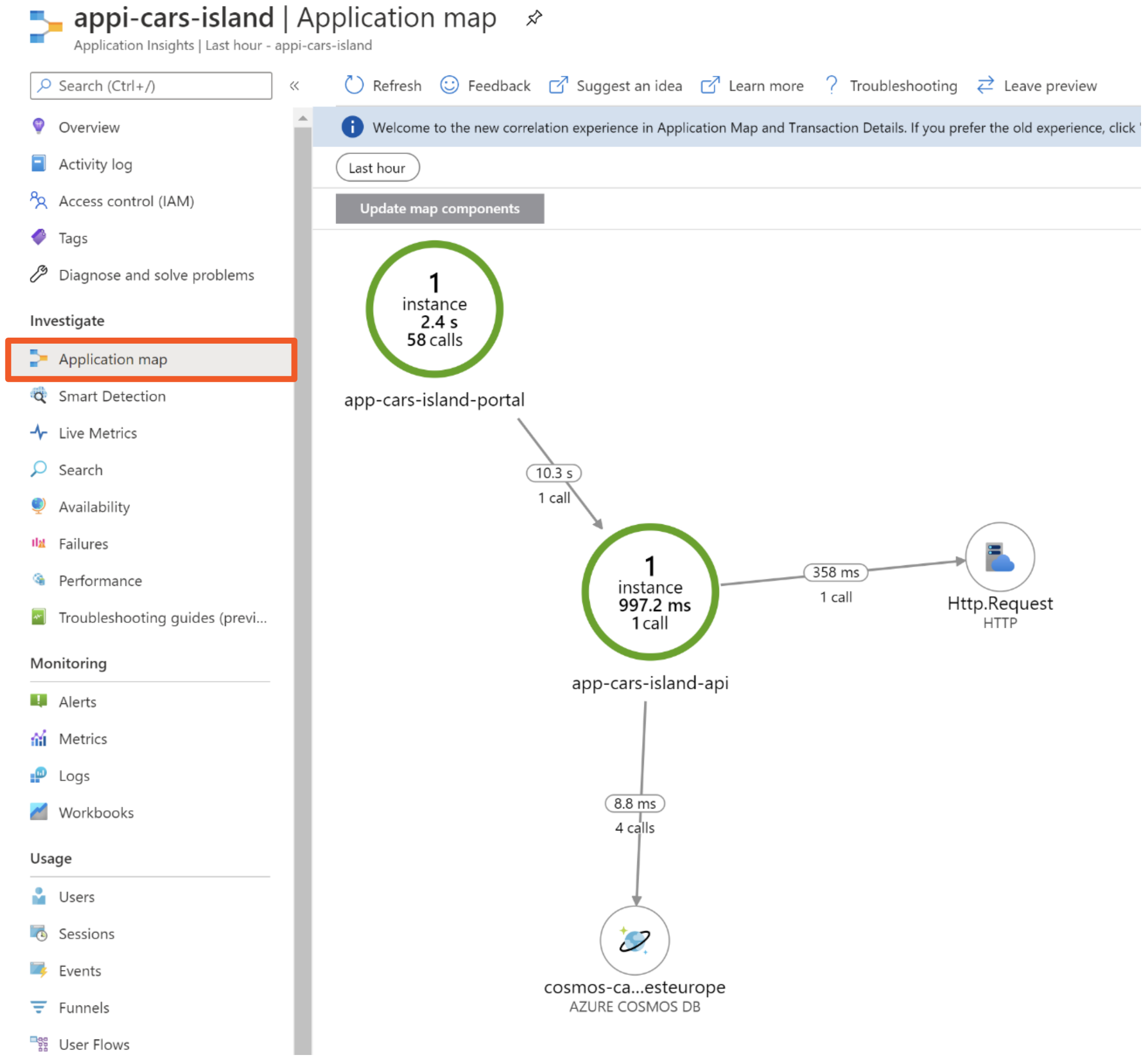
Potentially insecure URL access detected

When: 7/9 5:30 AM - 7/10 5:29 AM

What: 2 URLs were accessed by both HTTP and HTTPS protocols

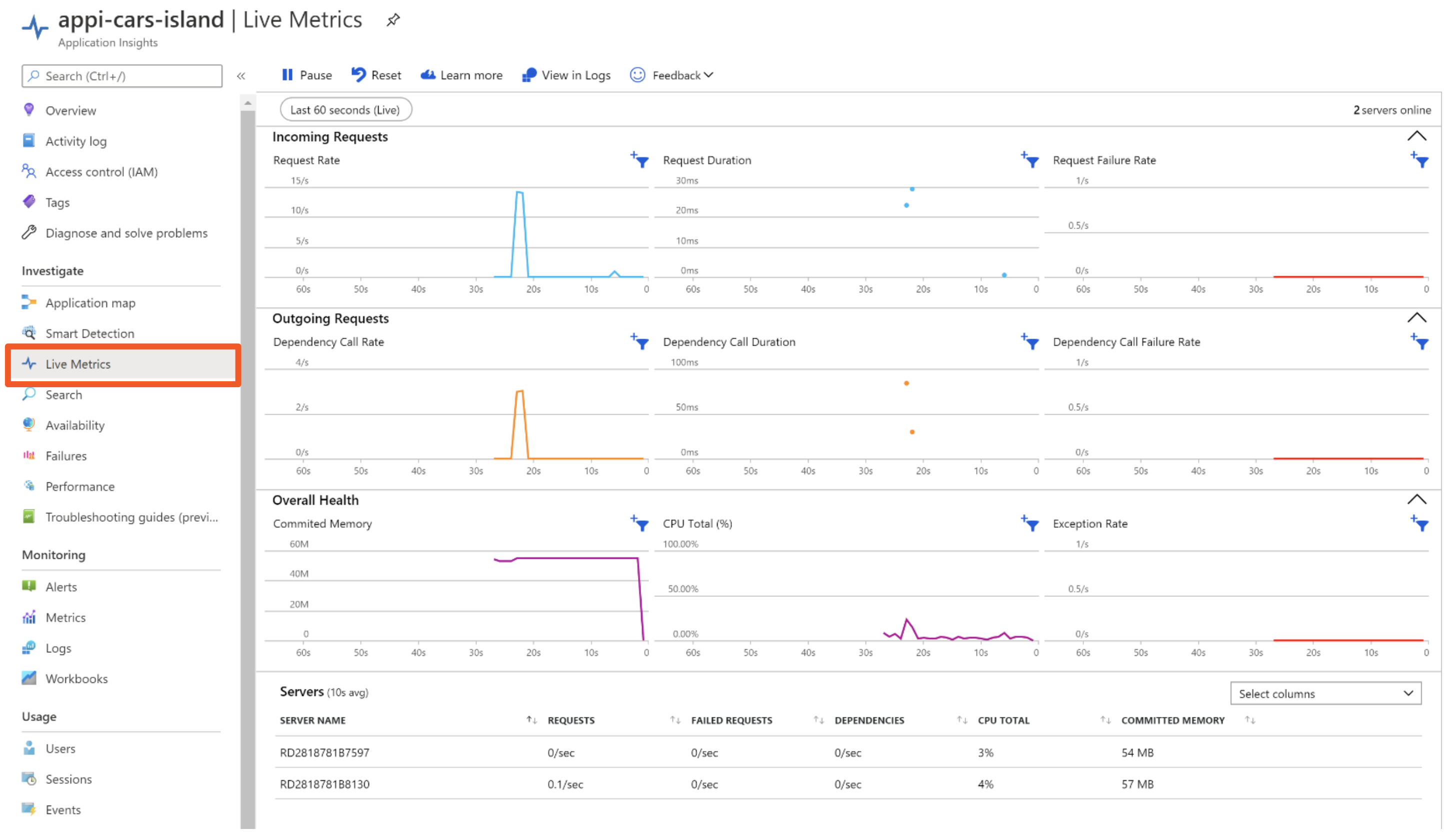
Note: 4 users accessed multiple URLs using HTTP instead of HTTPS

Application Map helps spot performance bottlenecks or failure hotspots across all components of the distributed application



Welcome to the new correlation experience in Application Map and Transaction Details. If you prefer the old experience, click

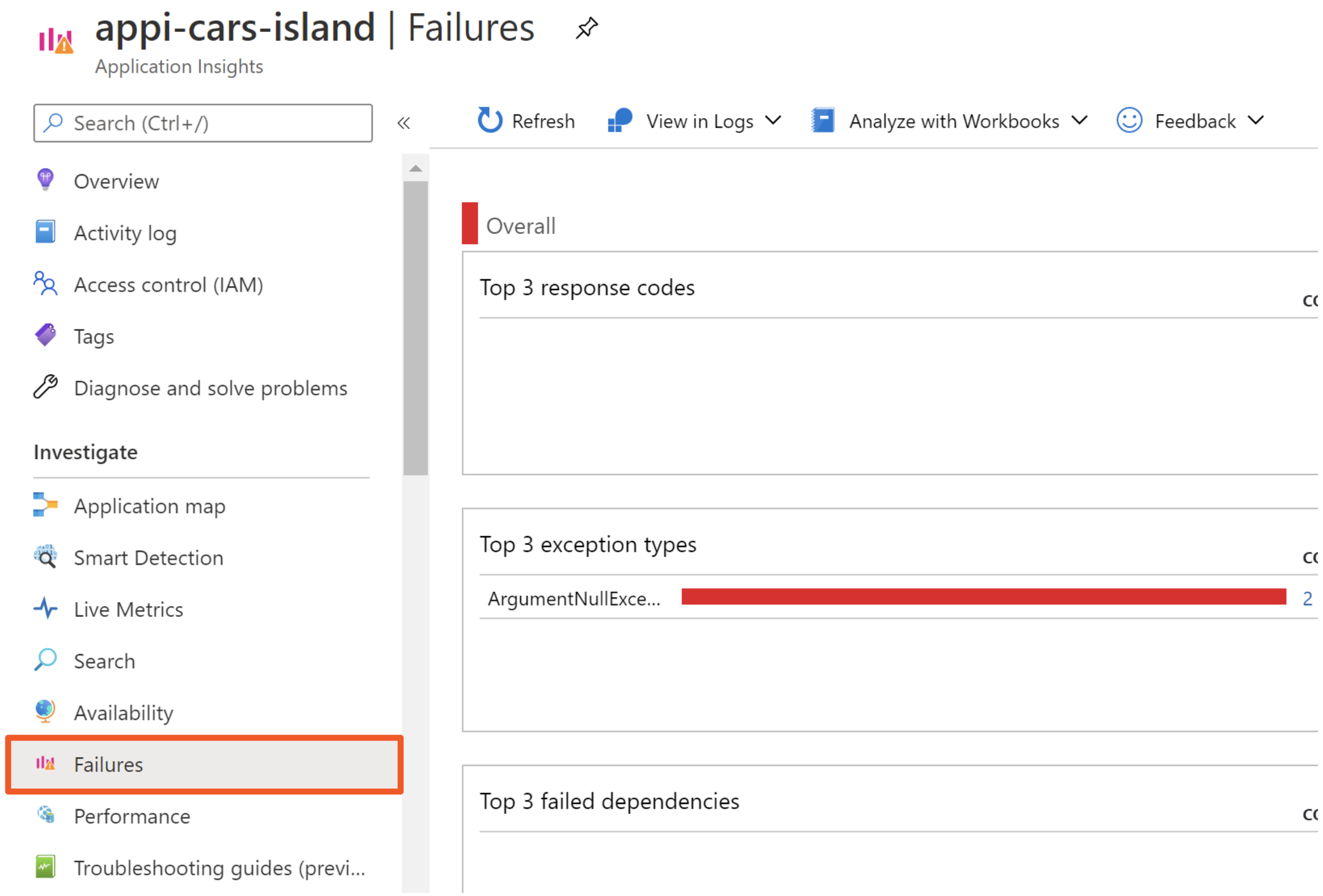
Live Metrics tab provides real time information about application performance



Servers (10s avg)

SERVER NAME	REQUESTS	FAILED REQUESTS	DEPENDENCIES	CPU TOTAL	COMMITTED MEMORY
RD2818781B7597	0/sec	0/sec	0/sec	3%	54 MB
RD2818781B8130	0.1/sec	0/sec	0/sec	4%	57 MB

Failures tab provides details about issues detected inside your applications like exceptions and server errors



appi-cars-island | Failures

Application Insights

Search (Ctrl+/)

Refresh View in Logs Analyze with Workbooks Feedback

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems

Investigate

Application map
Smart Detection
Live Metrics
Search
Availability
Failures
Performance
Troubleshooting guides (previ...

Overall

Top 3 response codes

Top 3 exception types

ArgumentNullExce... 2

Top 3 failed dependencies

Demo

Create Application Insights resource in the Azure portal

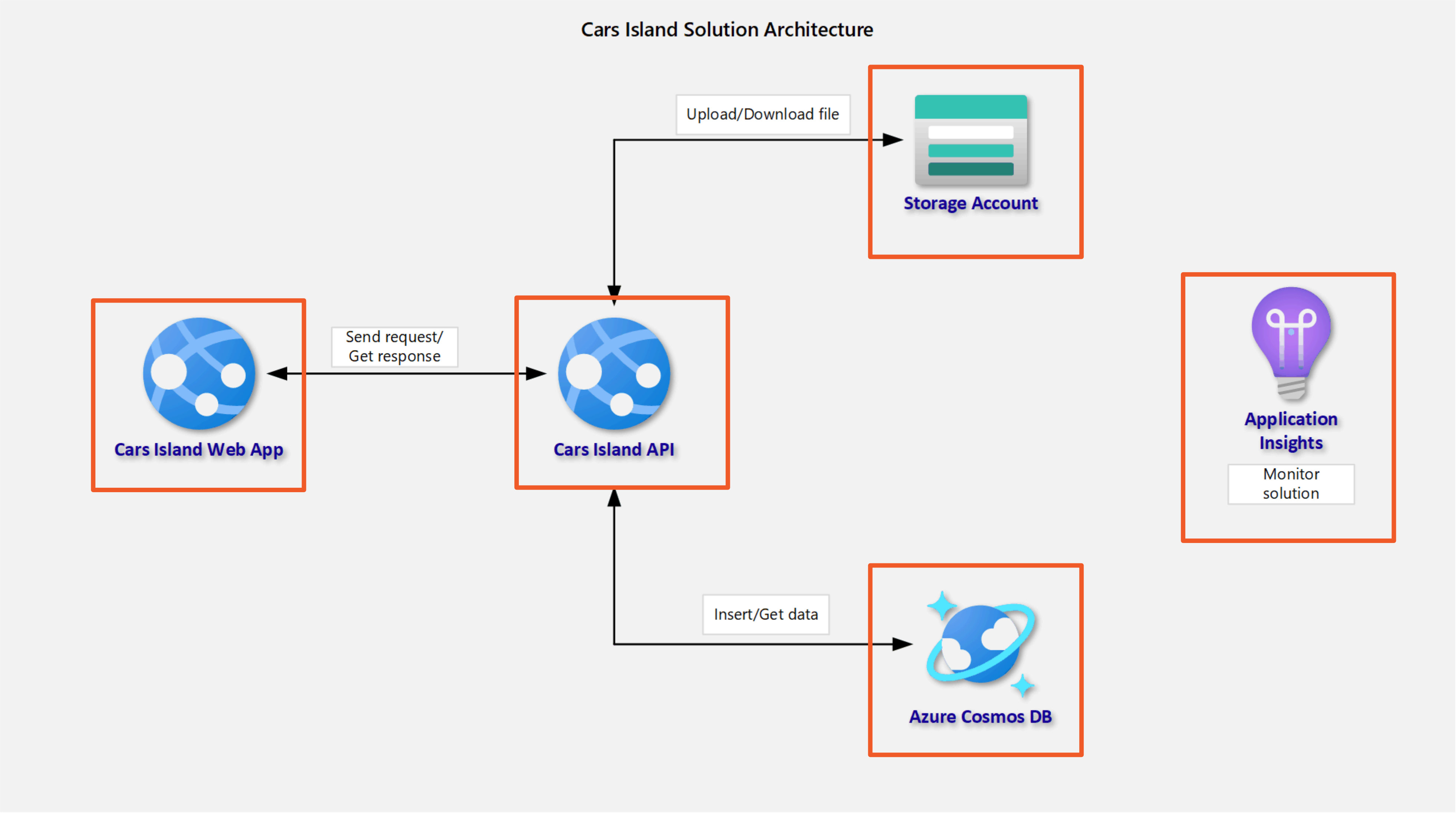
- Overview of the Application Insights tab
- Instrumentation key

Demo

Add instrumentation to the ASP .NET Core applications

- Integrate ASP .NET Core API application
- Integrate ASP .NET Core Blazor web application

Solution Architecture



Before We Begin

Source code link: github.com/Daniel-Krzyczkowski/Pluralsight

We will use Visual Studio 2019 (16.5.x)

Solution requires the .NET Core 3.1

Demo

Analyze logs and solve issues

- Analyze logs and detect issues in the ASP .NET Core application
- Fix bugs in the source code

Summary

Azure Monitor as a tool to monitor performance and issues related to applications and services

Application Insights as an extensible Application Performance Management service

Analyze log data and troubleshoot solutions with Application Insights