

# Application Insights

Application Insights in Azure is a powerful Application Performance Management (APM) service that helps developers monitor, analyze, and optimize the performance and usage of their applications. It's part of the broader Azure Monitor suite and is particularly useful for identifying performance issues, understanding user behavior, and diagnosing application failures. Azure Application Insights is a comprehensive Application Performance Management (APM) service in Azure that helps you monitor live applications. It automatically detects performance anomalies, provides powerful analytics tools to diagnose issues, and gives insights into user behavior. Essentially, it helps you keep your applications running smoothly and efficiently.

Azure Application Insights is a feature of Azure Monitor that provides powerful application performance management (APM) capabilities. It is designed to help developers and DevOps teams monitor the performance, availability, and usage of their applications in real-time.

## Key Features of Application Insights:

1. **Smart Detection:** Automatically detects performance anomalies, such as unusual patterns in failed requests, performance degradations, or memory leaks.
2. **Performance Monitoring:** Provides detailed performance metrics, such as response times, request rates, and dependency durations.
3. **Failure Analysis:** Helps you diagnose the root cause of application failures by providing detailed error information, including stack traces and request details.
4. **Usage Analysis:** Provides insights into how users are interacting with your application, such as which pages are most popular, how long users spend on each page, and user demographics.
5. **Availability Monitoring:** Monitors the availability of your application by sending web requests to your application from various locations around the world.

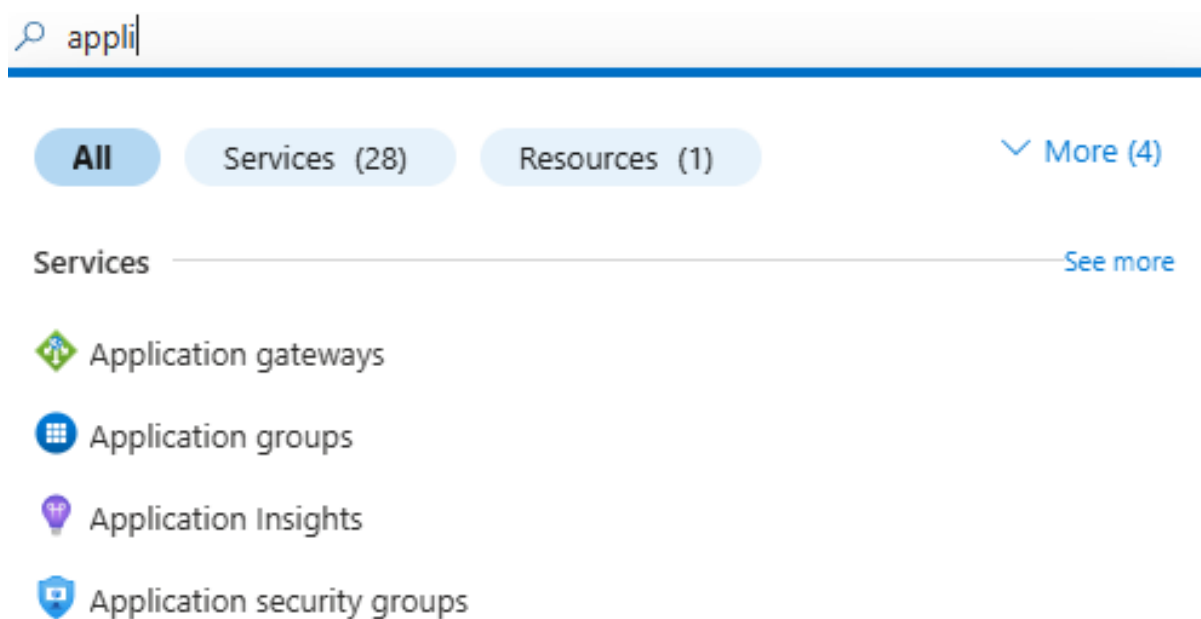
## Use Cases for Application Insights:

1. **Web Applications:** Monitor the performance and usage of web applications, identify performance bottlenecks, and diagnose errors.
2. **Mobile Apps:** Track usage, performance, and errors in mobile apps running on various platforms.
3. **Microservices:** Monitor the performance and health of microservices architectures, identify dependencies, and diagnose issues across services.
4. **Background Services:** Monitor the performance and health of background services and jobs.
5. **APIs:** Track the usage and performance of APIs, identify performance bottlenecks, and diagnose errors.

The end goal of Application Insights is to provide comprehensive monitoring and performance management for live web applications, enabling developers to ensure optimal performance, detect and resolve issues, and improve user experience. By integrating Application Insights with an Azure Web App or other platforms, developers gain real-time visibility into metrics such as response times, request rates, and errors. It also tracks user interactions and application dependencies. Through telemetry data and analytics, Application Insights empowers teams to proactively address performance bottlenecks, optimize code, and enhance application reliability, ultimately delivering a seamless and efficient experience for end-users.

## To begin with the lab

1. Firstly you need to establish an Application Insights Resource to do so access the Azure Portal and search for Application Insights.
2. Initiate the creation of a new resource within your selected Resource Group and select a distinctive name and region (for instance, North Europe).



3. Opt for a workspace-based setup to transmit telemetry data to a Log Analytics Workspace. Examine the details and proceed to create the resource.

#### PROJECT DETAILS

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \* ⓘ MSDN Platforms Subscription

Resource Group \* ⓘ demors

[Create new](#)

#### INSTANCE DETAILS

Name \* ⓘ appinsights120

Region \* ⓘ (Europe) North Europe

#### WORKSPACE DETAILS

Subscription \* ⓘ MSDN Platforms Subscription

Log Analytics Workspace \* ⓘ DefaultWorkspace-d6549a66-c45c-4979-840c-3b356da446b0-NEU [nort...

[Review + create](#)

[« Previous](#)

[Next : Tags >](#)

4. Access the Azure Web App. Navigate to the Settings section and find Application Insights.

The screenshot shows the Azure portal interface. On the left, the 'All resources' list is visible, with 'demoapp120' selected. The main pane displays the 'demoapp120' Web App resource page. The 'Properties' tab is active, showing details such as Resource group (demors), Status (Running), Location (North Europe), and Subscription ID (d6549a66-c45c-4979-840c-3b356da446b0). The 'Application Insights' resource is listed in the left sidebar under the 'Monitoring' section.

5. Turn on Application Insights and select the existing resource you created and leave other settings as default and apply changes.

**demoapp120 | Application Insights**
☆ ...

Web App

×
«

- API definition
- CORS
- Monitoring
  - Alerts
  - Metrics
  - Logs
  - Advisor recommendations
  - Health check
  - Application Insights**
  - D diagnostic settings
  - App Service logs
  - Log stream

### Application Insights

Collect application monitoring data using Application Insights

?
Feedback ▾

Link to an Application Insights resource

**i** Your app is connected to Application Insights resource: [demoapp120](#)

**i** As part of using Application Insights instrumentation, we collect and send diagnostic data to Microsoft. This data helps us run and improve Application Insights. You have the option to disable non-essential data collection. [Learn more](#)

▾ Change your resource

Instrument your application

**demoapp120 | Application Insights**
☆ ...

Web App

×
«

- Monitoring
  - Alerts
  - Metrics
  - Logs
  - Advisor recommendations
  - Health check
  - Application Insights**
  - D diagnostic settings
  - App Service logs
  - Log stream
- Automation
  - Tasks
  - Export template
- Support + troubleshooting
  - Resource health

**i** Application insights and workspace resources are created in current subscription and resource group scope. If you want to choose a different scope, please create a new AI component by visiting: [Create a new Application Insights resource](#) and then return to this page.

New resource name

Location

North Europe ▾

Log Analytics Workspace ?

DefaultWorkspace-d6549a66-c45c-4979-840c-3b356da446b0-NEU [northeurope] ▾

☒ Select existing resource

select a subscription \*

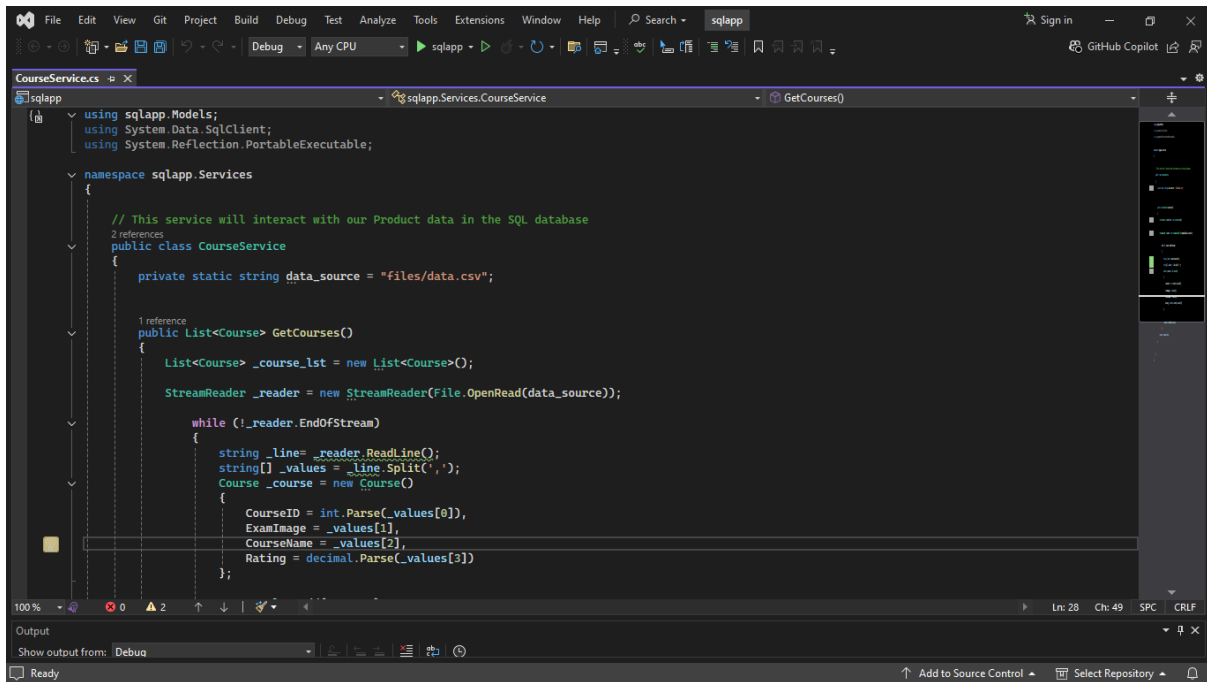
MSDN Platforms Subscription ▾

Top 5 relevant resources - Relevance is determined by resource group, location, or in alphabetical order.

**i** Only resources with write permission are selectable here.

Name	Resource Group	Location
demoapp120	demors	North Europe

- In your .NET project, access the project settings by right-clicking on it and selecting the option to Configure Application Insights.



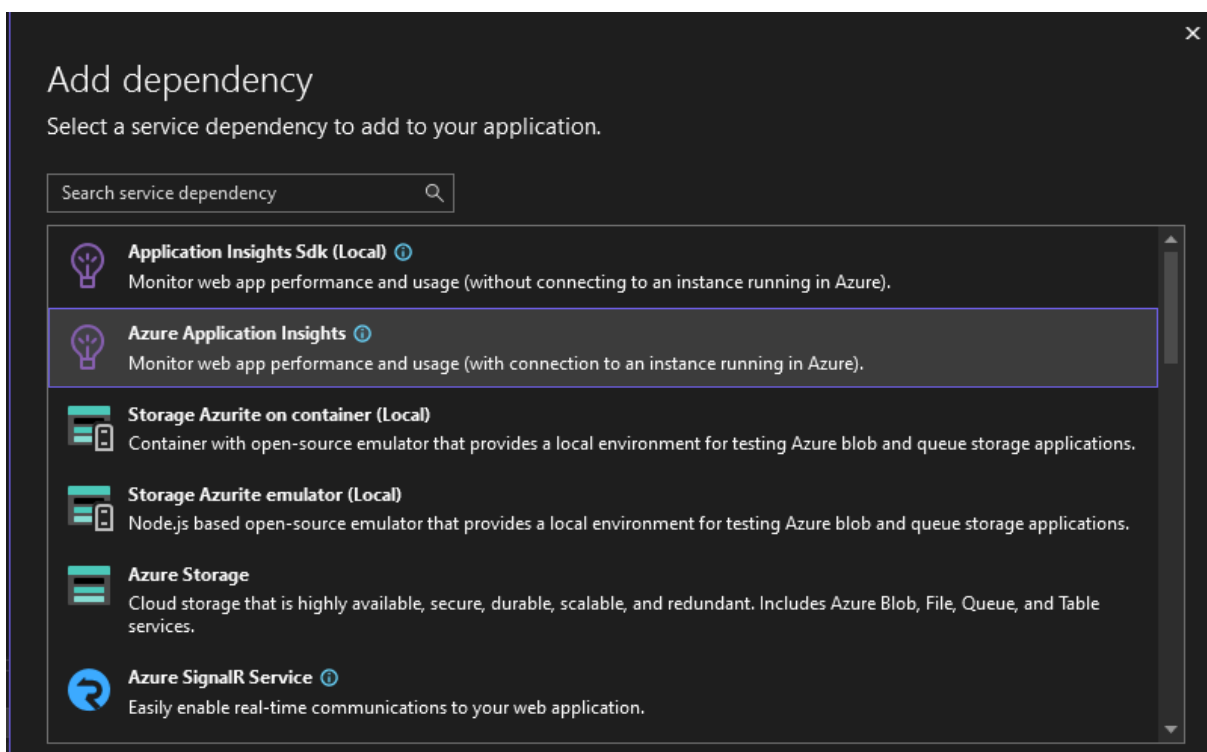
```
using sqlapp.Models;
using System.Data.SqlClient;
using System.Reflection.PortableExecutable;

namespace sqlapp.Services
{
    // This service will interact with our Product data in the SQL database
    public class CourseService
    {
        private static string data_source = "files/data.csv";

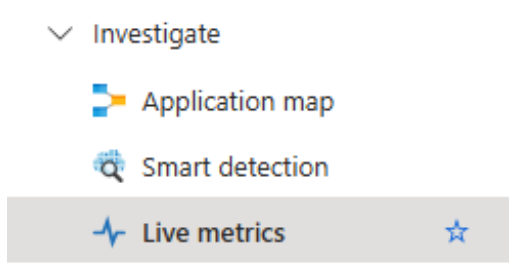
        public List<Course> GetCourses()
        {
            List<Course> _course_lst = new List<Course>();
            StreamReader _reader = new StreamReader(File.OpenRead(data_source));

            while (!_reader.EndOfStream)
            {
                string line = _reader.ReadLine();
                string[] _values = line.Split(',');
                Course _course = new Course()
                {
                    CourseID = int.Parse(_values[0]),
                    ExamImage = _values[1],
                    CourseName = _values[2],
                    Rating = decimal.Parse(_values[3])
                };
            }
        }
    }
}
```

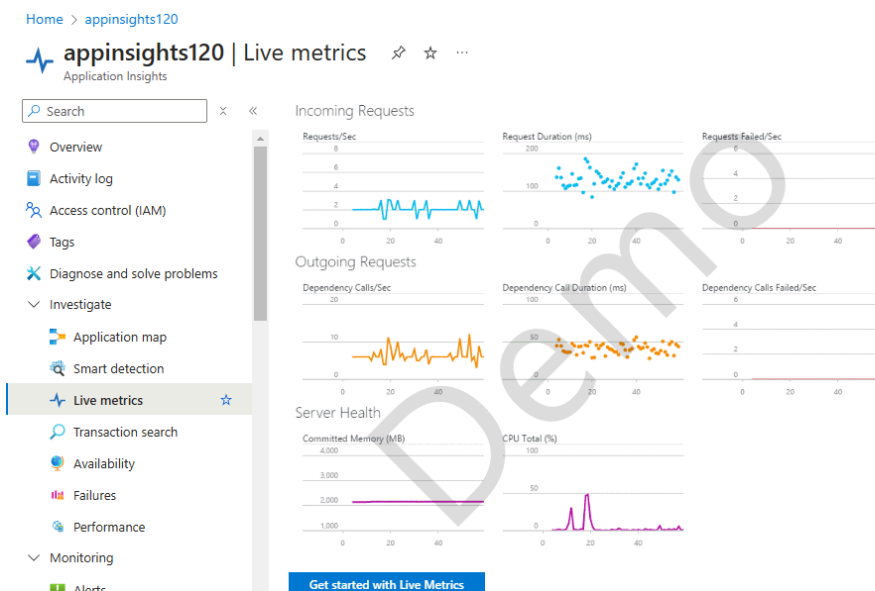
7. Opt to connect to Azure and then choose the relevant Application Insights resource. Ensure that you utilize a secure connection string for the integration process.



8. Ensure the necessary Application Insights packages are added to the project and publish the updated project back to the **Azure Web App** using the existing publish profile.
9. Now Access Live Metrics within the Application Insights resource. Monitor real-time information regarding application usage, requests, and operations.



10. Access the Performance section within Application Insights. Examine metrics including Types of operations (e.g., GET requests), Average response durations, Count of invocations for particular pages.



- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Investigate
  - Application map
  - Smart detection
  - Live metrics
  - Transaction search
  - Availability
  - Failures
  - Performance**
- Monitoring

Server

Browser

Local Time: Last 24 hours

Roles = All

OperationsDependenciesRoles

Operation times: zoom into a range

Avg50<sup>th</sup>95<sup>th</sup>99<sup>th</sup>

100 ms

50 ms

0.0ms

Storage

100

0

06:00 PM09:00 PMThu 1903:00 AM06:00 AM09:00 AM12:00 PM03:00 PM

06:00 PM09:00 PMThu 1903:00 AM06:00 AM09:00 AM12:00 PM03:00 PM

05:25 PM05:25 PM

Select operation

Search to filter items...