Monitoring and Troubleshooting with Application Insights

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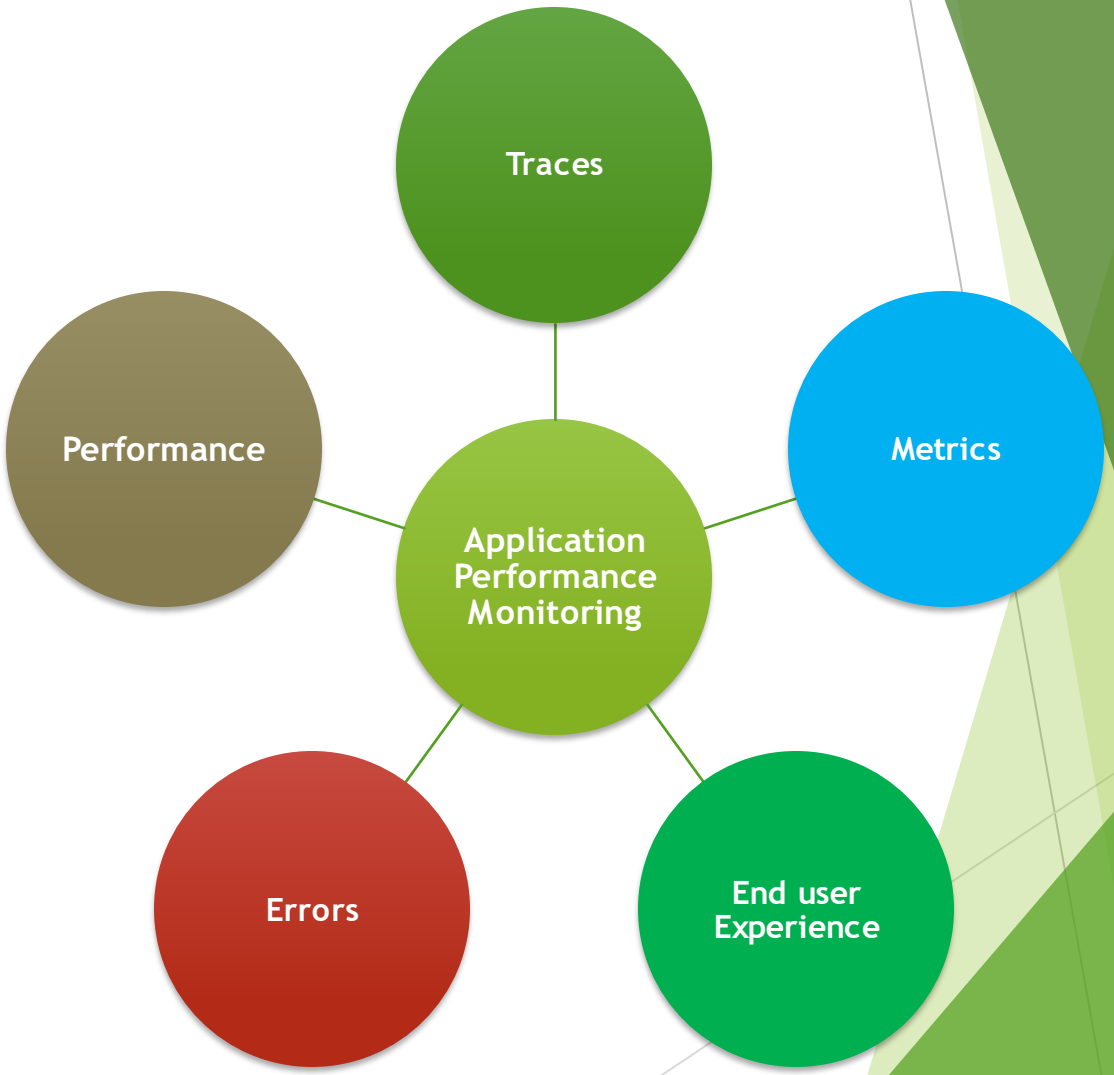
AGENDA

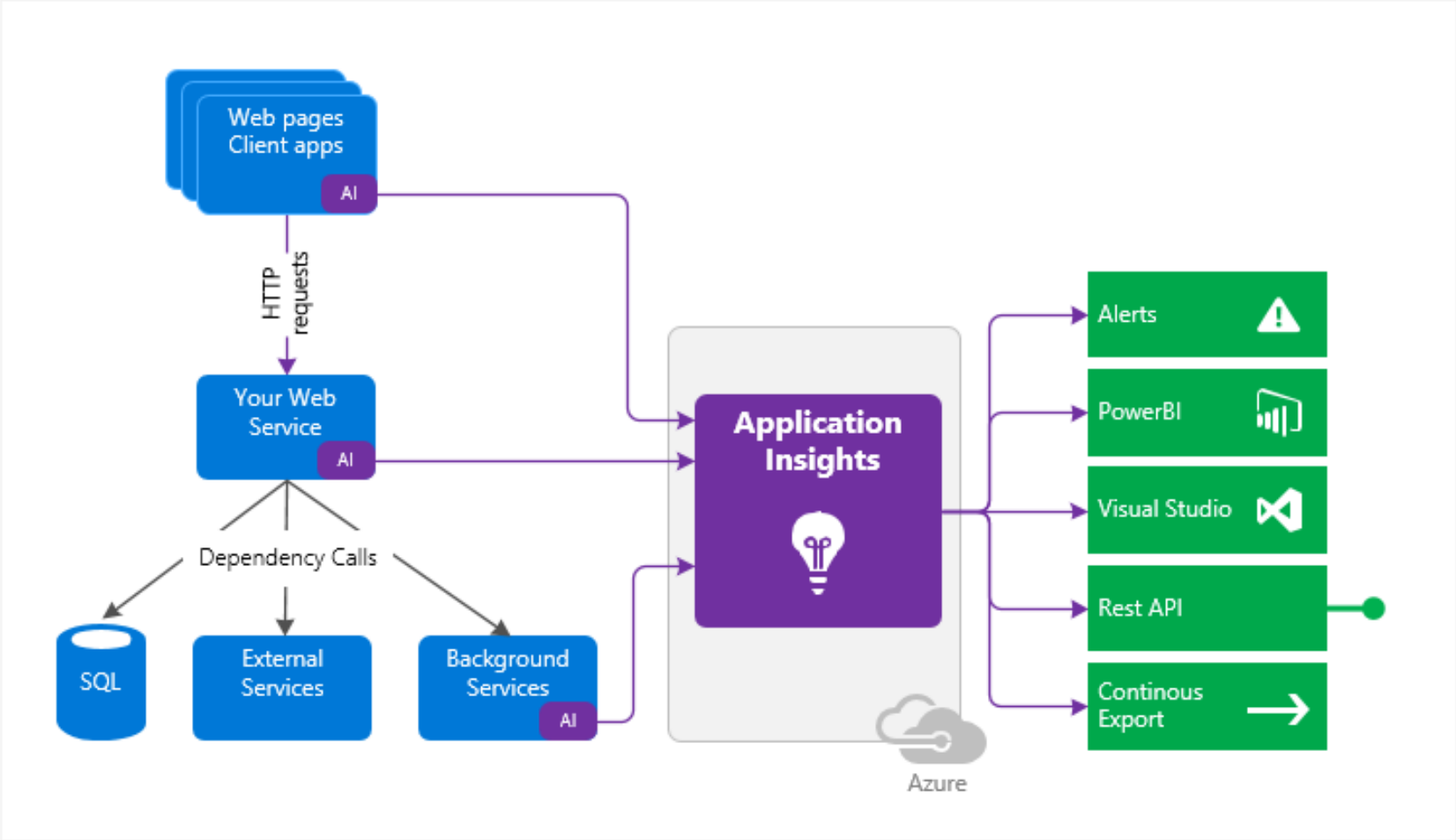
- Azure Application Insights
- Application Insights SDK
- Telemetry Processors
- DEMO
- Questions

Application Insights

Application Performance Management (APM)



Azure Application Insights



Azure Application Insights

REQUEST RATES, RESPONSE TIMES, AND FAILURE RATES

DEPENDENCY RATES, RESPONSE TIMES, AND FAILURE RATES

EXCEPTIONS

PAGE VIEWS AND LOAD PERFORMANCE

AJAX CALLS FROM WEB PAGES

Azure Application Insights

USER AND SESSION COUNTS

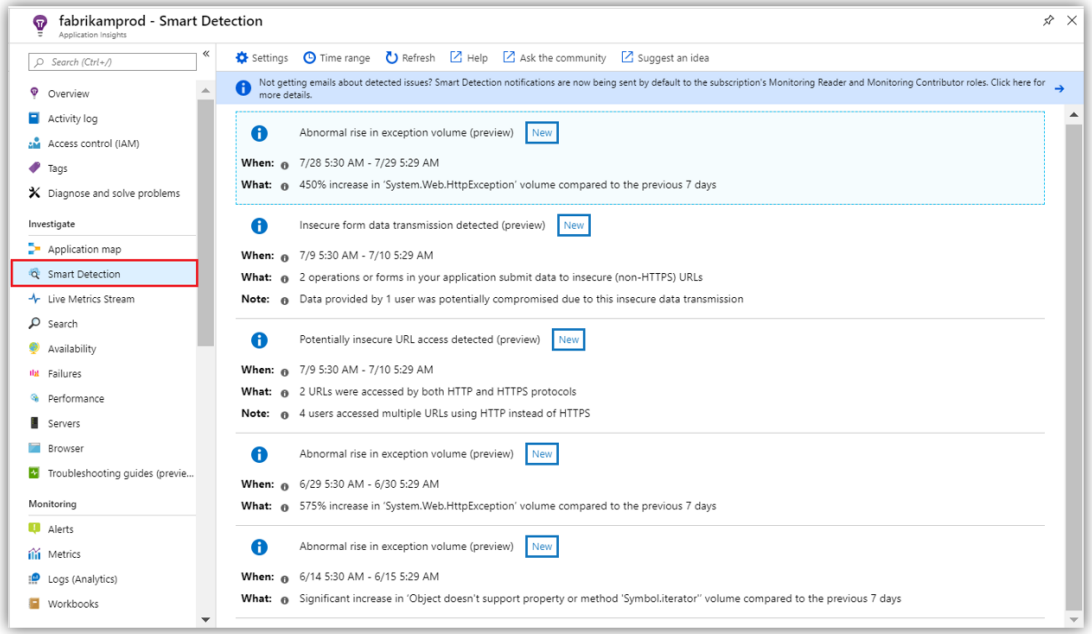
PERFORMANCE COUNTERS

HOST DIAGNOSTICS

DIAGNOSTIC TRACE LOGS

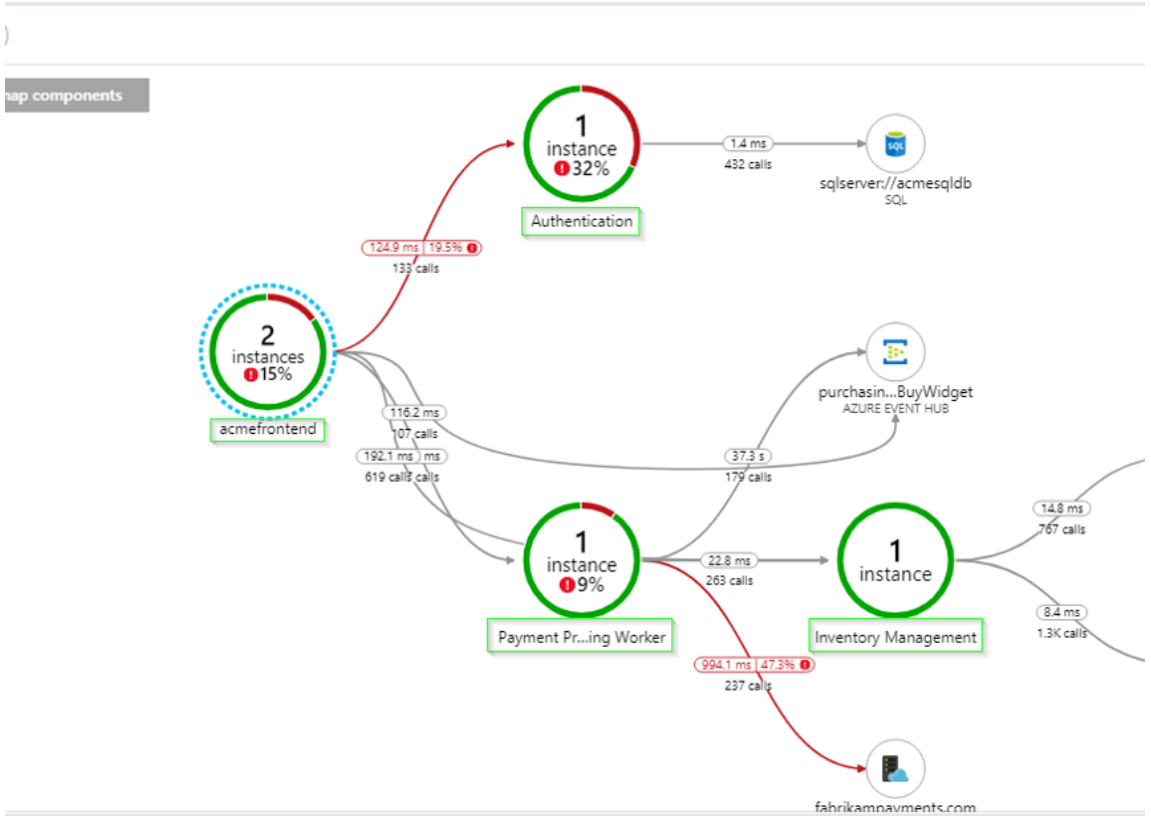
CUSTOM EVENTS AND METRICS

Smart detection



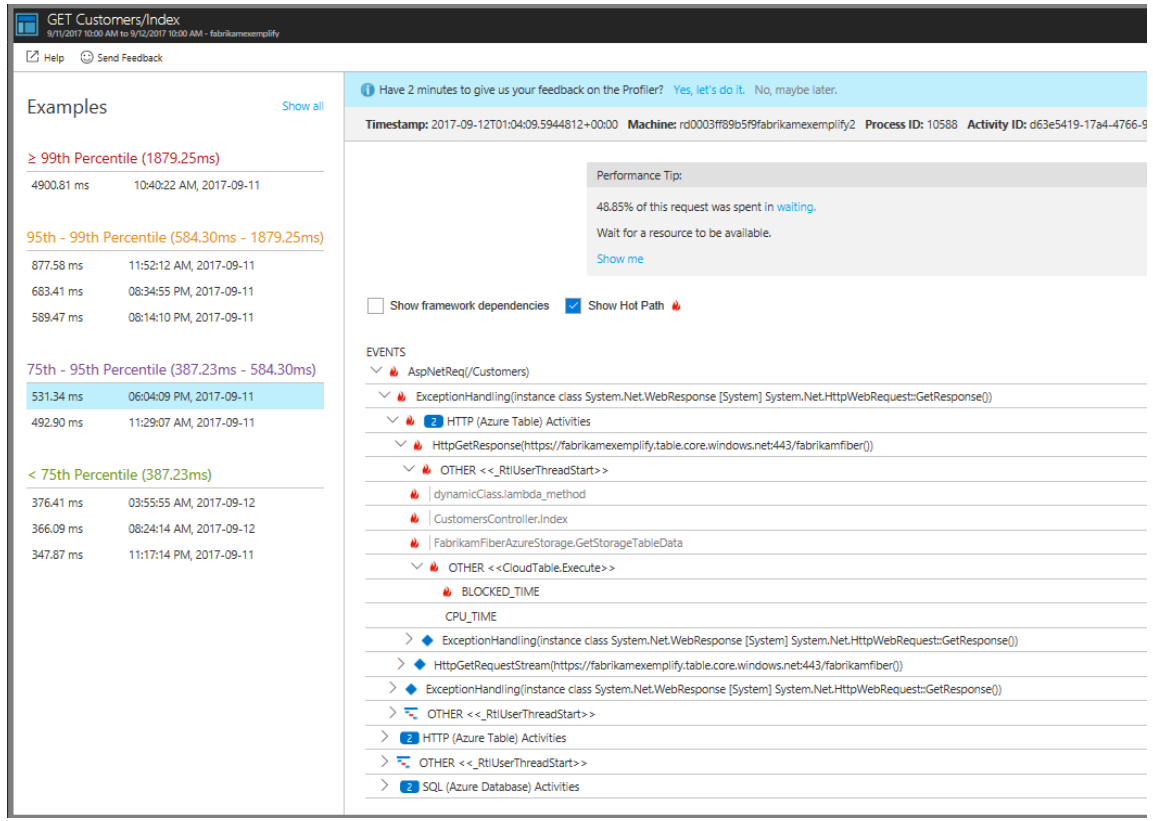
- Automatic alerts based on your app
- Triggers when outside the usual pattern.
- Alerts on custom or standard metrics.

Application map



- Spot performance bottlenecks or failure hotspots across all components of your distributed application
- Each node on the map represents an application component or its dependencies;

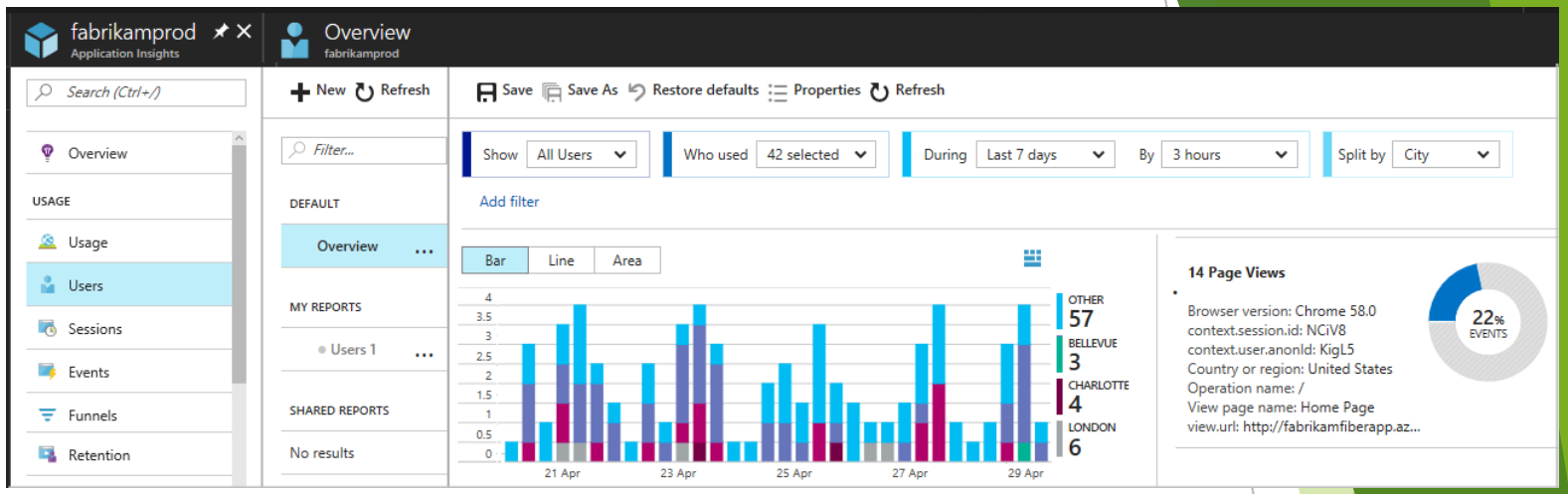
Profiler



- Show Hot Path
- Label
- Elapsed
- When

- *Profiler runs randomly two times every hour and for a duration of two minutes each time it runs

Usage


fabrikamprod
Application Insights
Overview
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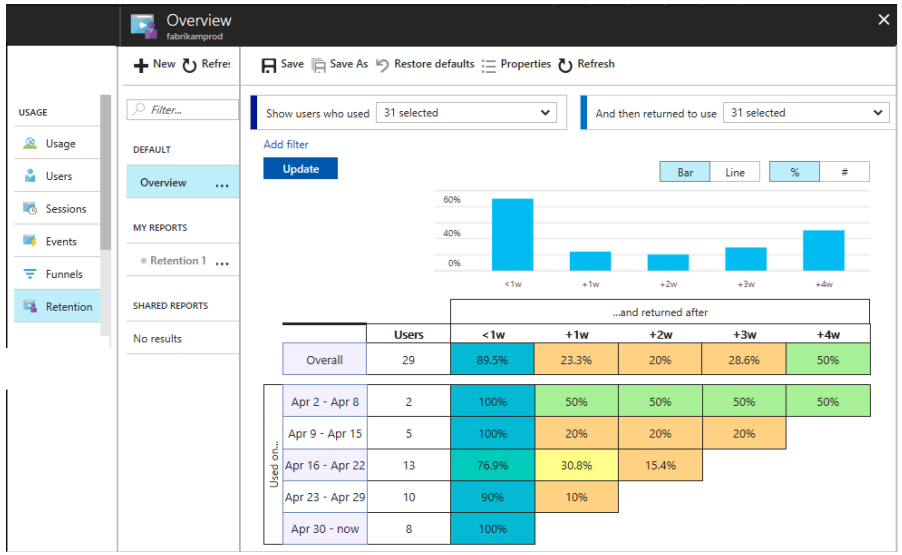
Usage
Users
Sessions
Events
Funnels
Retention
Filter...
DEFAULT
Overview
MY REPORTS
Users 1
SHARED REPORTS
No results
Show All Users
Who used 42 selected
During Last 7 days
By 3 hours
Split by City
Add filter
Bar
Line
Area
OTHER 57
BELLEVUE 3
CHARLOTTE 4
LONDON 6
21 Apr
23 Apr
25 Apr
27 Apr
29 Apr
14 Page Views
Browser version: Chrome 58.0
context.session.id: NCiV8
context.user.anonId: KigL5
Country or region: United States
Operation name: /
View page name: Home Page
view.url: http://fabrikamfiberapp.az...
22% EVENTS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No results
Show users who used 31 selected
And then returned to use 31 selected
Add filter
Update
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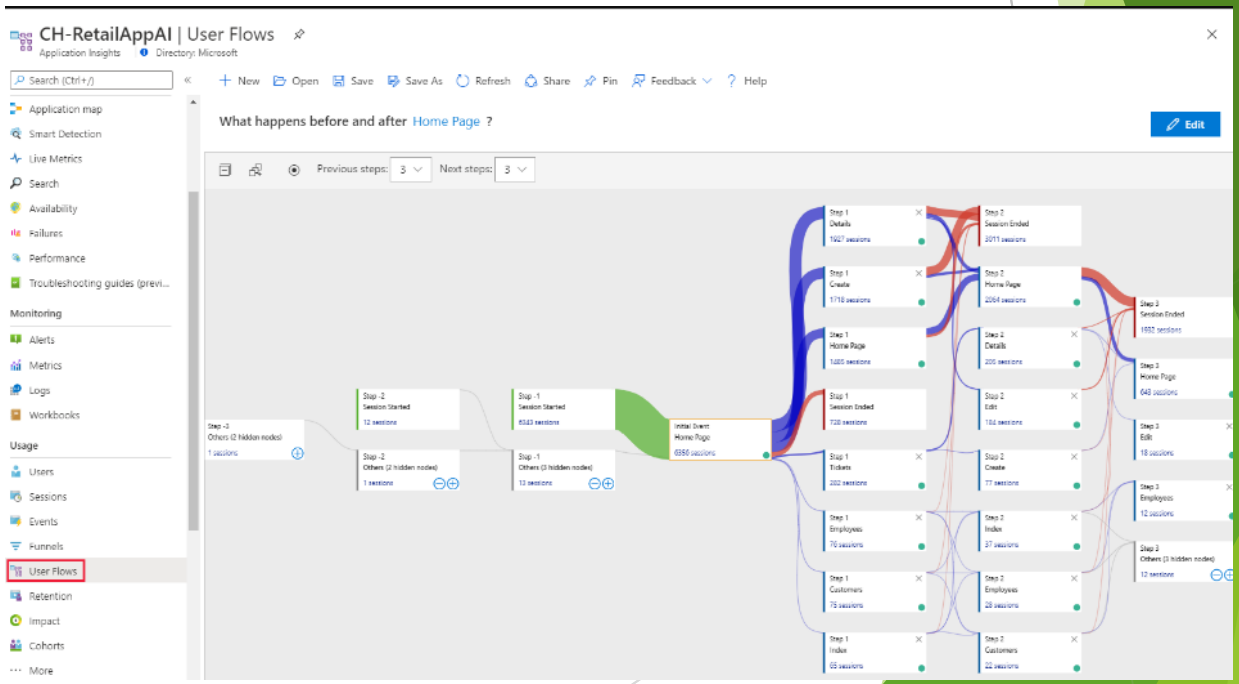
...and returned after
Users
Overall 29 89.5% 23.3% 20% 28.6% 50%
Apr 2 - Apr 8 2 100% 50% 50% 50% 50%
Apr 9 - Apr 15 5 100% 20% 20% 20%
Apr 16 - Apr 22 13 76.9% 30.8% 15.4%
Apr 23 - Apr 29 10 90% 10%
Apr 30 - now 8 100%
Used on...


CH-RetailAppAI | User Flows
Application Insights
Directory: Microsoft
Search (Ctrl+/)
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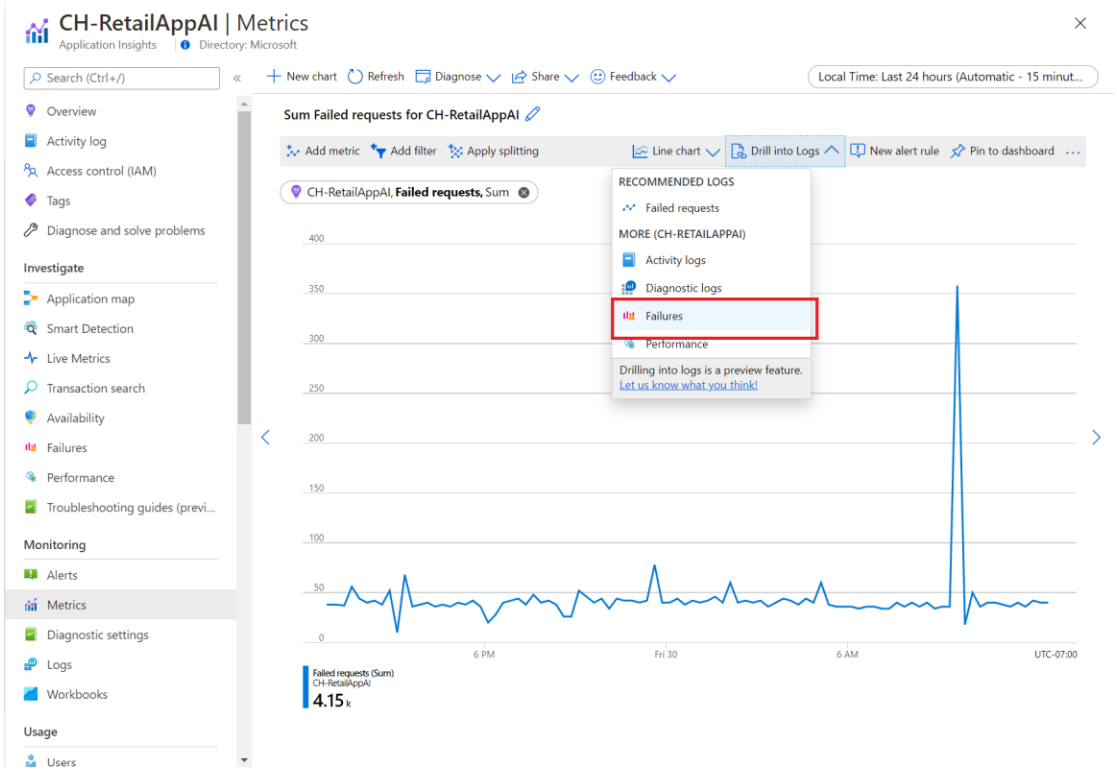
Open
Save
Save As
Refresh
Share
Pin
Feedback
Help
Application map
Smart Detection
Live Metrics
Search
Availability
Failures
Performance
Troubleshooting guides (previ...
Monitoring
Alerts
Metrics
Logs
Workbooks
Usage
Users
Sessions
Events
Funnels
User Flows
Retention
Impact
Cohorts
More
What happens before and after Home Page ?
Edit
Previous steps: 3
Next steps: 3

Search

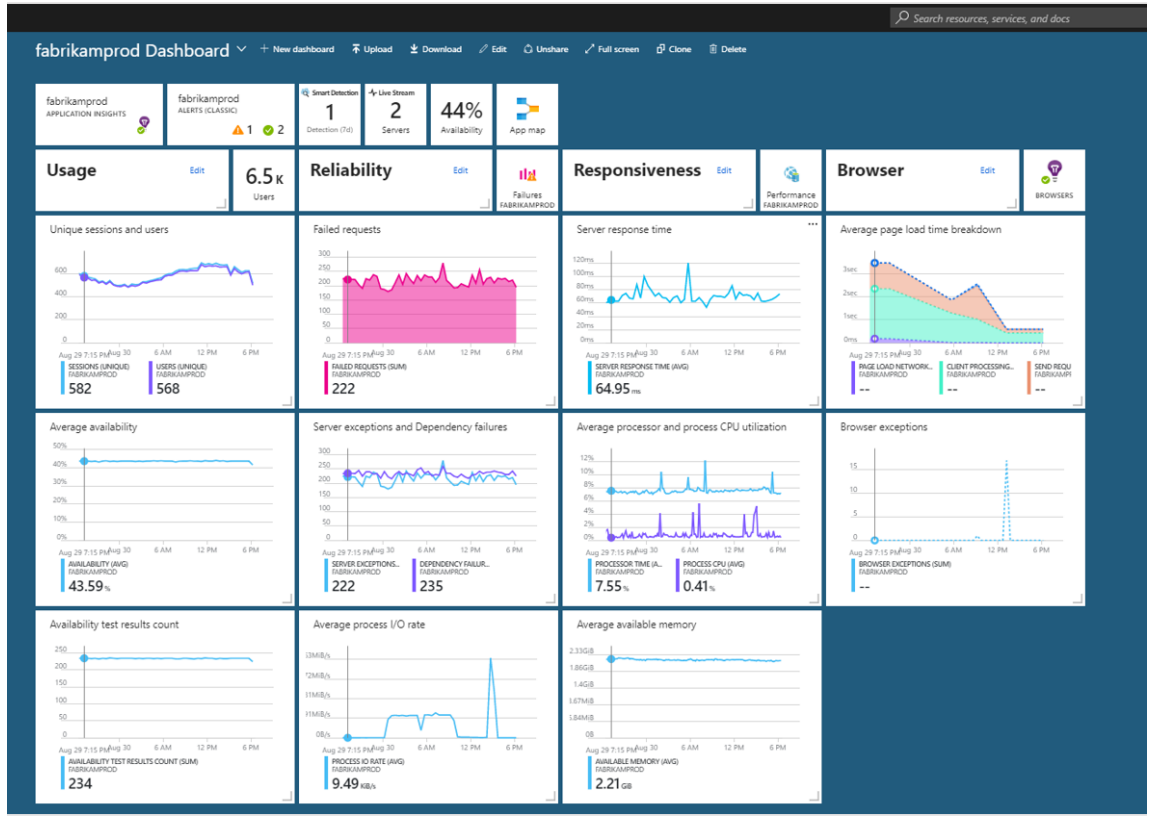
- Search and filter:
  - Events
  - Requests
  - Exceptions
  - Dependency calls
  - Log traces
  - Page views.

Metrics Explorer



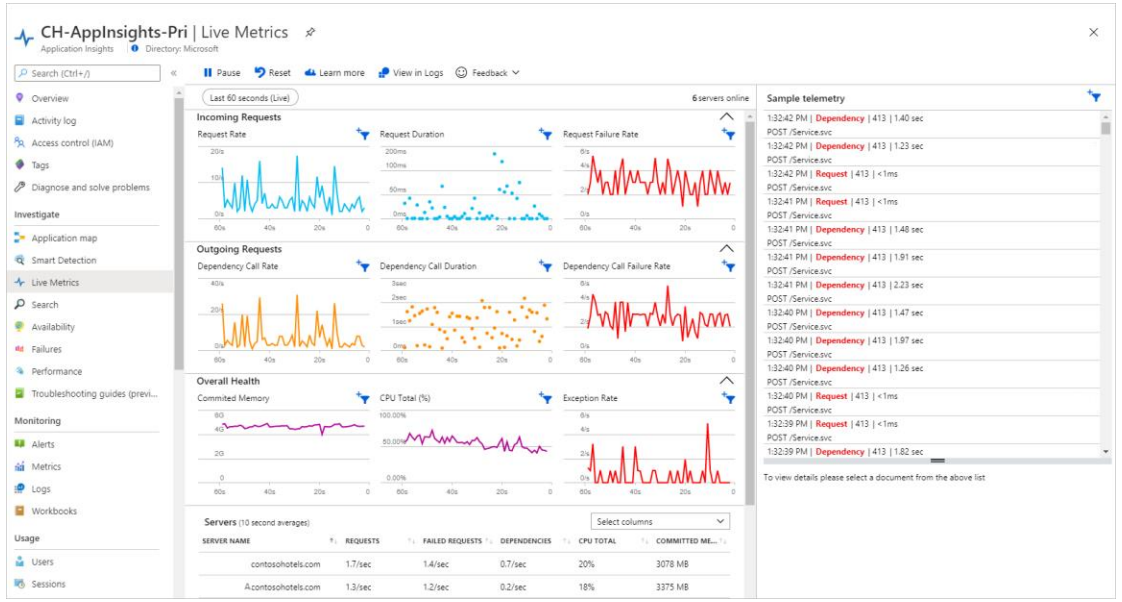
- Explore, filter, and segment aggregated data such as:
  - Rates of requests
  - Failures and exceptions
  - Response times
  - Page load times

Dashboards



- Mash up data from multiple resources and share with others.
- Great for multi-component applications, and for continuous display in the team room.

Live Metrics Stream



- Validate a fix while it is released, by watching performance and failure counts.
- Watch the effect of test loads, and diagnose issues live.
- Get exception traces as they happen.
- Experiment with filters to find the most relevant KPIs.
- Monitor any Windows performance counter live.
- Easily identify a server that is having issues, and filter all the KPI/live feed to just that server.

Application Insights SDK

Application Insights
Supported Languages and Loggers

Languages

- C#|VB (.NET)
- Java
- JavaScript
- Node.JS
- Python

Logging Frameworks

- ILogger
- Log4Net, NLog, or System.Diagnostics.Trace
- Java, Log4J, or Logback
- LogStash plugin
- Azure Monitor

Application Insights Supported Platforms

Instrumentation for already-deployed applications (codeless, agent-based)	Instrumentation through code (SDKs)	Export and data analysis
• Azure VM and Azure virtual machine scale sets • Azure App Service • ASP.NET - for apps that are already live • Azure Cloud Services, including both web and worker roles • Azure Functions	• ASP.NET • ASP.NET Core • Android (App Center) • iOS (App Center) • Java EE • Node.JS • Python • Universal Windows app (App Center) • Windows desktop applications, services, and worker roles • React • React Native	• Power BI • Stream Analytics

CodeLess Monitoring

- Resources:
  - on Azure – App Services, Functions, Kubernetes, VMs
  - On Prem – Windows VMs
- Language Support
  - .NET
  - .NET core
  - Java
  - Node.js

CodeBased Monitoring

Method	Used for
TrackPageView	Pages, screens, blades, or forms.
TrackEvent	User actions and other events. Used to track user behavior or to monitor performance.
GetMetric	Zero and multi-dimensional metrics, centrally configured aggregation, C# only.
TrackMetric	Performance measurements such as queue lengths not related to specific events.
TrackException	Logging exceptions for diagnosis. Trace where they occur in relation to other events and examine stack traces.
TrackRequest	Logging the frequency and duration of server requests for performance analysis.
TrackTrace	Resource Diagnostic log messages. You can also capture third-party logs.
TrackDependency	Logging the duration and frequency of calls to external components that your app depends on.


LOG ALL THE THINGS

Pricing

Data Ingestion	See Azure Monitor data ingestion rates
Data Retention	90 days
Multi-step web tests [3, 4]	$10 per test per month
Ping web tests[4]	Free

Pricing

Feature	Free Units Included	Price
Data Ingestion	5 GB per month[1]	$2.76 GB per month
Data Retention	31 days[2]	$0.12 per GB per month

Pricing - Azure Monitor | Microsoft Azure

Sampling

Adaptive sampling

Automatically adjusts the volume of telemetry sent from the SDK in your ASP.NET/ASP.NET Core app, and from Azure Functions. This is the default sampling.

Fixed-rate sampling

Reduces the volume of telemetry sent from both your ASP.NET or ASP.NET Core or Java server and from your users' browsers. You set the rate.

Ingestion sampling

Happens at the Application Insights service endpoint. It discards some of the telemetry that arrives from your app, at a sampling rate that you set. **Ingestion sampling does not apply when any other types of sampling are in operation.**

Telemetry Processors and Telemetry Initializers

- Both can be used to add or modify properties of telemetry, although we recommend that you use initializers for that purpose.
- Telemetry initializers always run before telemetry processors.
- Use telemetry initializers to enrich telemetry with additional properties or override an existing one. Use a telemetry processor to filter out telemetry.

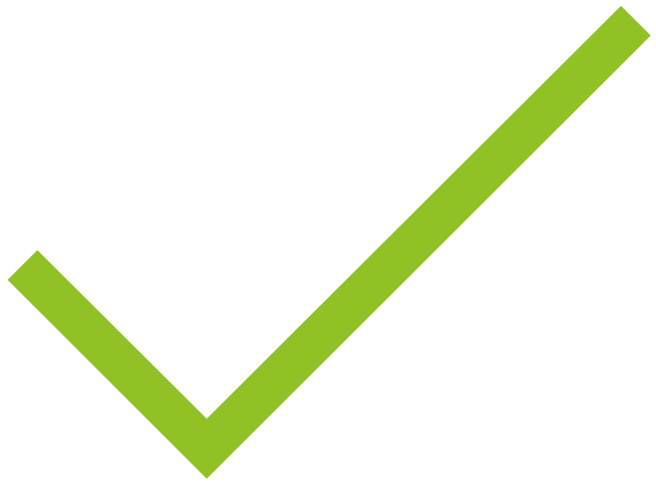
Telemetry Initializers

- Can be used to add or modify properties of telemetry, this is the recommended use.
- Telemetry initializers always run before telemetry processors.
- May be called more than once. By convention, they don't set any property that was already set.
- All registered telemetry initializers are guaranteed to be called for every telemetry item.
- Use telemetry initializers to enrich telemetry with additional properties or override an existing one.

Telemetry Processors

- Can be used to add or modify properties of telemetry, although we recommend that you use initializers for that purpose.
- Telemetry initializers always run before telemetry processors.
- Telemetry processors allow you to completely replace or discard a telemetry item.
- For telemetry processors, SDK guarantees calling the first telemetry processor. Whether the rest of the processors are called or not is decided by the preceding telemetry processors.
- Use a telemetry processor to filter out telemetry.

Azure Application Insights Demo



Thank You!