



Monitoring in Azure: Bringing IaaS and PaaS together

Vassil Stoitsev
@vassilstoitsev
Nov 23rd, 2017

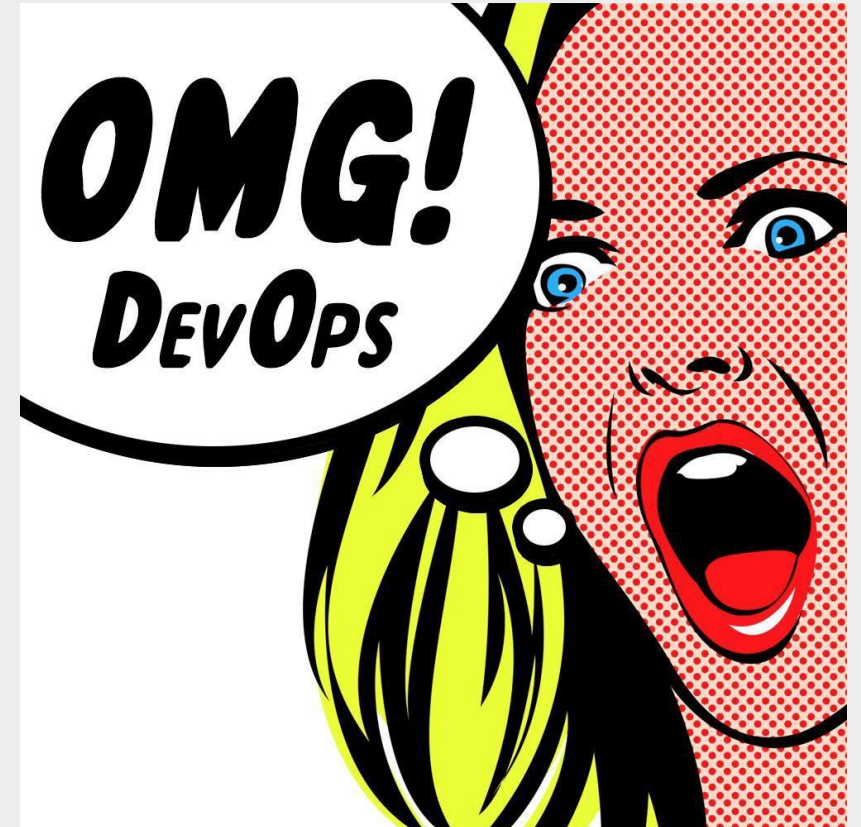
Contents

- Overview
- Azure Monitor
- Log Analytics & Kusto
- Operations Management Suite
- Some Extras

Overview

Why should we know about it?

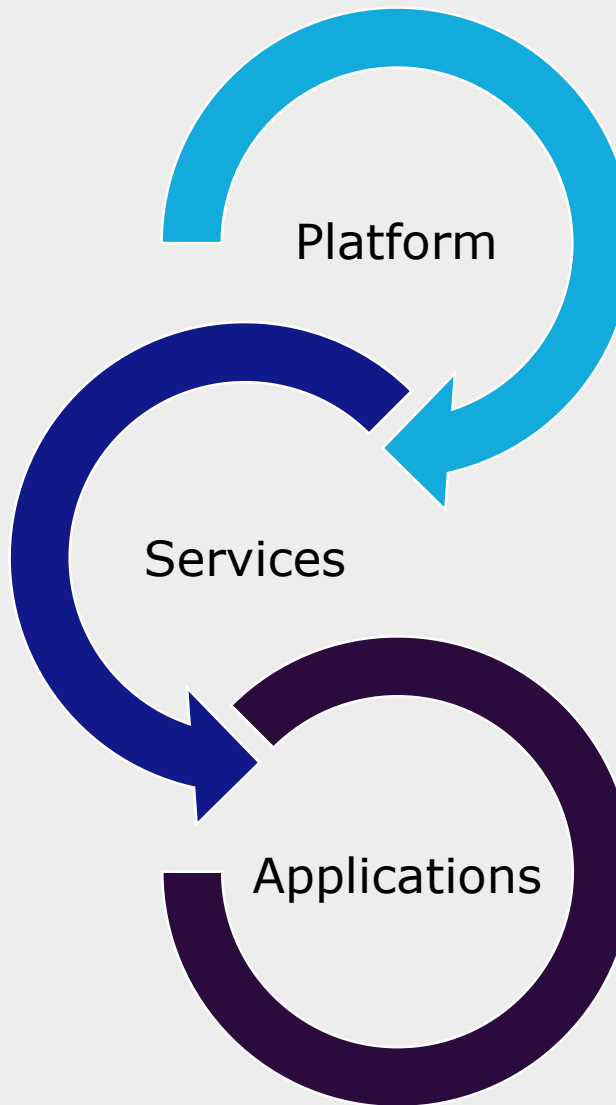
- Monitoring is essential in order to ensure continuity and not lose business value
- Dev and Ops people do actually need to work together
- More boundary IaaS/PaaS and PaaS/SaaS services
- Systems, even Azure, do go down



Monitoring options in Azure

- Azure Monitor
- Azure Advisor
- Azure Security Center

- Application Insights



- Log Analytics

OMS

Demo

Debug
ARM
templates

Monitor
Microsoft

Search (Ctrl+ /)

Overview

SHARED SERVICES

Alerts

Metrics

Metrics (preview)

Log Analytics

Activity log

Service Health

SOLUTIONS

Application Insights

Network watcher

Management solutions

SETTINGS

Diagnostics settings

Action groups

Autoscale

Refresh

Subscription

Visual Studio Enterprise

Time range

Last 6 hours

Alerts fired

0

Activity log errors

0

Service Health

Service Issues

0

Planned Maintenance

0

Health Advisories

0

Application Insights (1)

Filter Application Insights...

NAME	LOCATION	REQUEST RATE
wazug-apiapp	westeurope	-

Alerts

Alerts provide notifications for key metrics on your Azure resources. [Learn more](#)

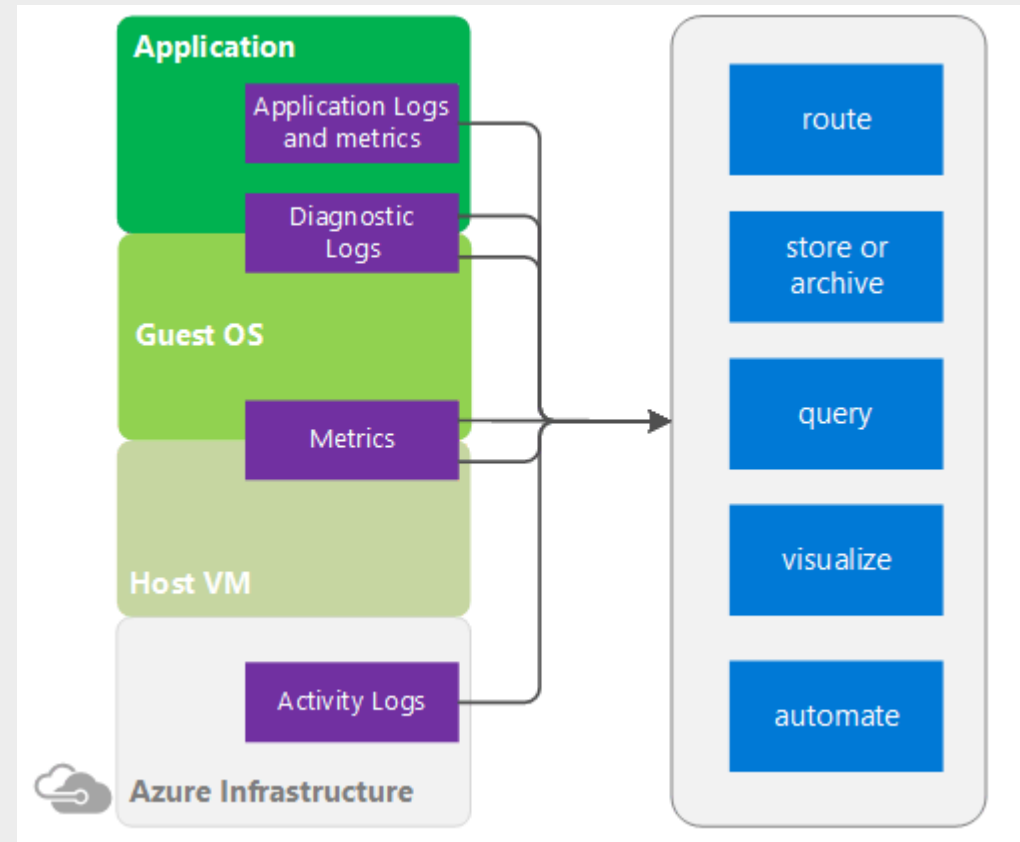
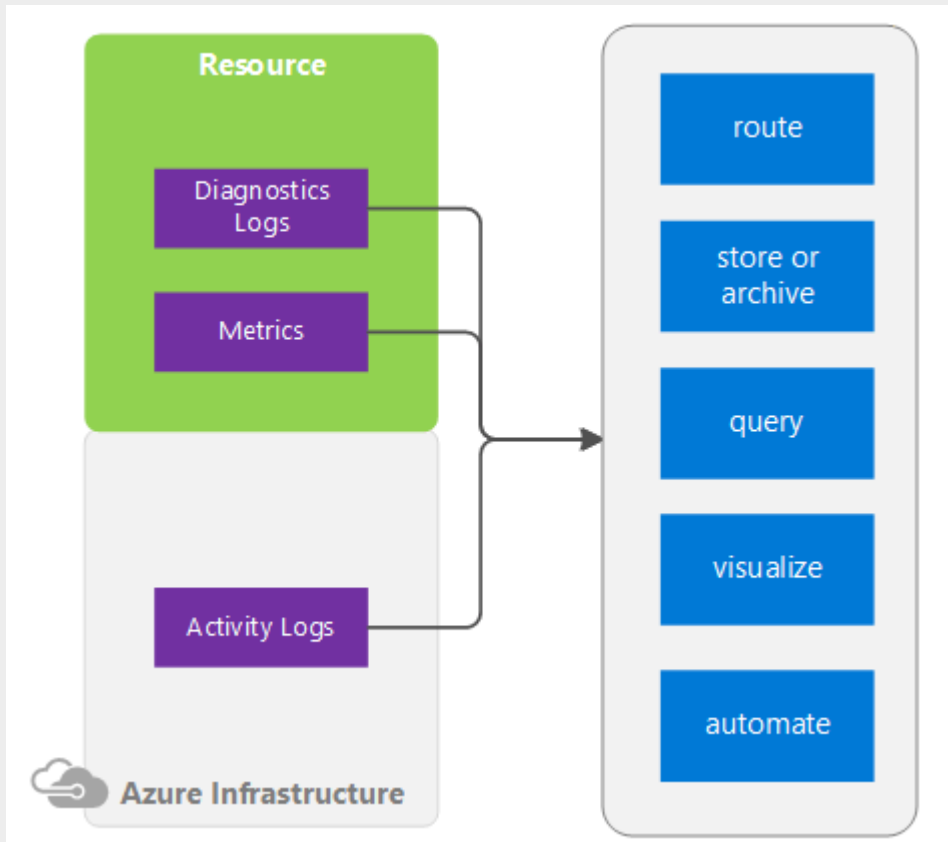
Configure

Monitor
Azure issues

Azure Monitor

What is Azure Monitor?

- Provides base-level infrastructure metrics and logs
- Azure services which do not egress their data yet, will do that in the future



Demo: Enabling egress

- IaaS
 - Agent installation for VM's
 - Enabling performance data streaming
- PaaS
 - Via single resources
 - Via Log Analytics

Demo: Installing Agent for IaaS

Microsoft Operations Management Suite

Overview

Settings

You can now view and edit settings in Azure Portal. [Learn more](#)

Solutions

Connected Sources

Data

Computer Groups

Accounts

Alerts

Preview Features

Windows Servers

Linux Servers

Azure Storage

System Center

Office 365

Windows Telemetry

Windows Servers

Attach any Windows server or client.

0 WINDOWS COMPUTERS CONNECTED

Download Windows Agent (64 bit)

Download Windows Agent (32 bit)

You'll need the Workspace ID and Key to install the agent.

WORKSPACE ID

aadf8

b10:

PRIMARY KEY

Ufr

8nyt

Regenerate

SECONDARY KEY



a8u


3jsl















Regenerate

Demo: Enabling Perf counters

Overview ▸ Settings

 Save  Discard

 You can now view and edit settings in Azure Portal. [Learn more](#)

 Solutions >	 Windows Event Logs >
 Connected Sources >	 Windows Performance Counters >
 Data >	 Linux Performance Counters >
 Computer Groups >	 IIS Logs >
 Accounts >	 Custom Fields >
 Alerts >	 Custom Logs >
 Preview Features >	 Syslog >

Enable Perf
counters

Demo: Enabling PaaS telemetry streaming

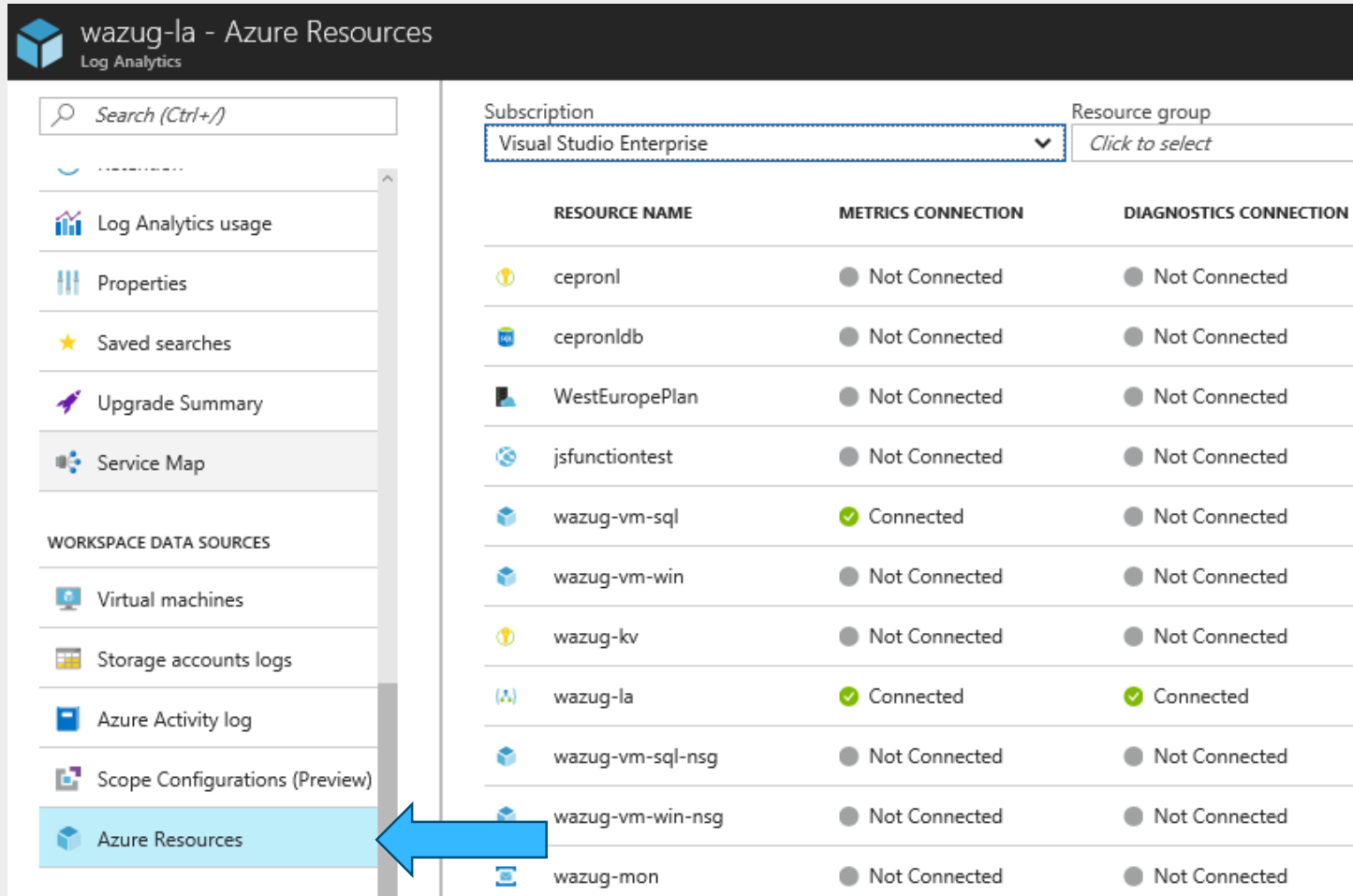
- Via the resource

The screenshot shows the Azure portal interface for a Logic app named 'wazug-la'. The left-hand navigation pane is visible, with 'Diagnostics logs' selected and highlighted in blue. The main content area shows the configuration for the 'wazug-la' Logic app. At the top, there are filters for Subscription (Visual Studio Enterprise), Resource group (wazug-monitoring), Resource type (Logic apps), and Resource (wazug-la). Below these filters, a table lists the diagnostic settings. The table has five columns: NAME, STORAGE ACCOUNT, EVENT HUB NAMESPACE, LOG ANALYTIC, and EDIT SETTING. A single row is shown with the name 'service', a storage account of '-', an event hub namespace of '-', and a log analytic of 'wazug-la'. The 'EDIT SETTING' column for this row contains a button labeled 'Edit setting', which is highlighted by a blue arrow. Below the table, there is a link to '+ Add diagnostic setting'. Another blue arrow points to the 'Diagnostics logs' option in the left sidebar.

NAME	STORAGE ACCOUNT	EVENT HUB NAMESPACE	LOG ANALYTIC	EDIT SETTING
service	-	-	wazug-la	Edit setting

Demo: Enabling PaaS telemetry streaming

- Via Log Analytics resource



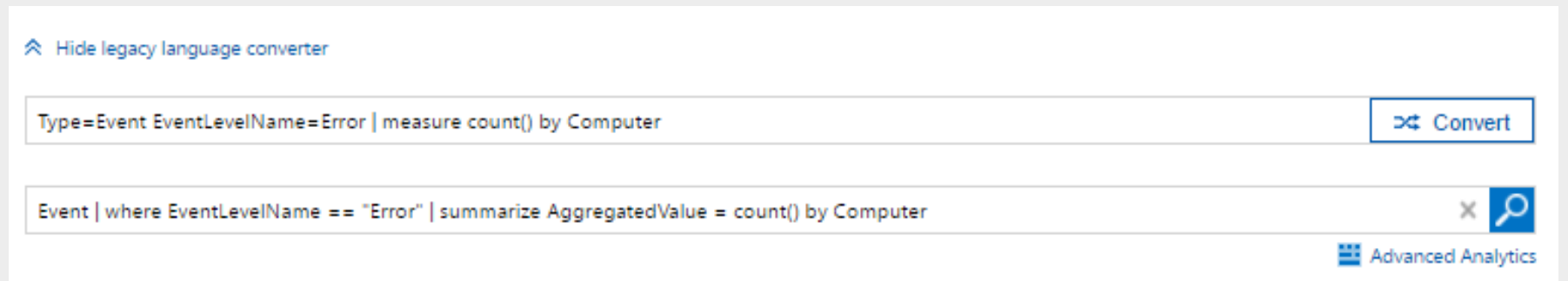
The screenshot shows the Azure portal interface for the 'wazug-la - Azure Resources' page. The left sidebar contains a search bar and a list of navigation items: Log Analytics usage, Properties, Saved searches, Upgrade Summary, Service Map, and a section for WORKSPACE DATA SOURCES including Virtual machines, Storage accounts logs, Azure Activity log, Scope Configurations (Preview), and Azure Resources (highlighted with a blue arrow). The main content area shows a table of resources with columns for RESOURCE NAME, METRICS CONNECTION, and DIAGNOSTICS CONNECTION. The 'wazug-la' resource is highlighted in blue and shows 'Connected' status for both metrics and diagnostics.

Subscription	Resource group	RESOURCE NAME	METRICS CONNECTION	DIAGNOSTICS CONNECTION
Visual Studio Enterprise	Click to select	cepronl	Not Connected	Not Connected
		cepronldb	Not Connected	Not Connected
		WestEuropePlan	Not Connected	Not Connected
		jsfunctiontest	Not Connected	Not Connected
		wazug-vm-sql	Connected	Not Connected
		wazug-vm-win	Not Connected	Not Connected
		wazug-kv	Not Connected	Not Connected
		wazug-la	Connected	Connected
		wazug-vm-sql-nsg	Not Connected	Not Connected
		wazug-vm-win-nsg	Not Connected	Not Connected
		wazug-mon	Not Connected	Not Connected

Log Analytics & Kusto

Road to GA

- Big update in June/July 2017
- From OQL to Kusto
- OMS Solutions were migrated in steps
- Migration tool for OQL queries
- Bottom line: it is in GA



Log Analytics Ecosystem

Ingestion



Microsoft Monitoring Agent

Azure Extensions
Data Collector APIs

Linux



SCOM MP

Exploration



Microsoft Azure Portal

Advanced Analytics Portal

Azure Monitor

Service Map

Export & Correlation



Application Insights
Connector



Power BI



Blob storage



Microsoft Flow

Data Access REST APIs

Language features

- Calculated Columns
- Correlate across solutions (Joins)
- Functions
- Time series analysis functions
- ML operators
- Syntax highlighting/IntelliSense
- Multi line query editor (not like OQL)
- Rich visualizations
- Use Shift+Enter instead of F5
- Data gets refresh in 3-5 mins

Demo: Querying with Log Analytics

Quick Reference

Home Page

Logic Apps [...]

+

Export

Last 7 days

GO

```
AzureDiagnostics
| where ResourceType == "WORKFLOWS/RUNS/ACTIONS" and status_s == "Succeeded"
| project TimeGenerated, ElapsedTime = todouble(endTime_t - startTime_t)/10000000
| render timechart

AzureDiagnostics
| where ResourceType == "WORKFLOWS/RUNS" and status_s != "Running" and status_s
| summarize Count = count() by status_s
| render piechart
```

TABLE

CHART

Pie

Status_S

Count

Sum

Show Labels

Completed. Showing results from the last 7 days.

00:00:00.530

2 records

Legend

Failed

Succeeded

Failed (29.35%)

Succeeded (70.65%)

Query Library

Graphic selection

IntelliSense

Log Analytics Pricing

- Free – 500MB daily/ 7 days retention
- Standalone – 2 EUR per GB/ 1 month retention
- OMS – per node/per service offering

Operations Management Suite

Solution Templates

- Predefined and categorized
- Some templates need additional configuration
- Build your own solutions and publish them to the Marketplace (preview)

Solutions

Security & Audit
Antimalware
Azure Activity Logs
Update Management
Azure Automation
Change Tracking

Wire Data
Network Performance
Monitoring
Office 365
Azure SQL Analytics
Azure Containers

Upgrade Compliance
Upgrade Readiness
Device Health
Service Map
Alert Management
Capacity Management

HD Insights
SQL Assessment
AD Assessment
SQL Assessment Plus
Exchange Assessment
SP Assessment

VMWare
Azure App Gateway
Azure NSG Analytics
Key Vault Analytics
MORE....

Building Tiles

- Required: Kusto query
- Visualization options
- Drill-down tiles

The screenshot displays the 'Building Tiles' interface in Microsoft Power BI. On the left is a 'Gallery' titled 'VIEW DASHBOARD' containing various tile templates such as 'List of queries', 'Number & list', 'Two numbers & list', 'Donut & list', 'Two timelines & list', 'Information', 'Line chart, callout, & list', 'Line chart & list', and 'Stack of line charts'. Each tile has a 'Preview' button. The central area is titled 'View dashboard' and shows an 'Overview tile' and a 'Traces' tile. The 'Traces' tile displays a large number '5' and a table with columns 'STATUS' and 'COUNT'. The table has one row: 'Succeeded' with a count of '5'. To the right is a 'Properties' panel for the selected 'Traces' tile. It includes a 'General' section with 'Group Title' (Traces), 'New Group' checkbox, 'Icon' field with a 'Browse...' button, and 'Use Icon' checkbox. The 'Tile' section includes 'Legend' (Traces), 'Query' (WAZUG_CL | summarize Count = count()), and 'List' section with 'Query' (WAZUG_CL | summarize Count = count() by status_s), 'Hide graph' checkbox, and 'Enable Sparklines' checkbox.

Gallery
VIEW DASHBOARD

List of queries
Number & list
Two numbers & list
Donut & list
Two timelines & list
Information
Line chart, callout, & list
Line chart & list
Stack of line charts

View dashboard

Overview tile
Traces

5

STATUS	COUNT
Succeeded	5

Click and drag a part from the library to the layout area to start building your View dashboard.

Properties Filters

Number & list
A blade that consists of a numeric tile, and the top ten results from your search query.

General

Group Title
Traces

☐ New Group

Icon Browse...

☐ Use Icon

Tile

Legend
Traces

Query
WAZUG_CL | summarize Count = count()

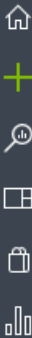
List

Query
WAZUG_CL | summarize Count = count() by status_s

☐ Hide graph
☐ Enable Sparklines

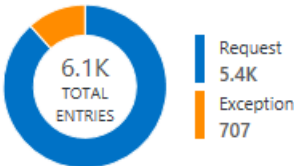
Real-life scenario





Filter by name...

Application Insights



Azure SQL Analytics (Preview)

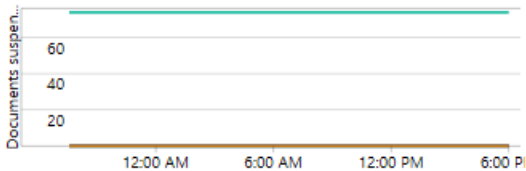
1
Total Azure SQL Databases

0
Total Azure SQL Elastic Pools

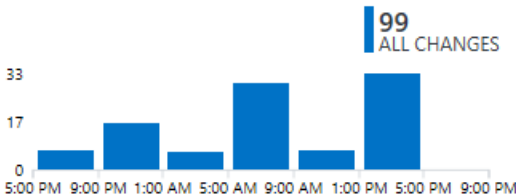
Azure Web Apps Analytics (Preview)

1
Azure Web Apps Count

Assessment



ChangeTracking



Computer Utilization

24
Computers reporting utilization for the last 10 min

35
Total count of computers

Server Assessment

2

Main Dashboard

24
Computers reporting utilization for the last 10 min

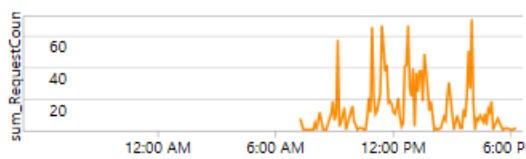
35
Total count of computers

Network Performance Monitor

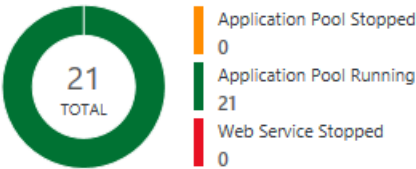
9
of 12 Subnetwork Links Unhealthy

0
of 4 Service Endpoint Tests Unhealthy

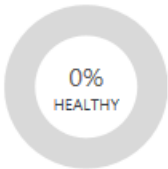
Application Insight



Assessment



Service Bus



Service Map

15
Machines reporting
(Last 30 min)

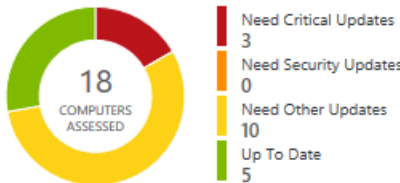
15
All-time machines reporting

15 **0**

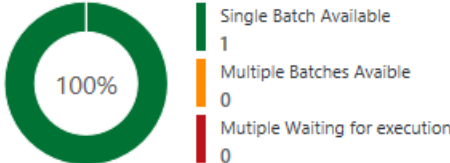
SQL Server Monitoring

5
SQL Servers

System Update Assessment



Assessment



Performance

Windows Server OS

Workflow - Run Results

OMS Pricing

- Complicated, connected with pricing of System Center
- Per node/per service area
 - Free
 - Standalone
 - OMS
- [OMS Pricing](#)



Some Extras

Ingress – from Data Collector API

- Send your own data to Log Analytics
- Define your own data type
- Use consistent data structures
- Create an Azure Function to act as a WebHook for other systems
- [Sample code](#)

Egress – to Power BI

- Log Analytics queries can be exported in the Power Query M language of Power BI
- Each query can be added as a separate dataset in Power BI

The screenshot displays the 'Log Search' interface for 'wazug-la'. The top navigation bar includes 'Refresh', 'Saved Searches', 'Analytics', 'Undo', 'Export', and 'PowerBI'. A blue callout box labeled 'Power BI M Query' points to the 'PowerBI' icon. The main content area is split: the left pane shows a bar chart titled 'Data based on last 7 days' with a legend '1 bar = 6hrs' and a timestamp '7:00:00 PM Nov 21, 2017'. The right pane contains a 'Show legacy language converter' link and a Power Query M query for 'AzureDiagnostics'.

Log Search
wazug-la

Refresh Saved Searches Analytics Undo Export PowerBI

Data based on last 7 days

1 bar = 6hrs

7:00:00 PM
Nov 21, 2017

Show legacy language converter

```
AzureDiagnostics
| where ResourceType == "WORKFLOWS/RUNS/ACTIONS" and status_s == "Succeeded"
| project TimeGenerated, ElapsedTime = todouble(endTime_t - startTime_t)/10000000
```

Thank you!

Q & A



People matter, results count.

This message contains information that may be privileged or confidential and is the property of the Capgemini Group.

Copyright © 2017 Capgemini. All rights reserved.

Rightshore® is a trademark belonging to Capgemini.

About Capgemini

With more than 190,000 people, Capgemini is present in over 40 countries and celebrates its 50th Anniversary year in 2017. A global leader in consulting, technology and outsourcing services, the Group reported 2016 global revenues of EUR 12.5 billion. Together with its clients, Capgemini creates and delivers business, technology and digital solutions that fit their needs, enabling them to achieve innovation and competitiveness. A deeply multicultural organization, Capgemini has developed its own way of working, [the Collaborative Business Experience™](#), and draws on [Rightshore®](#), its worldwide delivery model.

Learn more about us at

www.capgemini.com

This message is intended only for the person to whom it is addressed. If you are not the intended recipient, you are not authorized to read, print, retain, copy, disseminate, distribute, or use this message or any part thereof. If you receive this message in error, please notify the sender immediately and delete all copies of this message.