Scifoni Ivano

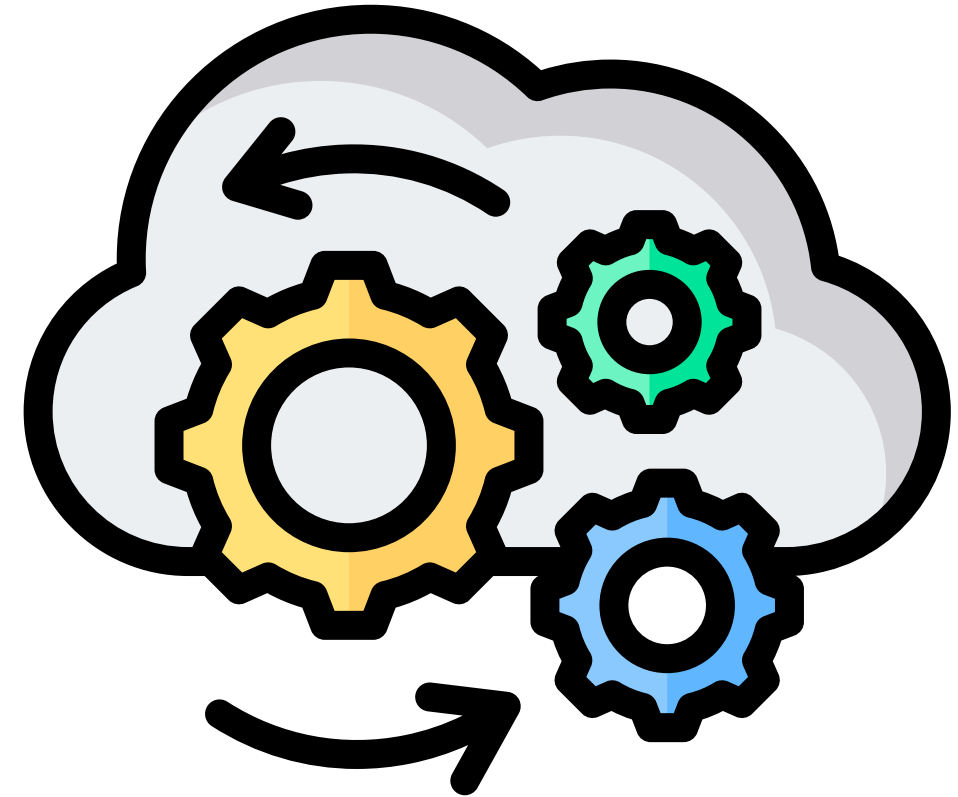Fabio Mannis

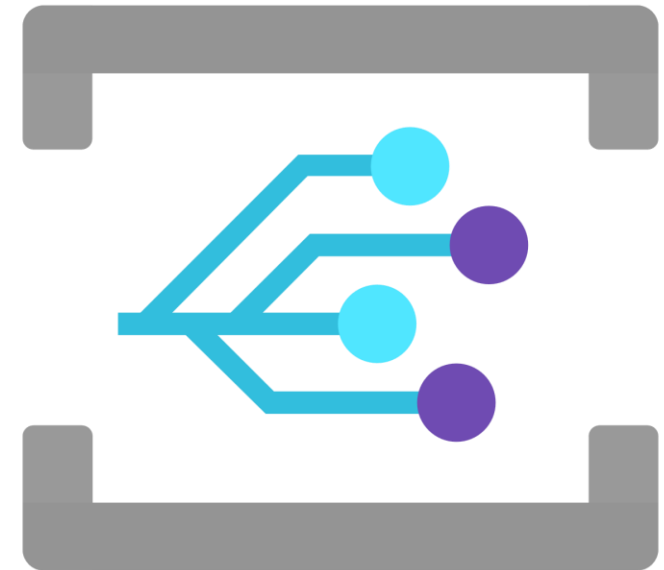Francesco Del Re

Matteo Riccardi

Valerio Benedetti

Coding

"**Automation** is the technique of making an apparatus, a process, or a system operate automatically."

ISA (International Society of Automation)

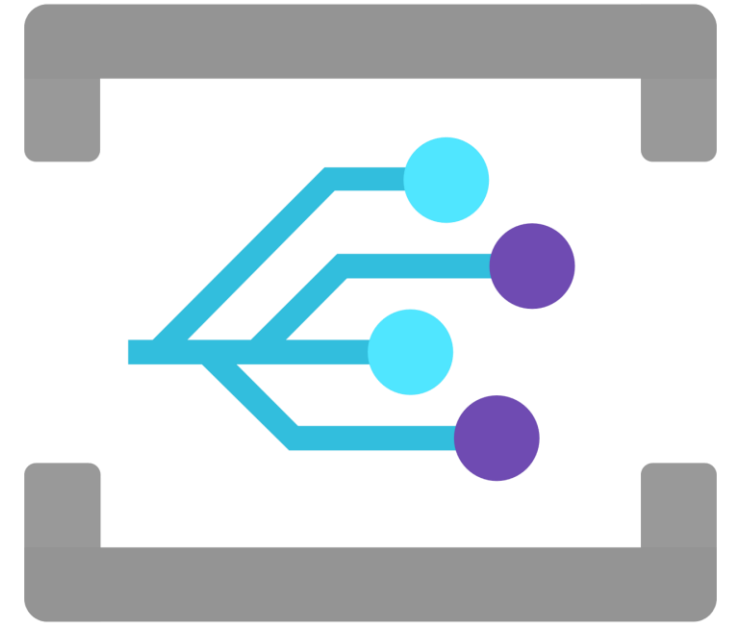# Azure Event Grid

Azure Event Grid is a complete event routing service invented to build event-based and serverless applications on Azure at an ease.

Event Grid capabilities

Simplicity - Point and click to aim events from your Azure resource to any event handler or endpoint.

Advanced filtering - Filter on event type or event publish path.

Publish/Subscribe - Subscribe several endpoints to the same.

Reliability - 24-hour retry with exponential backoff to make sure events are delivered.

Pay-per-event - Pay only for the amount you use Event Grid.

High throughput - Build high-volume workloads on Event Grid.

Built-in Events - Get up and running quickly with resource-defined built-in events.

Architecture
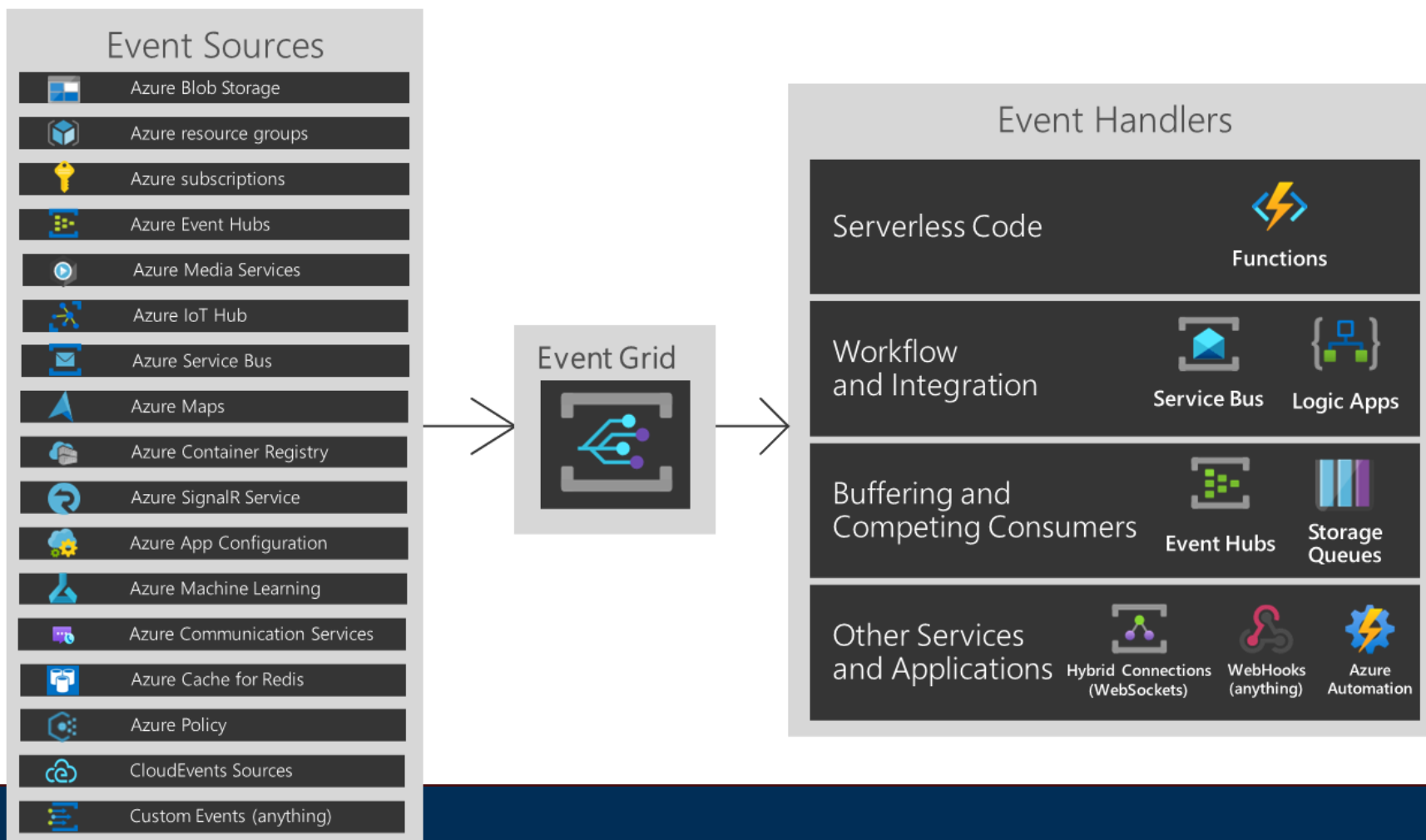
Architecture

Event Source
An event source is where the event happens.
Each event source is related to one or more event types.
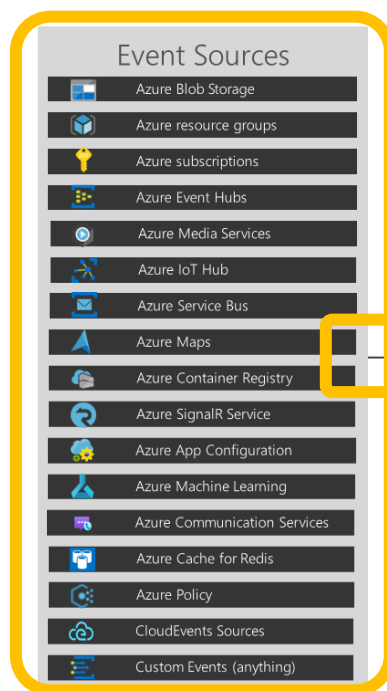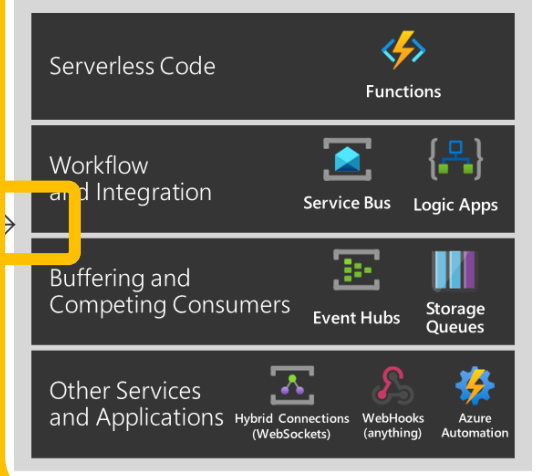
Event handler
An event handler is the place where the event is sent. The handler takes some further action to process the event.

Topic
Provides an endpoint where the source sends events.

Event subscription
Tells Event Grid which events on a topic you're interested in receiving.
You provide an endpoint for handling the event and you can filter the events.

Coding

Topics

System Topics

- A system topic in Event Grid represents one or more events published by Azure services such as Azure Storage and Azure Event Hubs
- Only Azure services can publish events to system topics

Custom Topics

- A custom topic provides an endpoint where your applications can send events
- Your solution use HTTP POST calls to send events

Event Schemas

Event sources send events to Azure Event Grid in an array

The array can have a total size of up to 1 MB

Each event in the array is limited to 1 MB

Event Grid sends the events to subscribers in an array that has a single event

You can use Event Grid Schema or Cloud Schema (v1.0)

#️ Coding

Event Schemas

```
{
  "topic": "/subscriptions/.../myaccount",
  "subject": "blobServices/.../myimage.png",
  "eventType": "Microsoft.Storage.BlobCreated",
  "eventTime": "2017-06-26T18:41:00.9584103Z",
  "id": "831e1650-001e-001b-66ab-eeb76e069631",
  "dataVersion": "",
  "metadataVersion": "1",
  "data": {
    "api": "PutBlockList",
    "clientRequestId": "6d79dbfb-0e37-4fc4-981f-442c9ca65760",
    "requestId": "831e1650-001e-001b-66ab-eeb76e000000",
    "eTag": "0x8D4BCC2E4835CD0",
    "contentType": "application/octet-stream",
    "contentLength": 524288,
    "blobType": "BlockBlob",
    "url": "https://myaccount.blob.core.windows.net/.../myimage.png",
    "sequencer": "00000000000044200000000000028963",
    "storageDiagnostics": {
      "batchId": "b68529f3-68cd-4744-baa4-3c0498ec19f0"
    }
  }
}
```

Event Grid Schema

```
{
  "specversion": "1.0",
  "type": "Microsoft.Storage.BlobCreated",
  "source": "/subscriptions/.../myaccount",
  "id": "9aeb0fdf-c01e-0131-0922-9eb54906e209",
  "time": "2019-11-18T15:13:39.4589254Z",
  "subject": "blobServices/.../myimage.png",
  "dataschema": "#",
  "data": {
    "api": "PutBlockList",
    "clientRequestId": "4c5dd7fb-2c48-4a27-bb30-5361b5de920a",
    "requestId": "9aeb0fdf-c01e-0131-0922-9eb549000000",
    "eTag": "0x8D76C39E4407333",
    "contentType": "image/png",
    "contentLength": 30699,
    "blobType": "BlockBlob",
    "url": "https://myaccount.blob.core.windows.net/.../myimage.png",
    "sequencer": "000000000000000000000000009924000000000000c41c18",
    "storageDiagnostics": {
      "batchId": "681fe319-3006-00a8-0022-9e7cde000000"
    }
  }
}
```

Cloud Schema

LImits

Custom topics per Azure subscription	100
Event subscriptions per topic	500
Publish rate for a custom or a partner topic (ingress)	5,000 events/sec or 5 MB/sec (whichever is met first)
Event size	1 MB

Costs

Price per million operations	**€0,518**
Free usage per month	100.000 operations

€

Example : An Azure Function is connected to Blob Storage through Event Grid, to process images each time a new image is added. In the blob storage container 5 million images are created - each one triggering the Function through Event Grid.

- You publish 5 million events to Event Grid in a month.

- All events are published to 1 https endpoint.

Number of operations	
Published events	5 million operations
Delivery attempts	5 million operations
Monthly free grant	- 100.000 operations
Total operations	9,9 million
Price per million operations	x **€0,518**
Total monthly cost	**€5,123**

#) Coding
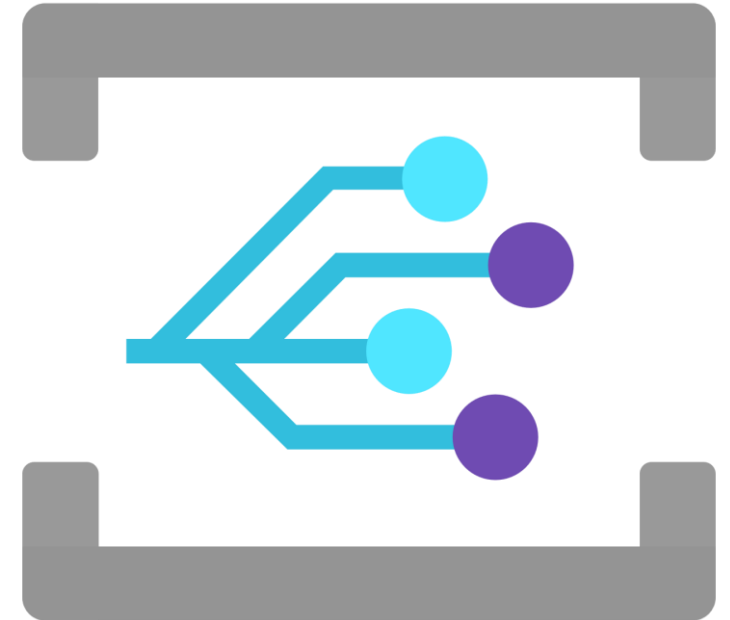
DEMO

Event Grid For Dummies

Custom Topic

App Configuration syncronization

Azure Alerts

Alerts proactively notify you when issues are found with your infrastructure or application using your monitoring data in Azure Monitor.

Alert Rules

Alert rules are separated from alerts and the actions taken when an alert fires.

The alert rule captures the target and criteria for alerting.

The alert rule can be in an enabled or a disabled state. Alerts only fire when enabled.

Alert Rule

Target Resource

Signal

Criteria /
Logic Test

Action Group

Actions to do

Monitor Condition

Alert State
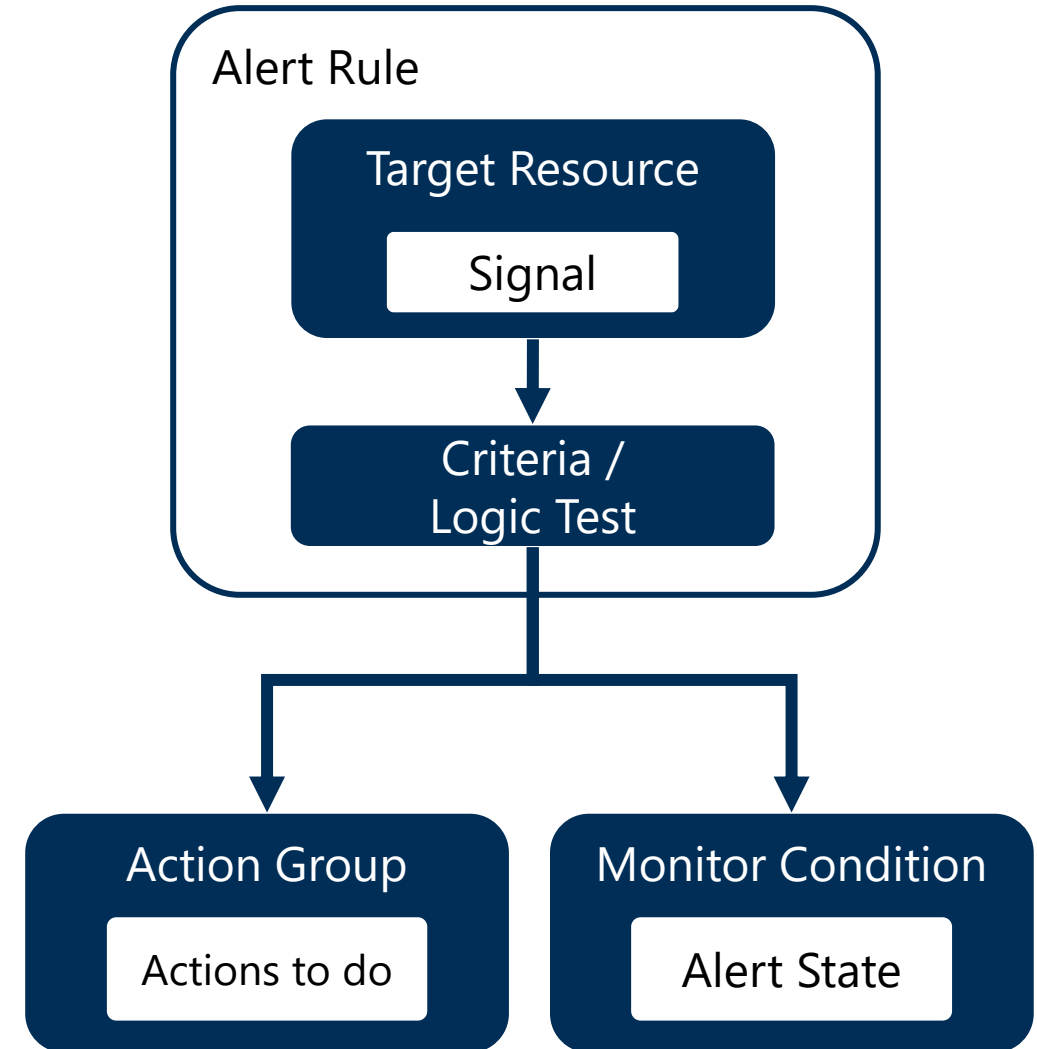
Alert Rules

- Metric values
- Log search queries
- Activity log events
- Health of the underlying Azure platform
- Tests for website availability

Alert Rule

Target Resource

Signal

Criteria / Logic Test
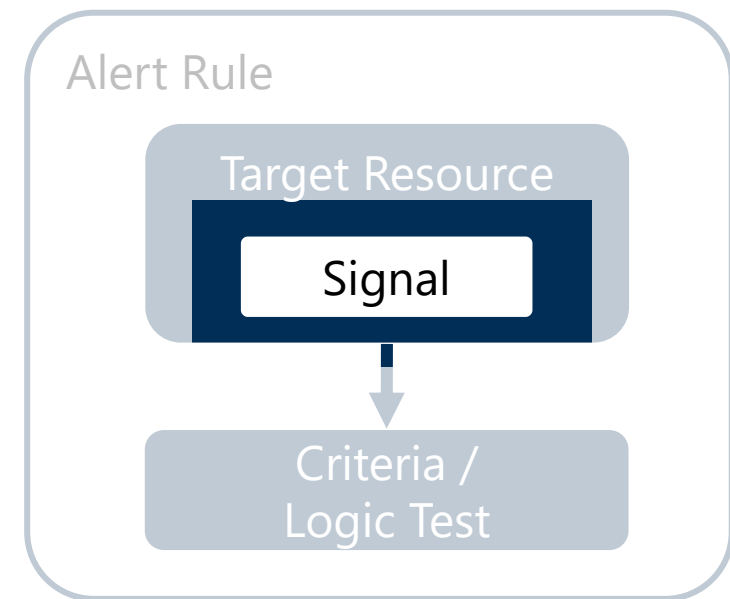
Action Groups

An action group is a collection of notification preferences defined by the owner of an Azure subscription.

Azure Monitor, Service Health and Azure Advisor alerts use action groups to notify users that an alert has been triggered

Various alerts may use the same action group or different action groups

Action Group is **Global service**, therefore there is no dependency on a specific Azure region

Being a **Global service** it helps client not to worry about **disaster recovery**

 # Coding

Manage alerts

You can set the state of an alert to specify where it is in the resolution process.

When the criteria specified in the alert rule is met, an alert is created or fired, and it has a status of New.

You can change the status when you acknowledge an alert and when you close it.

All state changes are stored in the history of the alert.

New
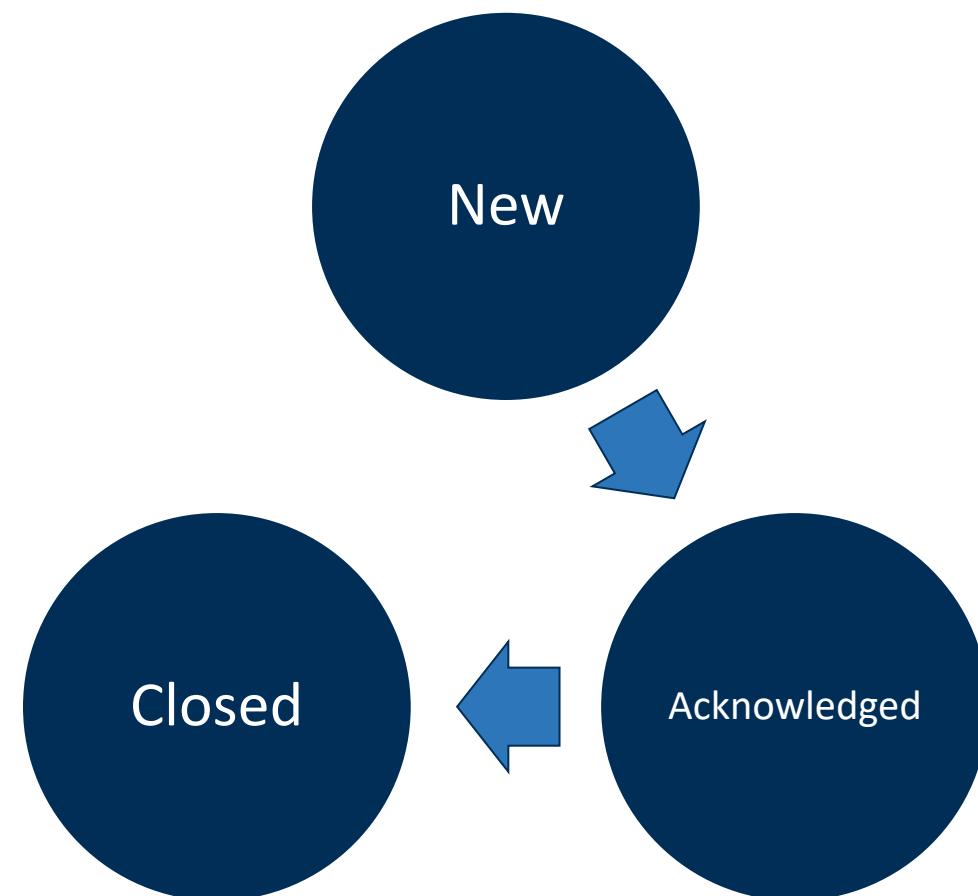
Acknowledged

Closed

Costs - Signals

€

Alert Signal	Free units included	Price
Metrics	10 monitored metric time-series per month	**€0,087** per metric time-series monitored per month
Log	None	15-min interval (or greater): **€0,432** per log monitored per month 10-min interval: **€0,863** per log monitored per month 5-min interval: **€1,294** per log monitored per month 1-min interval: **€2,588** per log monitored per month
Activity Log	Limited to 100 rules per subscription	Free

#Coding

Costs - Notifications

€

Feature	Free units included	Price
ITSM connector create or update event	1.000 events per month	**€4,312**/1.000 events
Emails	1.000 emails per month	**€1,725**/100.000 emails
Push notification (to Azure Mobile App)	1.000 notifications per month	**€1,725**/100.000 notifications
Secure web hooks	1 secure web hook	**€5,175**/1.000.000 secure web hooks
Web hooks	100.000 web hooks per month	**€0,518**/1.000.000 web hooks

DEMO

Alerts For Dummies

Unstoppable Web Site

Takeways

Events

- Using Pub/Sub you can add new handler quickly
- Events are routed as soon as possible to the handlers
- You can filter the events based on the data properties

Alerts

- You can create a common behavior using the Action Group
- Alerts are signaled when data is available in the log
- You can react to your custom metrics in your application log

Massimo Bonanni

Microsoft Technical Trainer @ Microsoft

massimo.bonanni@microsoft.com
@massimobonanni
linkedin.com/in/massimobonanni/

#Coding

References

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Storage Key rotation using Azure Functions – GitHub
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Thank You!

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