



# Zabbix as an IOT data processing and notification powerhouse

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**aws**  **CERTIFIED**

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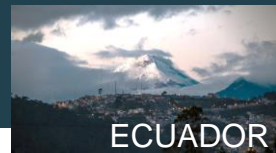


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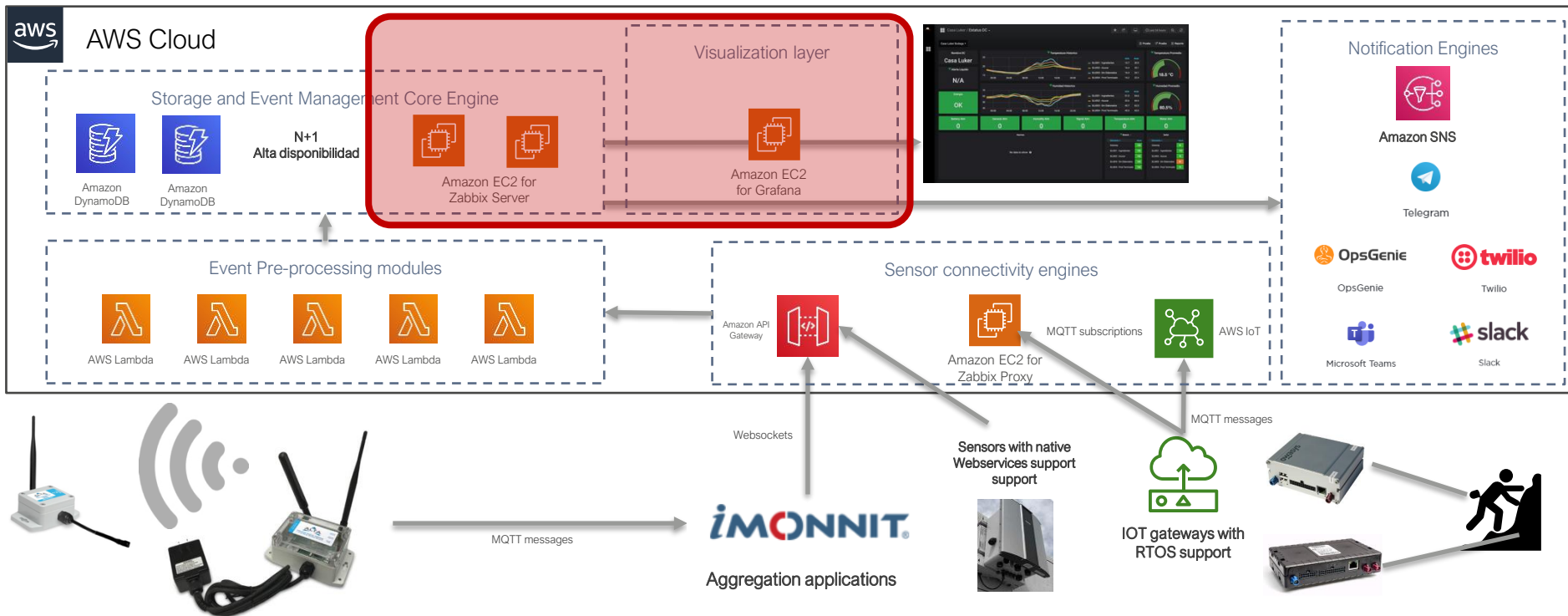
Best Worldwide IOT solution for cold  
chain monitoring  
2017



Best Worldwide IOT solution for  
human trafficking control  
2018



# TALKING FROM EXPERIENCE

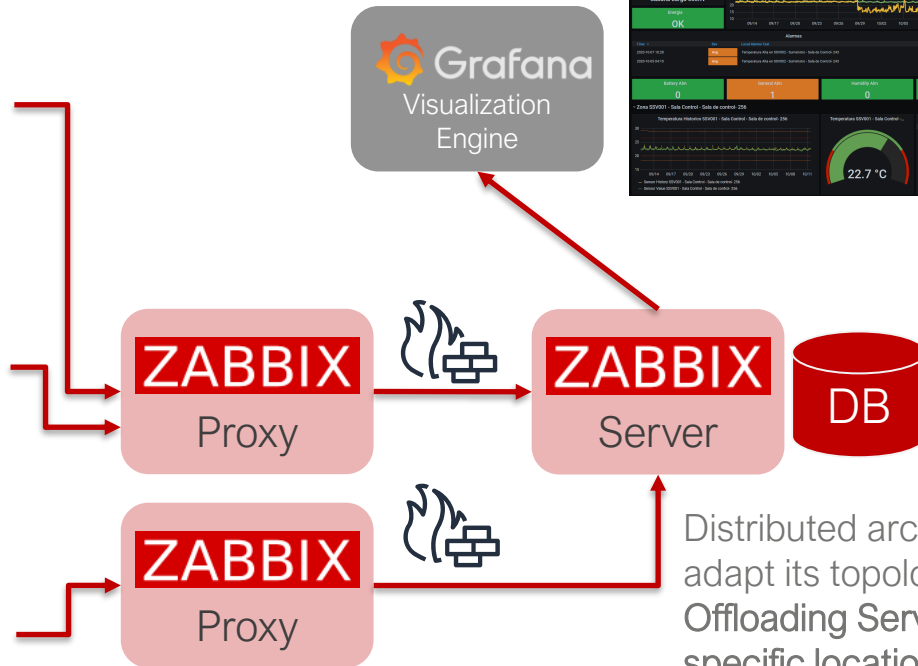


# WHAT MAKES ZABBIX STAND-OUT?

Throttling (with Discard  
unchanged with heartbeat)  
**Up to 96% less records for  
volatility sensors**

Embedded data normalization with pre-processing steps  
Ideal for Analog measure sensors

Calculated items for  
adaptive alert thresholds  
**Adapt on-the-fly, critical**  
when managing millions of  
devices



Integrations with  
visualization tools  
**Grafana** helps us to  
reach industries with  
no IT-background

Distributed architecture with capacity to adapt its topology to  
Offloading Servers with Proxies for specific locations can enable granular growth ... a lifesaver for unexpected behavior



# THROTTLING

All hosts / Local50347 Enabled ZBX SNMP JMX IPMI Applications 8 Items 31 Triggers 6 Graphs Discovery rules Web scenarios

Item Preprocessing

Preprocessing steps

Name

Parameters

1: Discard unchanged with heartbeat

30

Standard 5 seconds collection period equals to 518,400 values per month per sensor

Throttling (with Discard unchanged with heartbeat) at 30 second rate with no changes on sensor state 86,400 values per month per sensor

UP TO 83% LESS RECORDS FOR VOLATILITY SENSORS



UP TO 96% DATA REDUCTION WITH 1-HOUR HEARTBEAT PERIOD



hora	valor	Discard Unchanged	Discard Unchanged with HB 30 sec
0:00	0	0	0
0:05	0		
0:10	0		
0:15	1	1	1
0:20	1		
0:25	1		
0:30	1		
0:35	0	0	0
0:40	0		
0:45	0		
0:50	0		
0:55	0		
1:00	0		
1:05	0		0
1:10	1	1	1
1:15	1		
1:20	1		
1:25	1		
1:30	0	0	0





# MORE PRE-PROCESSING

Preprocessing steps

Name

Parameters

1:

JavaScript

```
return 250*(value/5)-25
```

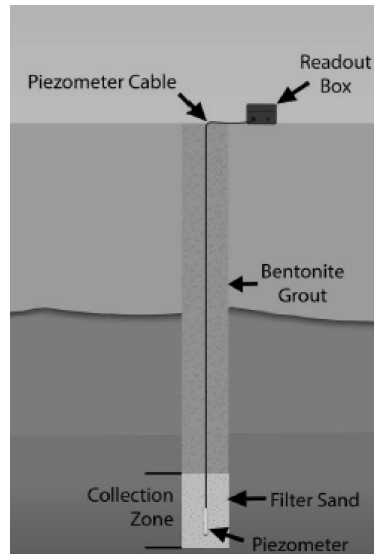
Add

Analog sensors reading to be mapped to adjusted values with all sort of formulas

Pre-processing steps enables ingestion-level data normalization which prevents and alleviates Zabbix servers and overall event engine processing



Example with pressure sensors that maps Voltage (V) to Pressure levels (PSI)



ENABLING ZABBIX  
TO SHINE IN  
PARTICULAR  
APPLICATIONS  
LIKE:

GEOLOGICAL  
MONITORING  
WITH  
PIEZOMETERS,  
INCLINOMETERS  
AND SO ON



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# CALCULATED ITEMS

Trigger Tags Dependencies

Parent triggers [Template Imagu Monnit Climatizacion](#)

\* Name

Operational data

Severity ☐ Not classified ☐ Information ☐ Warning ☒ Average ☐ High ☐ Disaster

\* Problem expression

[Expression constructor](#)

OK event generation ☐ Expression ☐ Recovery expression ☐ None

\* Recovery expression

[Expression constructor](#)

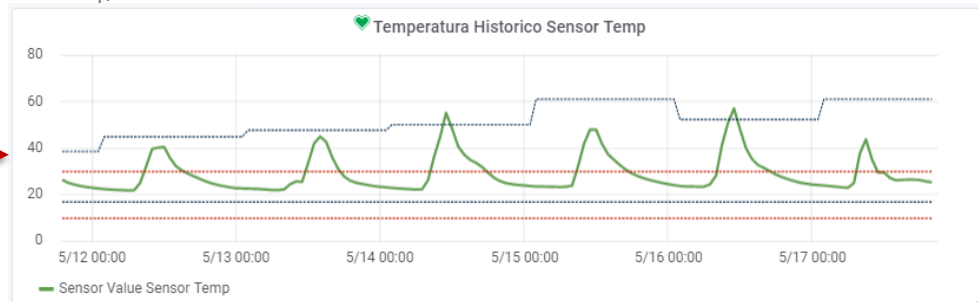
Using expressions on triggers opens the possibility to create “rolling windows” thresholds which adjust based on cumulative values of past performance

AVOID TOO LOOSE OR TOO STRICT ALERT THRESHOLDS FROM THE BEGINNING

AN AUTOMATION KEY ASSET THAT MAKES THE DIFFERENCE ON ENVIRONMENTS WITH A HIGH VOLUME OF SENSORS



Mapping this on a per trigger basis, allows for automation of key processes for



# DISTRIBUTED ARCHITECTURE

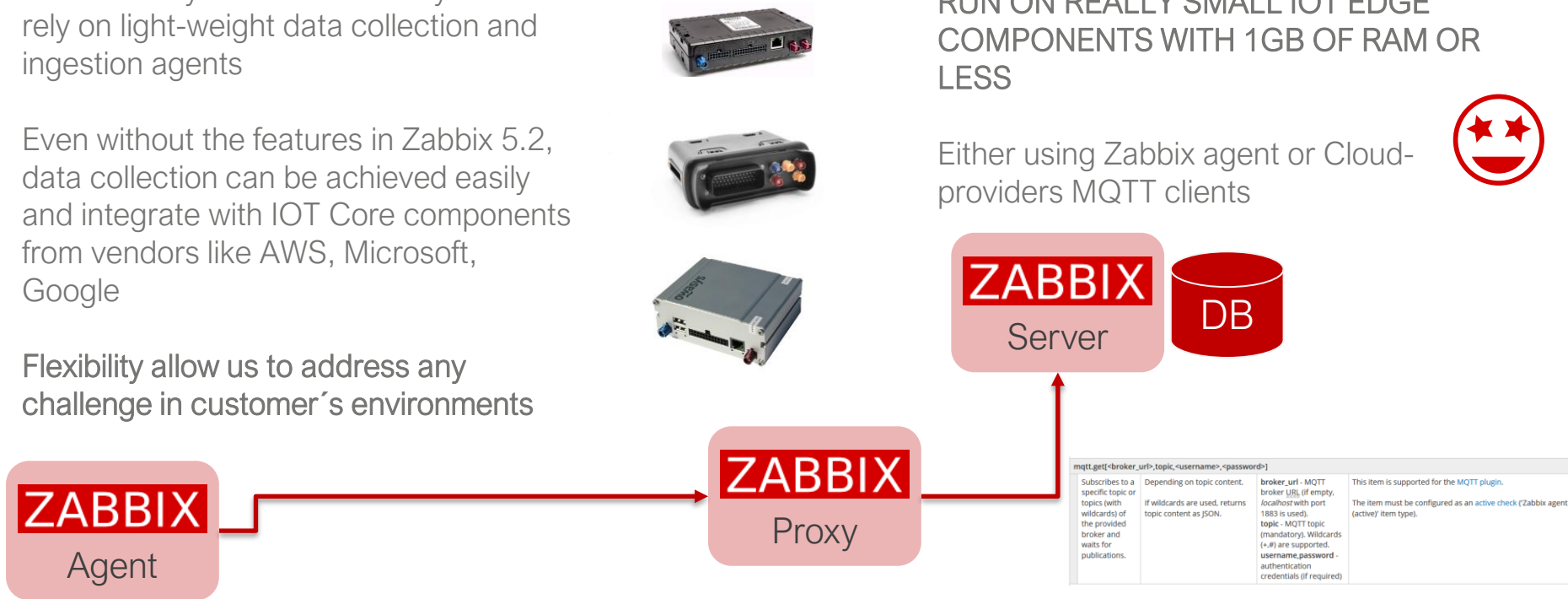
IOT Gateways and RTOS-ready sensors rely on light-weight data collection and ingestion agents

Even without the features in Zabbix 5.2, data collection can be achieved easily and integrate with IOT Core components from vendors like AWS, Microsoft, Google

Flexibility allow us to address any challenge in customer's environments

A LIGHTWEIGHT SOLUTION THAT CAN RUN ON REALLY SMALL IOT EDGE COMPONENTS WITH 1GB OF RAM OR LESS

Either using Zabbix agent or Cloud-providers MQTT clients



<code>mqtt.get[-&lt;broker_url&gt;.&lt;topic&gt;.&lt;username&gt;.&lt;password&gt;]</code>	Subscribes to a specific topic or topics (with wildcards) of the provided broker and waits for publications.	Depending on topic content. If wildcards are used, returns topic content as JSON.	broker_url - MQTT broker URL (if empty, localhost with port 1883 is used). topic - MQTT topic (mandatory). Wildcards (*, #) are supported. username, password - authentication credentials (if required).	This item is supported for the <a href="#">MQTT plugin</a> . The item must be configured as an <a href="#">active check</a> ('Zabbix agent (active)' item type).
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# VISUALIZATION



Integrations with visualization tools

Grafana helps us to reach industries with no IT-background, which are most of the target opportunities in this domain.

USERS EXPECT  
HIGHLY INTUITIVE  
DASHBOARDS.

ZABBIX OPEN  
INTEGRATION WITH  
GRAFANA MAKES IT  
SIMPLE TO DELIVER  
FRESH, MODERN AND  
ATTRACTIVE  
VISUALIZATIONS  
INTO TELEMETRY  
DATA



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All types of data ingestion challenges

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Zabbix 5.2  
ETA: Q4, 2020

## Zabbix just keeps getting better ... now go out and build!

Monitoring of IoT devices

- Support data collection using modbus and MQTT protocols

- Selection of timezone for individual users
- Versioning of the templates to simplify the deployment of enhanced templates.  
It could be used for monitoring automation when templates are managed externally, for example, stored in an external Git repository.

Enhanced discovery for efficient monitoring of cloud services

- Host prototypes will support host interfaces
- Ability to create hosts having no interfaces defined

