



CUSTOS

MONITORING

**Monitoring multiple Oracle instances
Automatized with LLD**

ZABBIX
CERTIFIED PARTNER

TEAM

Cantidad de transacciones diarias



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Monitoring multiple

ORACLE®

instances

Automatized with LLD

Fecha	AM	CA	CR	FI	GE	OC	PA	VI	CL	MI	AN	FL
jueves 06/10	537	2173	1033	59645	2869	20589	762	65899	332	158	474	
viernes 07/10	701	3017	1666	72287	3661	27920	1017	74484	344	24	470	10
sábado 08/10	812	2929	1419	66753	3345	26217	1135	77630	430	2848	493	503
domingo 09/10	580	1889	783	48062	2528	17380	671	60512	297	980	301	252
lunes 10/10	599	2657	1169	55727	2661	21016	920	66265	322	1926	445	442
martes 11/10	473	2611	976	54267	2758	18546	806	60028	331	1508	386	12

PURΣFACTS

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150 employees / 4 offices (CA, CH, PT, UK) / 120 Clients worldwide

jueves				GALLIARD Capital Management, Inc.		ROBECO The Investment Engineers		Desjardins		RICHARDSON Wealth		cg / Canaccord Genuity Wealth Management		Fidelity Investment Management	
viernes 07/10	701	3017	1266	73887	3910	27795	1018	84418	404	430	430	430	386	331	
sábado 08/10	812	BROWN BROTHERS HARRIMAN	CREDIT SUISSE		John Hancock	Scotiabank	CI	GLOBAL ASSET MANAGEMENT	NATIONAL BANK	Manulife					
domingo		HSBC		iA Financial Group		BANK OF SINGAPORE		SOCIETE GENERALE	Schroders		AGF		PICTET		ROYAL LONDON
lunes 10/10	599	2657	1169	55727	2661	21016	920	66265	322	1926	445	442	12		
martes 11/10	473	2611	976	54267	2758	18546	806	60028	331	1508	386				
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PURΣFACTS

Project Scope

- Global Zabbix deployment in 12 Azure Regions in CA, US, UK, CH, EU
- Local Proxies within the regions communicating to central instance
- No passive communication, only active agent connections
- No credentials used to access services

- **Monitoring of below services**

- Oracle Databases
- MS SQL Databases
- MS Internet Information Services
- Windows Server 2012-2022
- SFTP Server
- Custom Application checks

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SOLUTION

ZABBIX

out of the box offers

- Template for a **Single** Oracle instance monitoring
- Zabbix Agent **passive** or ODBC Monitoring
- Oracle User/**Password** for connection



TEMPLATE ORACLE

by Zabbix agent 2

Item example

❖ oracle.datafiles.stats["{\$ORACLE.CONNSTRING}",
"{\$ORACLE.USER}",
"{\$ORACLE.PASSWORD}",
"{\$ORACLE.SERVICE}"]

No way to connect without User/Password

Single Oracle Instance

SOLUTION

ZABBIX



TEMPLATE ORACLE

by ODBC

Item example

```
db.odbc.get[get_instance_state,,  
"Driver={$ORACLE.DRIVER};  
DBQ=://{HOST.CONN}:{$ORACLE.PORT}/{$ORACLE  
.SERVICE};"]
```

No way to connect without User/Password

Single Oracle Instance

Incoming Connection

SOLUTION

ZABBIX



SOLUTION

ZABBIX

All templates / Oracle by Zabbix agent 2 Items 72 Triggers 16 Graphs 7 Dashboards Discovery rules 5 Web scenarios

Item Tags 1 Preprocessing 1

Preprocessing steps

Name

Parameters

Custom on fail

Actions

1: JSONPath

\$

active_background

Discard value

Set value to

Set error to

0

☒

[Test](#) [Remove](#)

[Add](#)

Type of information

Numeric (float)

Update

Clone

Test

Delete

Cancel

[Test all steps](#)

Master Item queries Oracle (single instance)

“Fixed” dependent items (not discovered)

Extracting the data with JSON PATH

CUSTOMIZING ZABBIX TEMPLATE

SOLUTION

- Master item
 - Make the same set of queries for each instance
- Each dependent item is created by a dependent LLD
- Dependent items JSON PATH using the instance name



SOLUTION

Item prototypes

All templates / Oracle by Zabbix agent 2 Active - I... Discovery list / Instances discovery **Item prototypes 64** Trigger prototypes 15 Graph prototypes Host prototypes

Item prototype Tags 2 **Preprocessing 1**

Preprocessing steps	Name	Parameters	Custom on fail
1:	JSONPath	<code>\$(?(@.instance == "{#INSTANCE}"))..['active_background'].first()</code>	<input checked="" type="checkbox"/>
Custom on fail		<div>Discard value Set value to Set error to 0</div>	

[Add](#)

Type of information Numeric (float)

domingo 09/10	580	1889	783	48062	2528	17380	671	60512	297	980	301	252	3
lunes 10/10	599	2657	1169	55727	2661	21016	920	66265	322	1926	445	442	12
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CHANGES TO ZABBIX TEMPLATE

SOLUTION

- ❖ Zabbix agent **active** checks (with encryption)
- ❖ Custom UserParameters
 - Custom powershell scripts
 - avoiding User/Password Connection
- ❖ Dependent items
 - JSON preprocessing
- ❖ LLD
 - Discovering multiple instances (subdirs)



CONFIGURATION

- Agent configuration
 - Modify the configuration file
 - Add scripts to be use by the agent

- FrontEnd
 - New Host

SOLUTION



AGENT CONFIGURATION

SOLUTION

Modify the zabbix_agent2.conf

UserParameter=powershell.execute[*],powershell.exe

-NoProfile

-ExecutionPolicy bypass

**-File "C:\Program Files\Zabbix Agent 2\scripts\\$1"
"\$2" "\$3" "\$4" "\$5" "\$6" "\$7" "\$8" "\$9"**

Timeout=12

for example, depending on the number of instances

keep it low



AGENT CONFIGURATION

SOLUTION

- Add scripts to be use by the agent

Copy Zabbix Agent 2\scripts\oracle.queries.ps1

- PowerShell script that discover all the instances
- Executes queries as SYSDBA (no password).
- Returns a JSON

Copy Zabbix Agent 2\scripts\oracle*sql

- Queries to be executed by PowerShell script



NEW HOST IN THE FRONTEND

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SOLUTION

- Create a Host
- Assign and configure the template

- Oracle by Zabbix agent 2 Active - INSTANCES
- Configure macros
 - `{$ORACLE.INSTANCES.DIR}`
 - Directory to look for Oracle instances
 - "P://ORADATA" by default



TAG VALUES

component: application +40 cache +14 cpu +2 datafiles +4 disk +8 fra +12 health +2 memory +1
oracle: ZABXTST1 +59 ZABXTST2 +59

SOLUTION

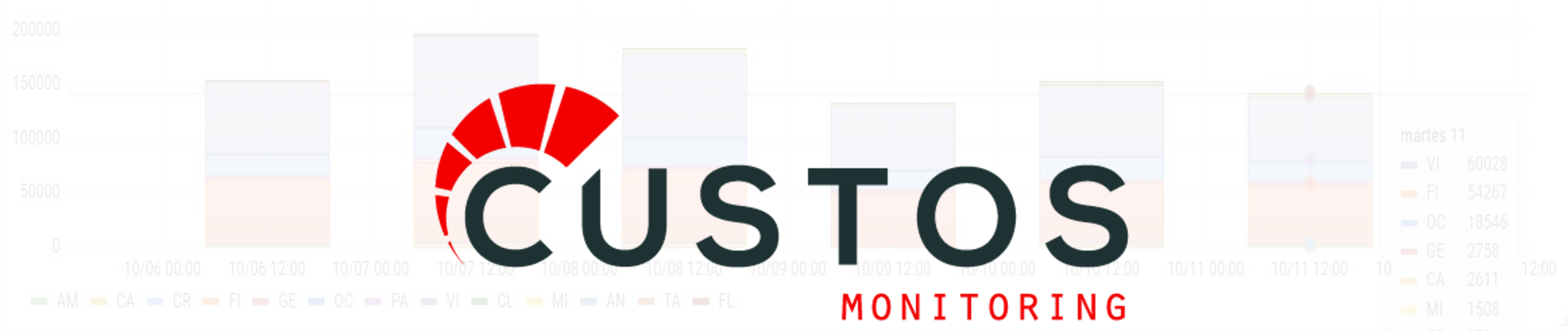
DATA

With data Without data

<input type="checkbox"/> Host	Name ▲	Last check	Last value	Change	Tags
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST1: PGA, Aggregate target parameter ?	3m 28s	444 MB		component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST1: PGA, Global memory bound ?	3m 28s	88.8 MB		component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST1: PGA, Total allocated ?	3m 28s	383.99 MB	+1.55 MB	component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST1: PGA, Total freeable ?	3m 28s	12.69 MB	+384 KB	component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST1: PGA, Total inuse ?	3m 28s	347.88 MB	+1.46 MB	component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST2: PGA, Aggregate target parameter ?	3m 28s	1020 MB		component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST2: PGA, Global memory bound ?	3m 28s	101.99 MB		component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST2: PGA, Total allocated ?	3m 28s	399.16 MB		component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST2: PGA, Total freeable ?	3m 28s	34.38 MB	+192 KB	component: memory component: pga ...
<input type="checkbox"/> Oracle Server 🛠	Oracle ZABXTST2: PGA, Total inuse ?	3m 28s	342.9 MB	+108 KB	component: memory component: pga ...

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sábado 08/10	812	2929	1419	66753	3910	26217	115	630	430	2848	493	503	5
domingo 09/10	580	1889	783	48062	2515	17330	11	5512	297	980	301	252	3
lunes 10/10	599	2657	1169	55727	2661	21016	920	66265	322	1926	445	442	12
martes 11/10	473	2611	976	54267	2758	18546	806	60028	331	1508	386	409	17

AM

473

TA

409

AN

386

CL

331

FL

17

¡Muchas gracias!

Thanks!

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Thanks!

CONTACT

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