

# Advanced Automated data collection in Zabbix using only frontend features



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## About me

Fifteen years of experience in IT area, specialist in opensource softwares  
For more than ten years, he has been providing various training courses, including Linux, PfSense®, Zabbix, FreeBSD, Samba 4, Zimbra and ProxMox, among others.  
Zabbix Certified Trainer



How to collect data in a application level  
using only frontend Zabbix features?

# HTTP CHECKS

Before 4.0: you can use a user parameter with cURL command

```
curl -s -X POST -H "Content-Type:application/json" -H "AuthToken:djA546Z@E"  
https://$1/api/backups?pretty=true -d '{"status": "Failed"}'
```

Starting from Zabbix 4.0:  
you can use HTTP agent

Item	Preprocessing				
* Name	List of failed backups				
Type	HTTP agent				
* Key	list.backups[failed]				
* URL	https://{HOST.CONN}/api/backups				
Query fields	<table><thead><tr><th>Name</th><th>Value</th></tr></thead><tbody><tr><td>pretty</td><td>⇒ true</td></tr></tbody></table> <a href="#">Add</a>	Name	Value	pretty	⇒ true
Name	Value				
pretty	⇒ true				
Request type	POST				
Timeout	3s				
Request body type	Raw data JSON data XML data				
Request body	{"status": "Failed"}				

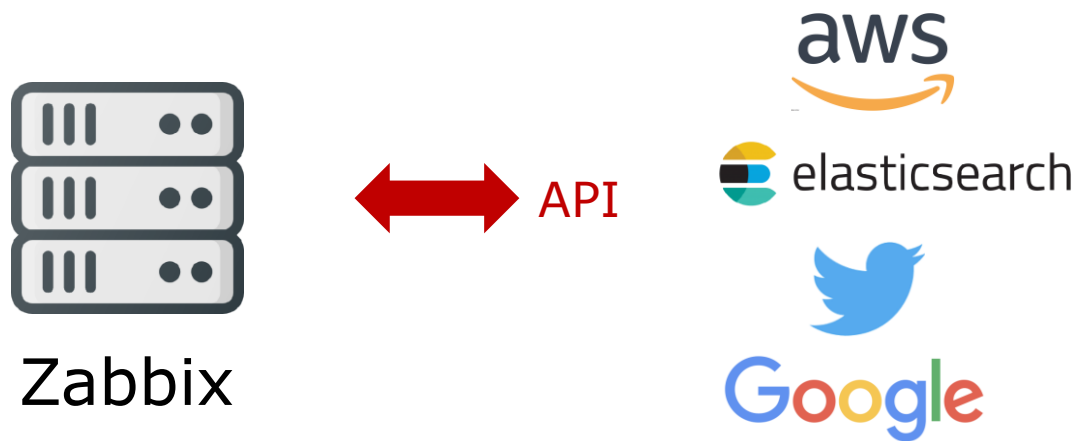
# HTTP CHECKS

Many applications are exposing their data via RESTful APIs

Allows data polling using HTTP/HTTPS protocol

Makes it easy to monitor applications and services

No agent is required

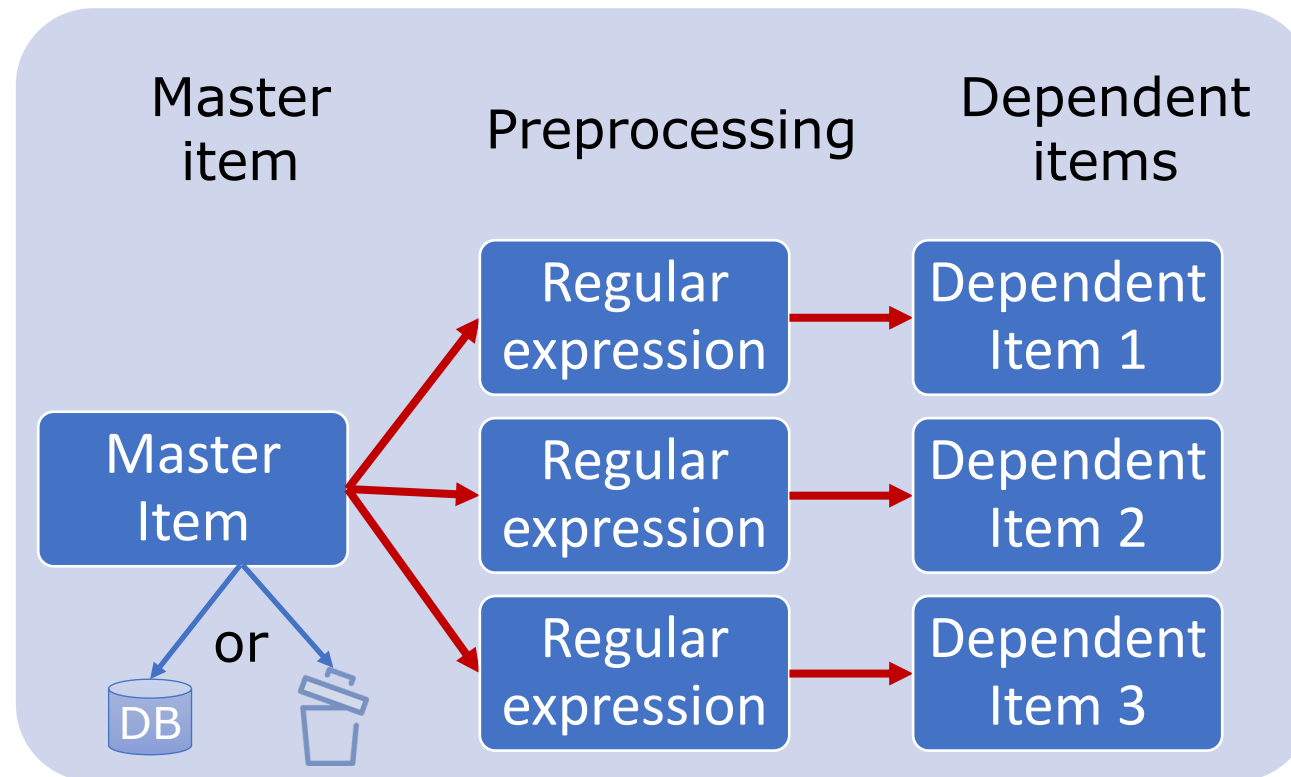


# Preprocessing

Preprocessing allows to define transformation rules for received values

One or several transformations are possible

All preprocessing is done by Zabbix server



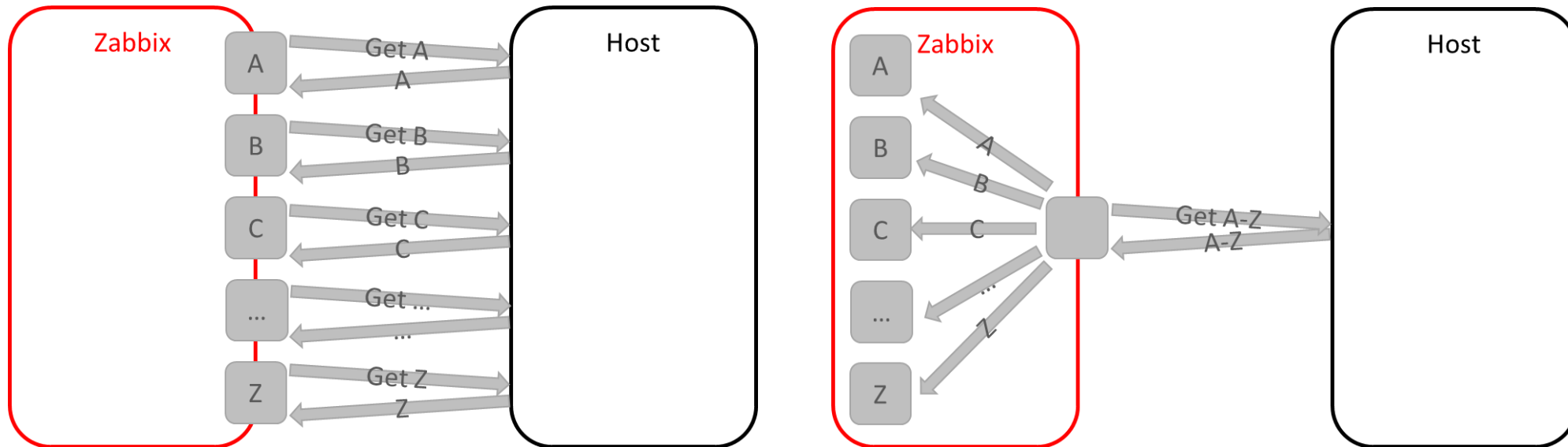
# Dependent Item

To allow for bulk metric collection and simultaneous use in several related items, Zabbix supports dependent items

The master item automatically populates the values of the dependent items

Zabbix preprocessing options can be used to extract the part that is needed for the dependent item from the master item data

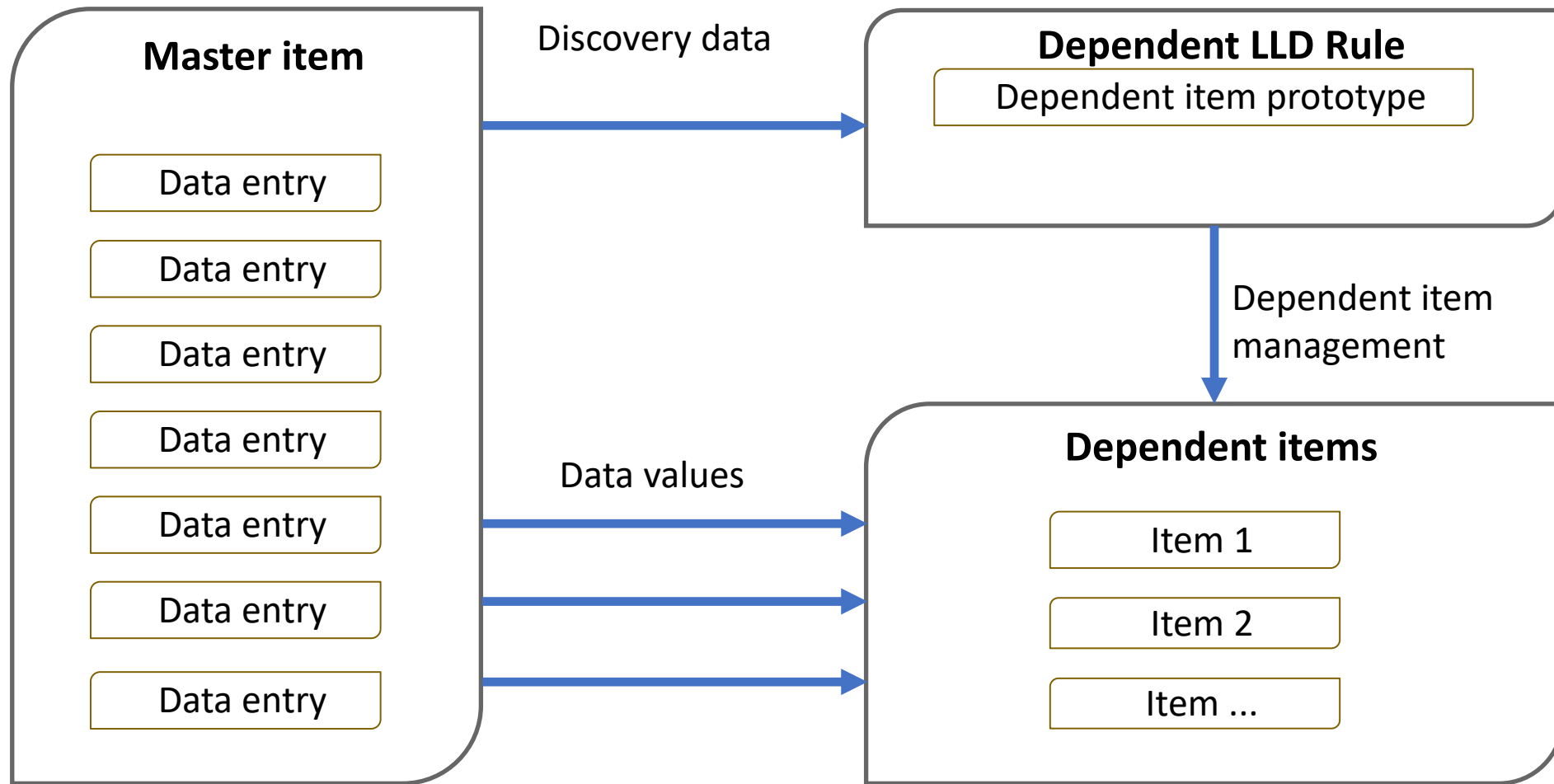
Only Zabbix server is processing dependent items





# Discovery using dependent items

Master item data can be used  
to discover entities (items, triggers, graphs)  
to fill discovered items with values





## Practical Scenario

The number of people to have died from Covid-19 in Brazil has passed 150,000.

Brazil has the second-highest coronavirus death toll in the world, after the US, and the third-highest number of cases after the US and India. The country also passed five million total infections earlier this week.

We are going to collect Brazilian Covid-19 statistics, using only Zabbix frontend features

# Brazilian Covid-19 statistics data collection using Zabbix

## Source of Information

External public HTTP JSON Data

<https://covid19-brazil-api.now.sh/api/report/v1>

```
← → ⌂ covid19-brazil-api.now.sh/api/report/v1

{"data": [{"uid": 35, "uf": "SP", "state": "São Paulo", "cases": 1098207, "deaths": 38885, "suspects": 5334, "refuses": 596, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 31, "uf": "MG", "state": "Minas Gerais", "cases": 351033, "deaths": 8789, "suspects": 925, "refuses": 104, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 13, "uf": "RJ", "state": "Rio de Janeiro", "cases": 304904, "deaths": 20292, "suspects": 1254, "refuses": 148, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 23, "uf": "CE", "state": "Ceará", "cases": 271006, "deaths": 9305, "suspects": 493, "refuses": 89, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 52, "uf": "GO", "state": "Goiás", "cases": 251400, "deaths": 5648, "suspects": 353, "refuses": 55, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 42, "uf": "SC", "state": "Santa Catarina", "cases": 249899, "deaths": 3059, "suspects": 346, "refuses": 47, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 15, "uf": "PA", "state": "Pará", "cases": 249235, "deaths": 6729, "suspects": 43, "refuses": 23, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 43, "uf": "RS", "state": "Rio Grande do Sul", "cases": 238396, "deaths": 5665, "suspects": 416, "refuses": 330, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 53, "uf": "DF", "state": "Distrito Federal", "cases": 210774, "deaths": 3653, "suspects": 327, "refuses": 107, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 41, "uf": "PR", "state": "Paraná", "cases": 209541, "deaths": 5129, "suspects": 400, "refuses": 119, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 21, "uf": "MA", "state": "Maranhão", "cases": 184668, "deaths": 4014, "suspects": 125, "refuses": 13, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 26, "uf": "PE", "state": "Pernambuco", "cases": 160354, "deaths": 8575, "suspects": 89, "refuses": 23, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 13, "uf": "AM", "state": "Amazonas", "cases": 158718, "deaths": 4478, "suspects": 18, "refuses": 26, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 32, "uf": "ES", "state": "Espírito Santo", "cases": 152143, "deaths": 3816, "suspects": 71, "refuses": 21, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 51, "uf": "MT", "state": "Mato Grosso", "cases": 141013, "deaths": 3761, "suspects": 45, "refuses": 8, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 25, "uf": "PB", "state": "Paraíba", "cases": 131435, "deaths": 3070, "suspects": 85, "refuses": 11, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 22, "uf": "PI", "state": "Piauí", "cases": 110864, "deaths": 2363, "suspects": 12, "refuses": 2, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 27, "uf": "AL", "state": "Alagoas", "cases": 90384, "deaths": 2221, "suspects": 43, "refuses": 22, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 28, "uf": "SE", "state": "Sergipe", "cases": 83965, "deaths": 2184, "suspects": 15, "refuses": 11, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 50, "uf": "MS", "state": "Mato Grosso do Sul", "cases": 80538, "deaths": 1566, "suspects": 193, "refuses": 26, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 24, "uf": "RN", "state": "Rio Grande do Norte", "cases": 80067, "deaths": 2564, "suspects": 108, "refuses": 22, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 17, "uf": "TO", "state": "Tocantins", "cases": 74500, "deaths": 1089, "suspects": 13, "refuses": 0, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 11, "uf": "RO", "state": "Rondônia", "cases": 70887, "deaths": 1448, "suspects": 61, "refuses": 2, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 14, "uf": "RR", "state": "Roraima", "cases": 56182, "deaths": 691, "suspects": 9, "refuses": 0, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 16, "uf": "AP", "state": "Amapá", "cases": 51427, "deaths": 743, "suspects": 15, "refuses": 0, "datetime": "2020-10-27T22:38:45.416Z"}, {"uid": 12, "uf": "AC", "state": "Acre", "cases": 30980, "deaths": 690, "suspects": 12, "refuses": 0, "datetime": "2020-10-27T22:38:45.416Z"}]}
```

JSON	Raw Data	Headers
Save	Copy	Collapse All Expand All Filter JSON
▼ data:		
▼ 0:		
uid:	35	
uf:	"SP"	
state:	"São Paulo"	
cases:	1098207	
deaths:	38885	
suspects:	5334	
refuses:	596	
datetime:	"2020-10-27T22:38:45.416Z"	
▼ 1:		
uid:	31	
uf:	"MG"	
state:	"Minas Gerais"	
cases:	351033	
deaths:	8789	
suspects:	925	
refuses:	104	
datetime:	"2020-10-27T22:38:45.416Z"	
▼ 2:		
uid:	29	
uf:	"BA"	
state:	"Bahia"	
cases:	347721	
deaths:	7519	
suspects:	573	
refuses:	36	
datetime:	"2020-10-27T22:38:45.416Z"	
— ..		

# I divided the process in two Steps

Step 1 – Host called Brazil with a LLD Http agent template with a host prototype inside for the creation of the hosts represents the information of each brazilian state.

Step 2 – The host created in the first step has a template with a dependent item low level discovery that get all data from covid-19 for each host Brazilian state.

# Template states discovery

Http Agent item Low level discovery for the Brazilian State creation

<input type="checkbox"/>	Name ▲	Applications	Items	Triggers	Graphs	Discovery	Web	Interface	Proxy	Templates	Status	Availability	Agent encrypt
<input type="checkbox"/>	Brazil	Applications 1	Items 2	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050		Template Covid-19 Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE

<input type="checkbox"/>	Host	Name ▼	Items	Triggers	Graphs	Hosts	Key	Interval	Type	Status
<input type="checkbox"/>	Brazil	Template Covid-19 Brazil: States Discovery	Item prototypes	Trigger prototypes	Graph prototypes	Host prototypes 1	state.discovery	1d	HTTP agent	Enabled

es Host prototypes 1

All templates / Template Covid-19 Brazil / Discovery list / States Discovery / Item prototypes / Trigger prototypes / Graph prototypes / Host prototypes 1

Discovery rule Preprocessing LLD macros Filters Overrides

LLD macros

LLD macro	JSONPath	
{#STATE}	\$.state	<a href="#">Remove</a>
{#UF}	\$.uf	<a href="#">Remove</a>
<a href="#">Add</a>		

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)

All templates / Template Covid-19 Brazil / Discovery list / Descobre estados / Item prototypes / Trigger prototypes / Graph prototypes / Host prototypes

Discovery rule Preprocessing LLD macros Filters Overrides

\* Name

Type

\* Key

\* Master item  [Select](#)

\* Keep lost resources period

Description

Enabled ☒

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)

<input type="checkbox"/>	Name ▼	Templates	Create enabled	Discover
<input type="checkbox"/>	Template Covid-19 Brazil: {#STATE}	Template Covid-19 States Brazil	Yes	Yes

# Template COVID-19

Above the list of the hosts created.

<input type="checkbox"/>	States Discovery: Acre	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Alagoas	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Amapa	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Amazonas	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Bahia	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Ceara	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Distrito Federal	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Espirito Santo	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Goias	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Maranhao	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Mato Grosso	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Mato Grosso do Sul	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Minas Gerais	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Para	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Paraiba	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Parana	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Pernambuco	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Piaui	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Rio de Janeiro	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Rio Grande do Norte	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Rio Grande do Sul	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Rondonia	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Roraima	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Santa Catarina	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Sao Paulo	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Sergipe	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE
<input type="checkbox"/>	States Discovery: Tocantins	Applications 1	Items 1	Triggers	Graphs	Discovery 1	Web	127.0.0.1: 10050	Template Covid-19 States Brazil	Enabled	ZBX   SNMP   JMX   IPMI	NONE

# Master http Agent Item

Master Item extracting data from http web site json format

All templates / Template Covid-19 States Brazil Applications 1 Items 1 Triggers Graphs Screens Discovery rules 1 Web scenarios

Template Linked templates Tags Macros

\* Template name

Visible name

\* Groups    
type here to search

Description

\* Name

Type HTTP agent

\* Key

\* URL

Query fields

Name	Value
name	value

Request type GET

Timeout 15s

Request body type Raw data JSON data XML data

Request body

Headers

Name	Value
name	value

Expected status codes 200

<input type="checkbox"/>	Wizard	Name ▼	Triggers	Key	Interval	History	Trends	Type	Applications	Status	Info
<input type="checkbox"/>	...	Covid-19 data		dados.covid	4h	1d		HTTP agent	dados	Enabled	

Displaying 1 of 1 found

# Low level Discovery using dependente item

Master Item extracting data from http web site json format

<input type="checkbox"/>	Host	Name ▼	Items	Triggers	Graphs	Hosts	Key	Interval	Type	Status	Info
<input type="checkbox"/>	Template Covid-19 States Brazil	<a href="#">Covid-19 data: Descubre estados</a>	Item prototypes 6	Trigger prototypes	Graph prototypes	Host prototypes	descubre.estados		Dependent item	Enabled	

Displaying 1 of 1 found

0 selected [Enable](#) [Disable](#) [Execute now](#) [Delete](#)

All templates / Template Covid-19 States Brazil / Discovery list / [Descubre estados](#) / Item prototypes 6 / Trigger prototypes / Graph prototypes / Host prototypes

Discovery rule / Preprocessing / LLD macros / **Filters** / Overrides

\* Name

Type

\* Key

\* Master item  [Select](#)

\* Keep lost resources period

Description

Enabled ☒

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)

Discovery rule / Preprocessing / LLD macros / **Filters** / Overrides

LLD macros

LLD macro	JSONPath	
<input type="text" value="{#STATE}"/>	<input type="text" value="\$state"/>	<a href="#">Remove</a>
<input type="text" value="{#UF}"/>	<input type="text" value="\$uf"/>	<a href="#">Remove</a>

[Add](#)

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)

Discovery rule / Preprocessing / LLD macros / **Filters** / Overrides

Filters

Label Macro		Regular expression	Action
A <input type="text" value="{#STATE}"/>	matches	<input type="text" value="{HOST.NAME}"/>	<a href="#">Remove</a>

[Add](#)

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)



# Dependente Prototype item

## Covid-19 information for each state

### Item prototypes

All hosts / Alagoas Enabled [ZBX] [SNMP] [JMX] [IPMI] Discovery list / Descobre estados Item prototypes 5 Trigger prototypes Graph prototypes									
<input type="checkbox"/>	Wizard	Name ▼	Key	Interval	History	Trends	Type	Application	
<input type="checkbox"/>	...	Template Covid-19 States Brazil: Data Covid-19 (#STATE): Number of suspects (#UF)	covid.suspeitos[#UF]	90d	365d		Dependent item	dados	
<input type="checkbox"/>	...	Template Covid-19 States Brazil: Data Covid-19 (#STATE): Number of descates (#UF)	covid.descartados[#UF]	90d	365d		Dependent item	dados	
<input type="checkbox"/>	...	Template Covid-19 States Brazil: Data Covid-19 (#STATE): Number of deaths (#UF)	covid.obitos[#UF]	90d	365d		Dependent item	dados	
<input type="checkbox"/>	...	Template Covid-19 States Brazil: Data Covid-19 (#STATE): Number of cases (#UF)	covid.casos[#UF]	90d	365d		Dependent item	dados	
<input type="checkbox"/>	...	Template Covid-19 States Brazil: Covid-19 data: Data Covid-19 (#STATE)	dados.covid[#UF]	90d			Dependent item	dados	

### em prototype Preprocessing

\* Name

Type

\* Key

\* Master item

Type of information

\* History storage period

New application

\* Name

Type

\* Key

\* Master item

Type of information

Units

\* History storage period

### Preprocessing steps

	Name	Parameters
1:	JSONPath	<input type="text" value="\$ .data"/>
2:	JSONPath	<input type="text" value="\$.[?(@.uf == \" {#uf}\")]"=""/>
3:	JavaScript	<input ");"="" type="text" value="return value.replace(/^.\/,\"/> <input type="button" value="Edit"/>
4:	JavaScript	<input ");"="" type="text" value="return value.replace(/.\/,\"/> <input type="button" value="Edit"/>

[Add](#)

### Preprocessing steps

	Name	Parameters
1:	JSONPath	<input type="text" value="\$ .cases"/>

[Add](#)

# Gelocalization Reference

Master item, and dependent item with preprocessing to collect the geo localization, it will be use in world map Grafana plugin.

Preprocessing

\* Name

Type

\* Key

\* URL

Query fields

Name	Value	
q	Salvador	<a href="#">Remove</a>
APPID	4f8c5d9fa158ad43b89de0fb18745b1d	<a href="#">Remove</a>
units	metric	<a href="#">Remove</a>

[Add](#)

Wizard	Name ▼	Triggers	Key	Interval	History	Trends	Type	Application
...	Master Geoloc		geoloc	24h	90d		HTTP agent	ge
...	Master Geoloc: Longitude		longitude		90d	365d	Dependent item	ge
...	Master Geoloc: Latitude		latitude		90d	365d	Dependent item	ge

\* Name

Type

\* Key

\* Master item

pe of information

Units

ry storage period

1d storage period

Show value

New application

Applications

Preprocessing

Preprocessing steps

	Name	Parameters
1:	<input type="text" value="JSONPath"/>	<input type="text" value="\$..coord.lat"/>

[Add](#)

# Lastest data

Follow the latest data with a filter in the host Sao Paulo

Host groups   Name

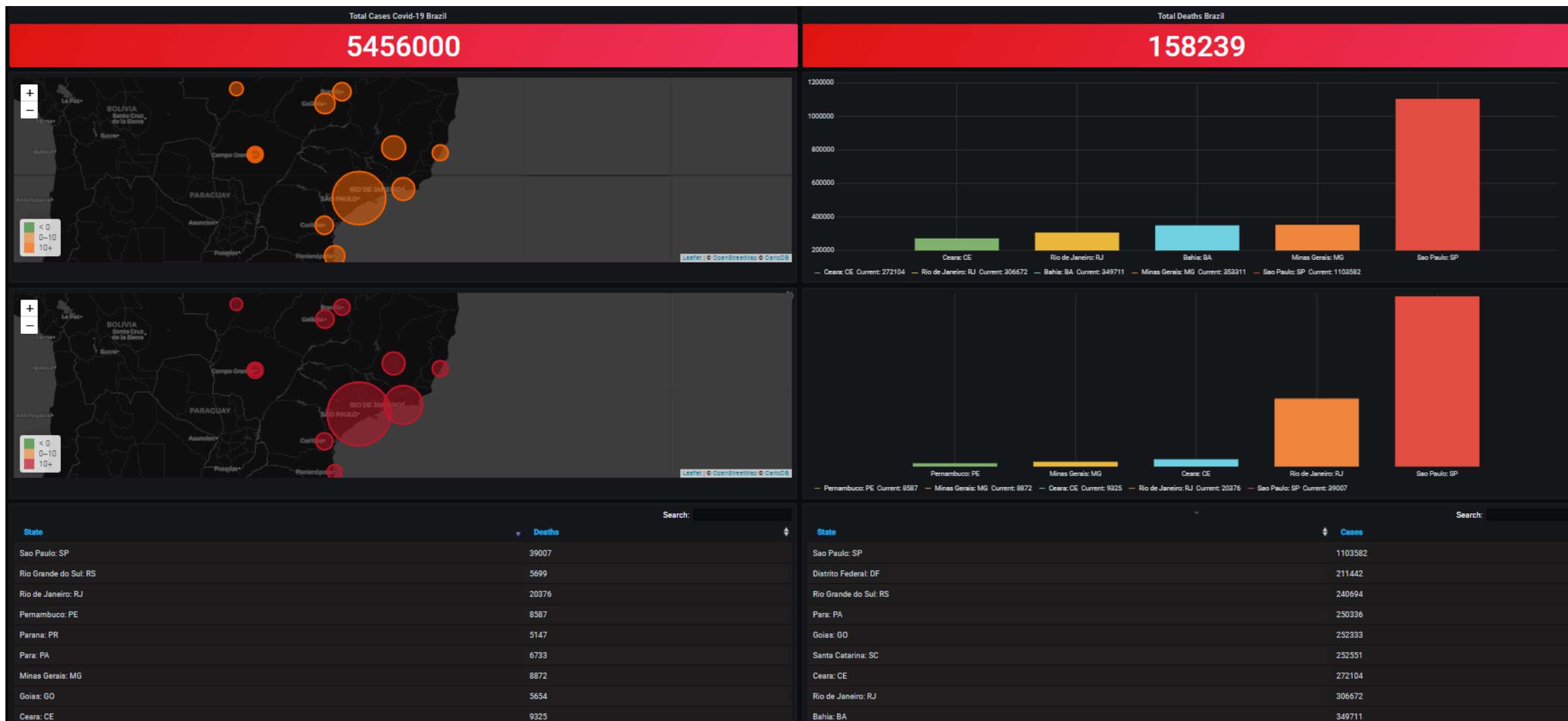
Hosts   Show items without data ☒

Application   Show details ☒

<input type="checkbox"/> Host	Name ▾	Interval	History	Trends	Type	Last check	Last value	Change
<u>Sao Paulo</u>	SP (5 Items)							
<input type="checkbox"/>	Number of suspects SP <a href="#">covid.suspeitos[SP]</a>		90d	365d	Dependent item	2020-10-28 22:29:41	5334	<a href="#">Graph</a>
<input type="checkbox"/>	Number of descates SP <a href="#">covid.descartados[SP]</a>		90d	365d	Dependent item	2020-10-28 22:29:41	596	<a href="#">Graph</a>
<input type="checkbox"/>	Number of deaths SP <a href="#">covid.obitos[SP]</a>		90d	365d	Dependent item	2020-10-28 22:29:41	39007	<a href="#">Graph</a>
<input type="checkbox"/>	Number of cases SP <a href="#">covid.casos[SP]</a>		90d	365d	Dependent item	2020-10-28 22:29:41	1103582	<a href="#">Graph</a>
<input type="checkbox"/>	Data Covid-19 Sao Paulo		90d		Dependent item	2020-10-28 22:29:41	{ "uid": 35, "uf": "SP", "state": "Sao Paulo", "cases..." }	<a href="#">History</a>
<u>Sao Paulo</u>	- other - (3 Items)							
	Longitude <a href="#">longitude</a>	90d	365d	Dependent i...	2020-10-29 10:08:37	-46.64		
	Latitude <a href="#">latitude</a>	90d	365d	Dependent i...	2020-10-29 10:08:37	-23.55		
	Get Location <a href="#">tempo</a>	1m	90d	HTTP agent	2020-10-29 10:08:37	{ "coord": { "lon": -46.64, "lat..." }		
<u>Sao Paulo</u>	SP (5 Items)							

Displaying 5 c

# Final visualization with Grafana



Thanks!

ZABBIX 2019  
Conference  
LATIN AMERICA

Um acesso. Poder  
e segurança em  
todo lugar.