

ZABBIX '25

CONFERENCE

LATIN AMERICA

Descoberta de Host com CSV

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Quem somos ?

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- ▶ Technical Support Engineer/
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Lucas Frade dos Santos



- ▶ Technical Support Engineer
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- ▶ Serra/ES

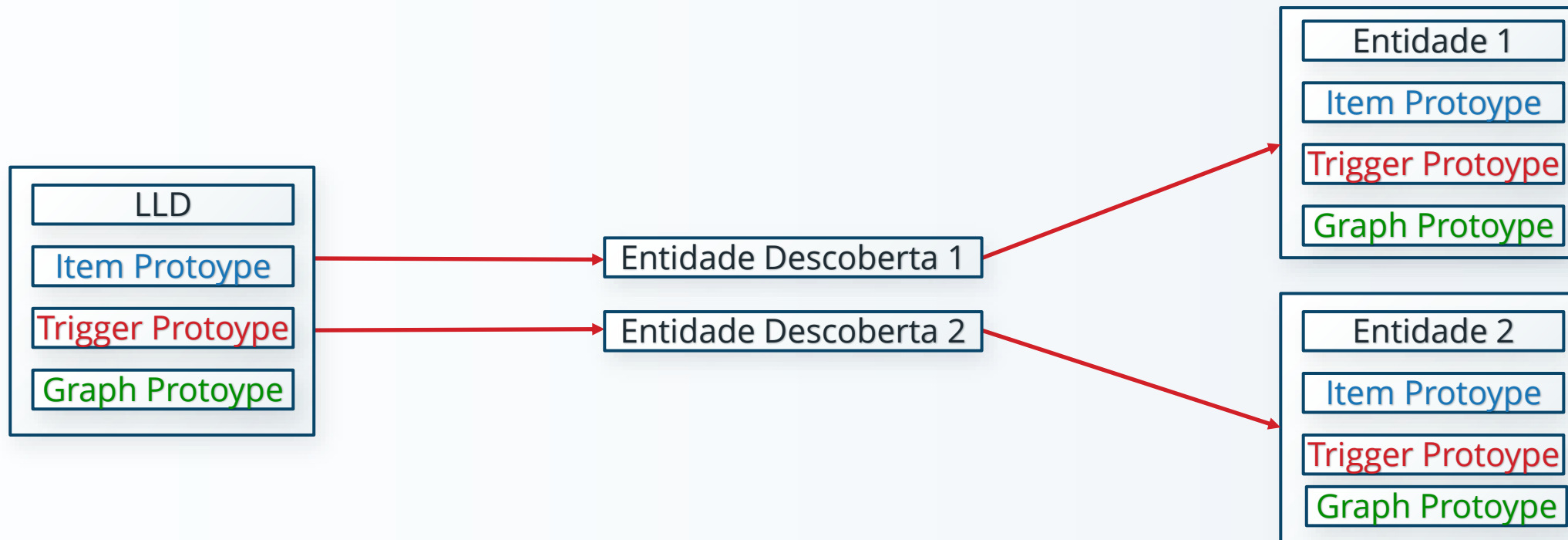
Low Level Discovery



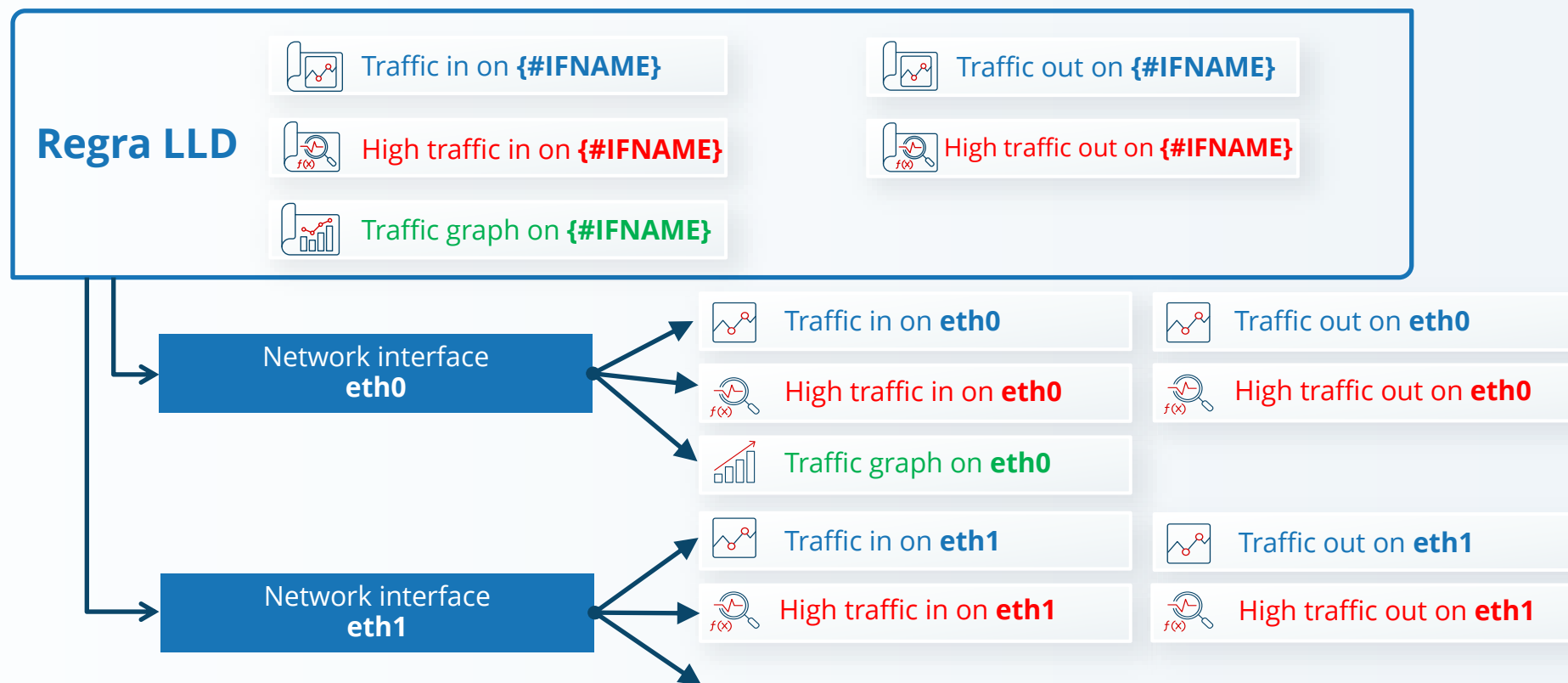
Conceito

Low Level Discovery é uma funcionalidade do Zabbix que permite automatizar a criação de entidade.

Facilita o gerenciamento de ambientes dinâmicos e de grande escala por meio da criação de: **Hosts**, **Itens**, **Gráficos** e **Triggers**



Protótipos



Protótipos

No Frontend do Zabbix, as regras de descoberta utilizam os seguintes protótipos de entidades (em azul)

Protótipos									
All templates / Linux by Zabbix agent Items 43 Triggers 15 Graphs 8 Dashboards 2 Discovery rules 3 Web scenarios Filter									
☐ Template	Name ▲	Items	Triggers	Graphs	Hosts	Key	Interval	Type	Status
☐ Linux by Zabbix agent	Block devices discovery	Item prototypes 9	Trigger prototypes 1	Graph prototypes 3	Host prototypes	vfs.dev.discovery	1h	Zabbix agent	Enabled
☐ Linux by Zabbix agent	Linux: Get filesystems: Mounted filesystem discovery	Item prototypes 6	Trigger prototypes 5	Graph prototypes 1	Host prototypes	vfs.fs.dependent.discovery		Dependent item	Enabled
☐ Linux by Zabbix agent	Network interface discovery	Item prototypes 9	Trigger prototypes 4	Graph prototypes 1	Host prototypes	net.if.discovery	1h	Zabbix agent	Enabled
Displaying 3 of 3 found									

Entidades

Os protótipos são criados pela regra LLD como itens regulares.

Protótipos de item

All hosts / Production server Enabled ZBX Discovery list / Network interface discovery Item prototypes 2 Trigger prototypes Graph prototypes 1 Host prototypes

☐	Name ▲	Key	Interval	History	Trends	Type	Create enabled	Discover	Tags
☐	... Interface {#IFNAME}: Bits received	net.if.in["{#IFNAME}"]	3m	7d	365d	Zabbix agent	Yes	Yes	component: network interface: {#IFNAME}
☐	... Interface {#IFNAME}: Bits sent	net.if.out["{#IFNAME}"]	3m	7d	365d	Zabbix agent	Yes	Yes	component: network interface: {#IFNAME}

Displaying 2 of 2 found

Todas as entidades criadas por LLD serão precedidas pelo nome da regra em **laranja** no nome do item.

Itens criados de protótipos

Regra LLD

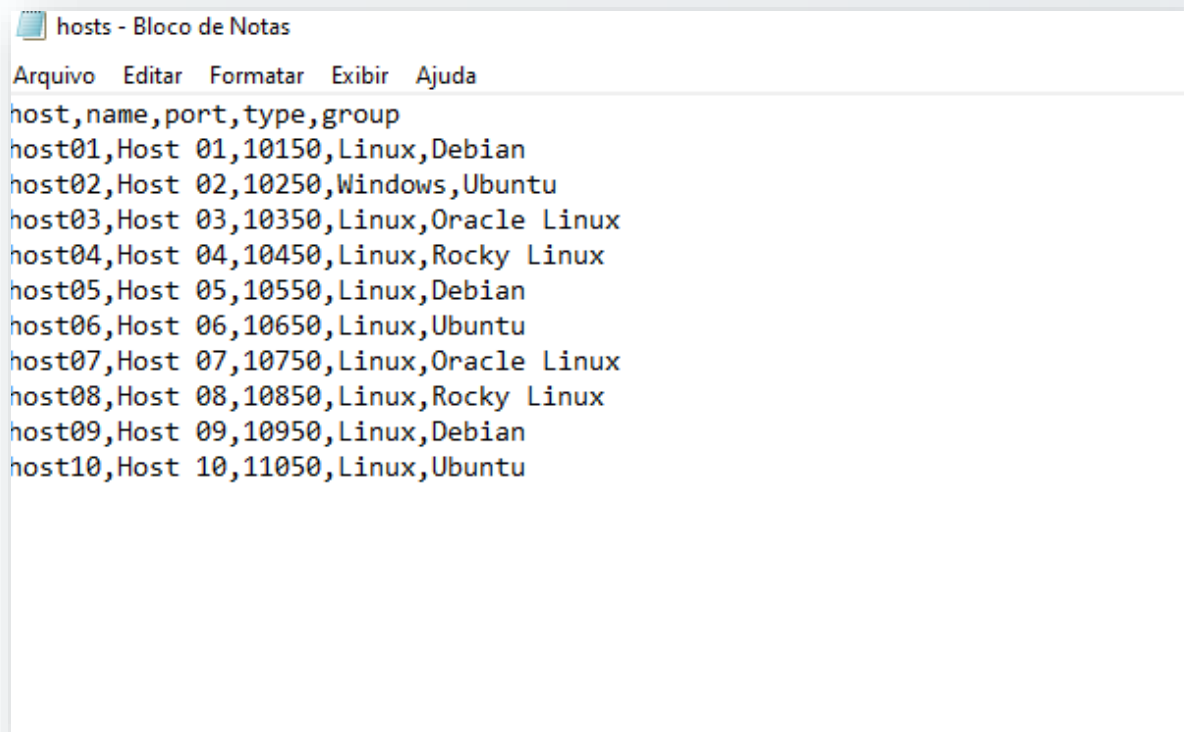
☐	Name ▲	Triggers	Key	Interval	History	Trends	Type	Status	Tags	Info
☐	... Network interface discovery: Interface eth0: Bits received		net.if.in["eth0"]	3m	7d	365d	Zabbix agent	Enabled	component: network interface: eth0	
☐	... Network interface discovery: Interface eth0: Bits sent		net.if.out["eth0"]	3m	7d	365d	Zabbix agent	Enabled	component: network interface: eth0	
☐	... Network interface discovery: Interface eth1: Bits received		net.if.in["eth1"]	3m	7d	365d	Zabbix agent	Enabled	component: network interface: eth1	
☐	... Network interface discovery: Interface eth1: Bits sent		net.if.out["eth1"]	3m	7d	365d	Zabbix agent	Enabled	component: network interface: eth1	

Displaying 4 of 4 found

Utilizando CSV

Uma das maneiras de automatizar o processo de criação de hosts no Zabbix é utilizando regras de descoberta.

Para isto, vamos utilizar um arquivo no formato CSV (valores separados por vírgula)



```
hosts - Bloco de Notas
Arquivo  Editar  Formatar  Exibir  Ajuda
host,name,port,type,group
host01,Host 01,10150,Linux,Debian
host02,Host 02,10250,Windows,Ubuntu
host03,Host 03,10350,Linux,Oracle Linux
host04,Host 04,10450,Linux,Rocky Linux
host05,Host 05,10550,Linux,Debian
host06,Host 06,10650,Linux,Ubuntu
host07,Host 07,10750,Linux,Oracle Linux
host08,Host 08,10850,Linux,Rocky Linux
host09,Host 09,10950,Linux,Debian
host10,Host 10,11050,Linux,Ubuntu
```

No arquivo temos as colunas:

- ▶ Host
- ▶ Name
- ▶ Port
- ▶ Type
- ▶ Group

Utilizando CSV

O arquivo CSV foi criado na pasta 'C:\hosts' com o nome 'hosts.csv' em uma máquina Windows 10 com agente 2 instalado.

Para que o Zabbix consiga ler seu conteúdo vamos utilizar a chave '**vfs.file.contents**' do **Zabbix Agent**.

The screenshot displays the Zabbix web interface for configuring a Discovery rule. The tabs at the top are 'Discovery rule', 'Preprocessing 1', 'LLD macros 5', 'Filters', and 'Overrides'. The 'Discovery rule' tab is active.

The configuration fields are as follows:

- Name:** Discovery Hosts CSV
- Type:** Zabbix agent
- Key:** vfs.file.contents[C:\hosts\hosts.csv]
- Host interface:** 192.168.17.48:10050
- Update interval:** 1h
- Custom intervals:**

Type	Interval	Period
Flexible	Scheduling	50s
		1-7,00:00-24:00

Buttons: Add, Remove
- Timeout:** Global, Override, 3s, Timeouts
- Delete lost resources:** Never, Immediately, After, 7d
- Disable lost resources:** Never, Immediately, After
- Description:** (Empty text area)
- Enabled:** ☒

At the bottom, there are buttons: Update, Clone, Execute now, Test, Delete, and Cancel.

Utilizando CSV

Pré-processamento *CSV to JSON* especificando **delimitadores** e **cabeçalhos**.

Discovery rules

All hosts / WINDOWS-VM Enabled Discovery list / **Discovery Hosts CSV** Item prototypes Trigger prototypes Graph prototypes Host prototypes 1

Discovery rule **Preprocessing 1** LLD macros 5 Filters Overrides

Preprocessing steps	Name	Parameters	Custom on fail	Actions
1:	CSV to JSON	, ☒ With header row	☐	Test Remove Test all steps

[Add](#)

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

Utilizando CSV

Valores recebidos

Sem o pré-processamento

```
1 host,name,port,type,group
2 host01,Host 01,10150,Linux,Debian
3 host02,Host 02,10250,Windows,Ubuntu
4 host03,Host 03,10350,Linux,Oracle Linux
5 host04,Host 04,10450,Linux,Rocky Linux
6 host05,Host 05,10550,Linux,Debian
7 host06,Host 06,10650,Linux,Ubuntu
8 host07,Host 07,10750,Linux,Oracle Linux
9 host08,Host 08,10850,Linux,Rocky Linux
10 host09,Host 09,10950,Linux,Debian
11 host10,Host 10,11050,Linux,Ubuntu
```

Após o pré-processamento

```
1 [
2   [
3     {
4       "host": "host01",
5       "name": "Host 01",
6       "port": "10150",
7       "type": "Linux",
8       "group": "Debian"
9     },
10    {
11      "host": "host02",
12      "name": "Host 02",
13      "port": "10250",
14      "type": "Windows",
15      "group": "Ubuntu"
16    },
17    {
18      "host": "host03",
19      "name": "Host 03",
20      "port": "10350",
21      "type": "Linux",
22      "group": "Oracle Linux"
23    },
24    {
25      "host": "host04",
26      "name": "Host 04",
27      "port": "10450",
28      "type": "Linux",
29      "group": "Rocky Linux"
30    },
31  ]
]
```

Utilizando CSV

E se não marcarmos a opção *With header row*?

Preprocessing steps ?

	Name	Parameters		
1:	CSV to JSON	,	"	☐ With header row

Add

Type of information Text

Utilizando CSV

Resultado

```
1  [
2  [
3  {
4      "1": "host",
5      "2": "name",
6      "3": "port",
7      "4": "type",
8      "5": "group"
9  },
10 {
11     "1": "host01",
12     "2": "Host 01",
13     "3": "10150",
14     "4": "Linux",
15     "5": "Debian"
16 },
17 {
18     "1": "host02",
19     "2": "Host 02",
20     "3": "10250",
21     "4": "Windows",
22     "5": "Ubuntu"
23 },
24 {
25     "1": "host03",
26     "2": "Host 03",
27     "3": "10350",
28     "4": "Linux",
29     "5": "Oracle Linux"
30 },
31 ]
```

Utilizando CSV

Macros de LLD (descoberta)

LLD macros 5

Filters

Overrides

LLD macros

LLD macro	JSONPath	
{#HOST_GROUP}	\$.group	Remove
{#HOST_HOST}	\$.host	Remove
{#HOST_NAME}	\$.name	Remove
{#HOST_PORT}	\$.port	Remove
{#HOST_TYPE}	\$.type	Remove
Add		

Protótipo de Host



Conceito

Protótipos de host são modelos usados para criar hosts por meio de regras de descoberta de baixo nível (LLD).



Antes de serem descobertos como hosts reais, esses protótipos **não podem conter itens nem triggers**, exceto aqueles que são herdados de **templates vinculados**.

Protótipo do host

Host

IPMI

Tags 1

Macros

Inventory

Encryption

* Host name

{#HOST_HOST}

Visible name

{#HOST_NAME}

Templates

Name

Discovery CSV

type here to search

Action

Unlink

Select

* Host groups

Virtual machines ✕

type here to search

Select

Group prototypes

{#HOST_TYPE}/{#HOST_GROUP}

Remove

Add

Interfaces

Inherit

Custom

Type

IP address

DNS name

Connect to

Port

Default

Agent

192.168.17.86

IP

DNS

{#HOST_PORT}

☒ Remove

Add

Monitored by

Server

Proxy

Proxy group

Create enabled

☒

Discover

☒

Update

Clone

Delete

Cancel

Protótipo do host

TAGs utilizadas nas **macros** de descoberta

[Host](#) [IPMI](#) [Tags 1](#) [Macros](#) [Inventory](#) [Encryption](#)

Tags

Name	Value	
Host Type	{#HOST_TYPE}	Remove
Add		

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

Template Discovery CSV



Template

Item **mestre** que recebe as informações do Sistema Operacional (Docker)

Item

Item Tags Preprocessing

* Name

Get OS Data

Type

Zabbix agent

* Key

os.get

Select

Type of information

Text

* Update interval

30s

Custom intervals

Type

Interval

Period

Flexible

Scheduling

50s

1-7,00:00-24:00

Remove

Add

* Timeout

Global

Override

3s

Timeouts

* History

Do not store

Store up to

31d

Populates host inventory field

-None-

Description

Enabled

☒

Update

Clone

Test

Delete

Cancel

```
{"NAME": "Oracle Linux Server", "PRETTY_NAME": "Oracle Linux Server 9.5", "VERSION_ID": "9.5", "VERSION": "9.5", "ID": "ol", "ID_LIKE": "fedora", "PLATFORM_ID": "platform:el9"}
```

```
{"NAME": "Debian GNU/Linux", "PRETTY_NAME": "Debian GNU/Linux 12 (bookworm)", "VERSION_ID": "12", "VERSION": "12 (bookworm)", "VERSION_CODENAME": "bookworm", "ID": "debian"}
```

Template

Item **dependente** que preenche o campo de **inventário** OS (Full details)

Item

Item Tags Preprocessing 1

* Name

Type

* Key

Type of information

* Master item

* History

Value mapping

Populates host inventory field

Description

Enabled ☒

Item

Item Tags Preprocessing 1

Preprocessing steps ?

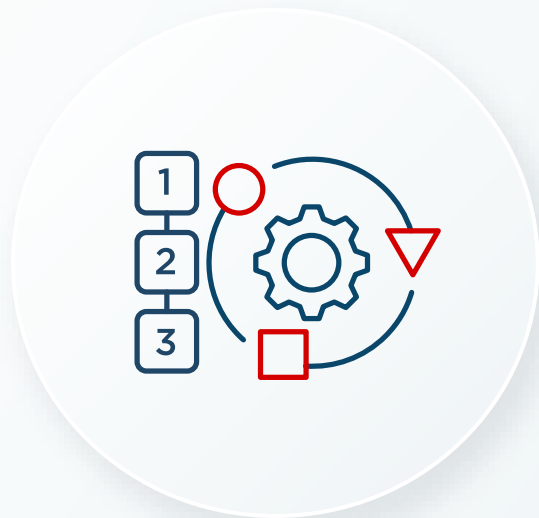
	Name	Parameters	Custom on fail	Actions
1:	JSONPath	\$PRETTY_NAME	☐	Test Remove

[Add](#)

Type of information

[Test all steps](#)

Hosts Descobertos



Hosts

Hosts **criados** pela regra LLD

☐ Name ▲	Items	Triggers	Graphs	Discovery	Web	Interface	Proxy	Templates	Status	Availability
☐ Discovery Hosts CSV: Host 01	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10150		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 02	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10250		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 03	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10350		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 04	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10450		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 05	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10550		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 06	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10650		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 07	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10750		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 08	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10850		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 09	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:10950		Discovery CSV	Enabled	ZBX
☐ Discovery Hosts CSV: Host 10	Items 2	Triggers	Graphs	Discovery	Web	192.168.17.86:11050		Discovery CSV	Enabled	ZBX
☐ WINDOWS-VM	Items 1	Triggers	Graphs	Discovery 1	Web	192.168.17.48:10050			Enabled	ZBX

Hosts

Propriedades de host criadas

The image displays three overlapping screenshots of the Zabbix web interface, specifically the 'Host' configuration page, illustrating the 'Propriedades de host criadas' (Host properties created).

Top Left Screenshot (Host Tab):

- Host:** host05
- Visible name:** Host 05
- Discovered by:** Discovery Hosts CSV
- Host groups:** Linux/Debian, Virtual machines
- Interfaces:** Agent, 192.168.17.86, IP, 10550
- Monitored by:** Server
- Enabled:** ☒

Top Right Screenshot (Inventory Tab):

- Disabled:** ☐ **Manual:** ☐ **Automatic:** ☒
- Type:** (empty)
- Type (Full details):** (empty)
- Name:** (empty)
- Alias:** (empty)
- OS:** (empty)
- OS (Full details):** Debian GNU/Linux 12 (bookworm) [Get Full Name](#)
- OS (Short):** (empty)

Bottom Screenshot (Tags Tab):

- Tags:**
- | Name | Value |
|-----------|-----------------------------------|
| Host Type | Linux (created by host discovery) |
- Buttons:** [Add](#), [Update](#), [Clone](#), [Delete](#), [Cancel](#)

Exportando hosts

Por padrão, o Zabbix **não exporta** hosts descobertos por LLD

É possível fazer de várias formas, a mais **indicada** é através da API do Zabbix

Uma outra maneira é fazer através do módulo **SQL Exporter**

```
cd /usr/share/zabbix/ui/modules
mkdir zabbix-module-sqlexplorer
wget https://github.com/gr8b/zabbix-module-sqlexplorer/releases/download/v1.13/v1.13-zabbix-6.4-7.2.zip
unzip v1.13-zabbix-6.4-7.2.zip
mv * zabbix-module-sqlexplorer/
```

Exportando hosts

Em *Administration > General > Modules* – verificamos todos os módulos configurados no Zabbix

☐ Name ▲	Version	Author	Description
☐ Action log	1.0	Zabbix	Displays records about executed action operations (notifications, remote commands).
☐ Clock	1.0	Zabbix	Displays local, server, or specified host time.
☐ Discovery status	1.0	Zabbix	Displays the status summary of the active network discovery rules.
☐ Favorite graphs	1.0	Zabbix	Displays shortcuts to the most needed graphs (marked as favorite).
☐ Favorite maps	1.0	Zabbix	Displays shortcuts to the most needed network maps (marked as favorite).
☐ Gauge	1.0	Zabbix	Displays the value of a single item as gauge.
☐ Geomap	1.0	Zabbix	Displays hosts as markers on a geographical map.
☐ Graph	1.0	Zabbix	Displays data of up to 50 items as line, points, staircase, or bar charts.
☐ Graph (classic)	1.0	Zabbix	Displays a single custom graph or a simple graph.
☐ Graph prototype	1.0	Zabbix	Displays a grid of graphs created by low-level discovery from either a graph prototype or an item prototype.
☐ Honeycomb	1.0	Zabbix	Displays item values as a honeycomb.
☐ Host availability	1.0	Zabbix	Displays the host count by status (available/unavailable/unknown).
☐ Host card	1.0	Zabbix	Displays the most relevant host information.
☐ Host navigator	1.0	Zabbix	Displays host hierarchy with ability to control other widgets based on selected host.
☐ Item history	1.0	Zabbix	Displays the latest data for the selected items with an option to add progress bar visualizations, customize report columns, and display images for binary data types.
☐ Item navigator	1.0	Zabbix	Displays item hierarchy with ability to control other widgets based on selected item.
☐ Item value	1.0	Zabbix	Displays the value of a single item prominently.
☐ Map	1.0	Zabbix	Displays either a single configured network map or one of the configured network maps in the map navigation tree.
☐ Map navigation tree	1.0	Zabbix	Allows to build a hierarchy of existing maps and display problem statistics for each included map and map group.
☐ Pie chart	1.0	Zabbix	Displays item values as a pie or doughnut chart.
☐ Problem hosts	1.0	Zabbix	Displays the problem count by host group and the highest problem severity within a group.
☐ Problems	1.0	Zabbix	Displays currently open problems with quick access links to the problem details.
☐ Problems by severity	1.0	Zabbix	Displays the problem count by severity.
☐ SLA report	1.0	Zabbix	Displays SLA reports.
☐ System information	1.0	Zabbix	Displays the current status and system statistics of the Zabbix server and its associated components.
☐ Top hosts	1.0	Zabbix	Displays top N hosts that have the highest or the lowest item value (for example, CPU load) with an option to add progress-bar visualizations and customize report columns.
☐ Top items	1.0	Zabbix	Displays the latest item data and current status of each item for selected hosts.
☐ Top triggers	1.0	Zabbix	Displays top N triggers that have the most problems within the period of evaluation, sorted by the number of problems.
☐ Trigger overview	1.0	Zabbix	Displays trigger states for selected hosts.
☐ URL	1.0	Zabbix	Displays the content retrieved from the specified URL.
☐ Web monitoring	1.0	Zabbix	Displays the status summary of the active web monitoring scenarios.

Exportando hosts

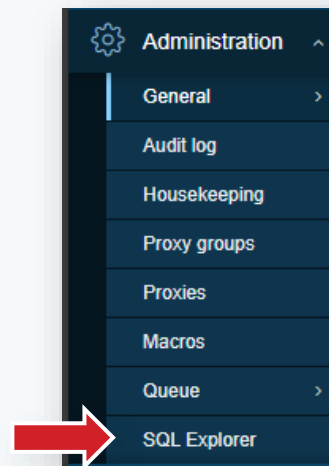
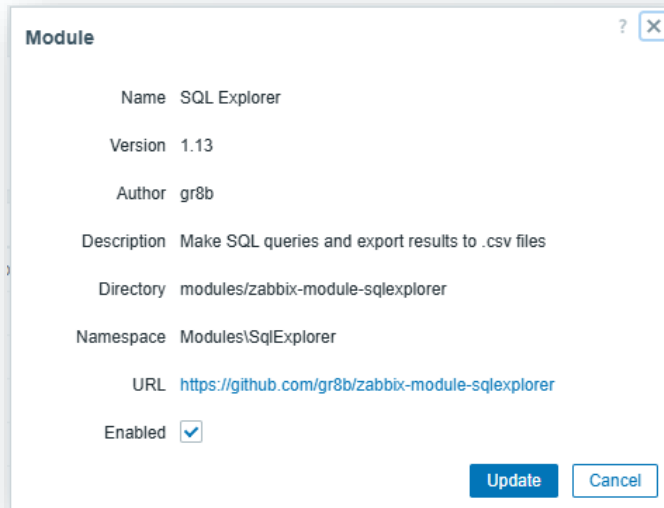
Ao clicar no botão *Scan Directory*, o módulo que acabamos de instalar será exibido



☐ SLA report	1.0	Zabbix	Displays SLA reports.	Enabled
☐ SQL Explorer	1.13	gr8b	Make SQL queries and export results to .csv files	Disabled
☐ System information	1.0	Zabbix	Displays the current status and system statistics of the Zabbix server and its associated components.	Enabled

Basta clicar em *Disabled* para ativar o módulo.

Informações gerais sobre o módulo instalado



Ao atualizar a página do Zabbix, em *Administration* uma nova opção estará disponível – *SQL Explorer*

Exportando hosts

Ao clicar no botão *CSV* poderemos fazer o **download** em formato *CSV* da consulta executada.

	A	B	C	D	E	F	G	H	I	J
1	Visible Name,"Hostname","IP address","Usa IP","Group","Status","Description","0"									
2	Host 01,"host01","192.168.17.86","Sim","Virtual machines, Linux/Debian","Habilitado","","1"									
3	Host 02,"host02","192.168.17.86","Sim","Virtual machines, Windows/Ubuntu","Habilitado","","1"									
4	Host 03,"host03","192.168.17.86","Sim","Virtual machines, Linux/Oracle Linux","Habilitado","","1"									
5	Host 04,"host04","192.168.17.86","Sim","Virtual machines, Linux/Rocky Linux","Habilitado","","1"									
6	Host 05,"host05","192.168.17.86","Sim","Virtual machines, Linux/Debian","Habilitado","","1"									
7	Host 06,"host06","192.168.17.86","Sim","Virtual machines, Linux/Ubuntu","Habilitado","","1"									
8	Host 07,"host07","192.168.17.86","Sim","Virtual machines, Linux/Oracle Linux","Habilitado","","1"									
9	Host 08,"host08","192.168.17.86","Sim","Virtual machines, Linux/Rocky Linux","Habilitado","","1"									
10	Host 09,"host09","192.168.17.86","Sim","Virtual machines, Linux/Debian","Habilitado","","1"									
11	Host 10,"host10","192.168.17.86","Sim","Virtual machines, Linux/Ubuntu","Habilitado","","1"									
12	WINDOWS-VM,"WINDOWS-VM","192.168.17.48","Sim","Windows","Habilitado","","1"									
13	Zabbix server,"Zabbix server","127.0.0.1","Sim","Zabbix servers","Habilitado","","1"									
14										

Obrigado Thank You Muchas Gracias

Leonardo Southier & Lucas Frade

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