

5 Discovery using ODBC SQL queries

Overview

This type of low-level [discovery](#) is done using SQL queries, whose results get automatically transformed into a JSON object suitable for low-level discovery.

Item key

SQL queries are performed using a “Database monitor” item type. Therefore, most of the instructions on [ODBC monitoring](#) page apply in order to get a working “Database monitor” discovery rule, the only difference being that a

```
db.odbc.discovery[<description>,<dsn>]
```

key should be used instead of “db.odbc.select[<description>,<dsn>]”.

Discovery using SQL queries is supported since Zabbix server/proxy 3.0.

As a practical example to illustrate how the SQL query is transformed into JSON, let us consider low-level discovery of Zabbix proxies by performing an ODBC query on Zabbix database. This is useful for automatic creation of “zabbix[proxy,<name>,lastaccess]” [internal items](#) to monitor which proxies are alive.

Let us start with discovery rule configuration:

Discovery rule **Filters**

Name

Type

Key

User name

Password

SQL query

Update interval

Custom intervals

Type	Interval	Period
<input checked="" type="checkbox"/> Flexible <input type="checkbox"/> Scheduling	<input type="text" value="50s"/>	<input type="text" value="1-7,00:00-24:00"/>

[Add](#)

Keep lost resources period

Description

Enabled

Here, the following direct query on Zabbix database is used to select all Zabbix proxies, together with the number of hosts they are monitoring. The number of hosts can be used, for instance, to filter out empty proxies:

```
mysql> SELECT h1.host, COUNT(h2.host) AS count FROM hosts h1 LEFT JOIN hosts h2 ON h1.hostid = h2.proxy_hostid WHERE h1.status IN (5, 6) GROUP BY h1.host;
+-----+-----+
| host   | count |
+-----+-----+
| Japan 1 |     5 |
| Japan 2 |    12 |
| Latvia |     3 |
+-----+-----+
```

```
3 rows in set (0.01 sec)
```

By the internal workings of “db.odbc.discovery[]” item, the result of this query gets automatically transformed into the following JSON:

```
{
  "data": [
    {
      "#{HOST}": "Japan 1",
      "#{COUNT}": "5"
    },
    {
      "#{HOST}": "Japan 2",
      "#{COUNT}": "12"
    },
    {
      "#{HOST}": "Latvia",
      "#{COUNT}": "3"
    }
  ]
}
```

It can be seen that column names become macro names and selected rows become the values of these macros.

If it is not obvious how a column name would be transformed into a macro name, it is suggested to use column aliases like “COUNT(h2.host) AS count” in the example above.

In case a column name cannot be converted into a valid macro name, the discovery rule becomes not supported, with the error message detailing the offending column number. If additional help is desired, the obtained column names are provided under DebugLevel=4 in Zabbix server log file:

```
$ grep db.odbc.discovery /tmp/zabbix_server.log
...
23876:20150114:153410.856 In db_odbc_discovery() query:'SELECT h1.host,
COUNT(h2.host) FROM hosts h1 LEFT JOIN hosts h2 ON h1.hostid =
h2.proxy_hostid WHERE h1.status IN (5, 6) GROUP BY h1.host;'
23876:20150114:153410.860 db_odbc_discovery() column[1]:'host'
23876:20150114:153410.860 db_odbc_discovery() column[2]:'COUNT(h2.host)'
23876:20150114:153410.860 End of db_odbc_discovery():NOTSUPPORTED
23876:20150114:153410.860 Item [Zabbix
server:db.odbc.discovery[proxies,{ $DSN}]] error: Cannot convert column #2
name to macro.
```

Now that we understand how a SQL query is transformed into a JSON object, we can use {#HOST} macro in item prototypes:

Item prototype Preprocessing

Name Last acces time of proxy {#HOST}

Type Zabbix internal

Key zabbix[proxy,{#HOST},lastaccess]

Type of information Numeric (unsigned)

Units unixtime

Update interval 60s

Custom intervals

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

Add

History storage period 90d

Trend storage period 365d

Show value As is [show value mappings](#)

Once discovery is performed, an item will be created for each proxy:

Items

All hosts / Zabbix server 1 Enabled ZBX SNMP JMX IPMI Applications 12 Items 70 Triggers

Filter

<input type="checkbox"/>	Wizard	Name	Triggers	Key
<input type="checkbox"/>		Proxy discovery: Last access time of proxy Japan1		zabbix[proxy,Japan1,lastacce
<input type="checkbox"/>		Proxy discovery: Last access time of proxy Japan2		zabbix[proxy,Japan2,lastacce
<input type="checkbox"/>		Proxy discovery: Last access time of proxy Latvia		zabbix[proxy,Latvia,lastaccess

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