

EPAM Systems, RD Dep., RD Dep.

MTN.NIX.05.Zabbix.Items

REVISION HISTORY					
Ver.	Description of Change	Author	Date	Approved	
				Name	Effective Date
1.0	Initial Version	Siarhei Beliakou	23/May/2017		

Task. Items

Task:

Assuming we have 2 servers (VMs) – ZabbixServer and Tomcat,
Configure:

1. Simple checks:
 - Zabbix Server WEB availability (80)
 - Zabbix DB is available (3306)
 - Tomcat availability (80, 8080)
 - Tomcat Server is available by ssh (22)
2. Calculated Checks:
 - CPU Load per Core (1, 5, 15min)
3. Internal Checks:
 - How many items are enabled
 - How many Servers are being monitored

T1

Create items and triggers for Zabbix

zabbix-server/items.php?hostid=10105&form=Create+item

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Items

All hosts / server Enabled **ZBX** SNMP JMX IPMI Applications 10 **Items 46** Triggers 19 Graphs 9 Discovery rules 2 Web scenarios

Name

Type

Key

Host interface

User name

Password

Type of information

Data type

zabbix-server/items.php?hostid=10105&form=Create+item

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Items

All hosts / server Enabled **ZBX** SNMP JMX IPMI Applications 10 **Items 47** Triggers 19 Graphs 9 Discovery rules 2 Web scenarios

Name

Type

Key

Host interface

User name

Password

Type of information

Data type

← ⓘ | zabbix-server/triggers.php?groupid=0&hostid=10105&form=Create+trigger

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Triggers

All hosts / server Enabled **ZBX** SNMP JMX IPMI Applications 10 Items 48 **Triggers 19** Graphs 9 Discovery rules 2 Web scenarios

Trigger Dependencies

Name

Severity

Expression

[Expression constructor](#)

OK event generation

PROBLEM event generation mode

OK event closes

← ⓘ | zabbix-server/triggers.php?groupid=0&hostid=10105&form=Create+trigger

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Triggers

All hosts / server Enabled **ZBX** SNMP JMX IPMI Applications 10 Items 48 **Triggers 20** Graphs 9 Discovery rules 2 Web scenarios

Trigger Dependencies

Name

Severity

Expression

[Expression constructor](#)

OK event generation

PROBLEM event generation mode

OK event closes

<input checked="" type="checkbox"/>	High	trigger_db_zabbix	{server.net.tcp.service[\"tcp\",3306].last()=0}	Enabled
<input checked="" type="checkbox"/>	High	trigger_zabbix	{server.net.tcp.service[\"http\",80].last()=0}	Enabled

Create tomcat ssh item and trigger

zabbix-server/items.php?form=update&hostid=10106&itemid=25481

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

Host groupsTemplatesHostsMaintenanceActionsEvent correlationDiscoveryIT services

Items

All hosts / 192.168.56.11EnabledZBXSNMPJMXIPMIApplications 10Items 51Triggers 22Graphs 9Discovery rules 2Web scenarios

Name

Chec_tomcat (ssh)

Type

Simple check

Key

net.tcp.service[ssh,192.168.56.10,22]

Select

Host interface

192.168.56.11 : 10050

User name

Password

zabbix-server/triggers.php?form=update&hostid=10106&triggerid=13607

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

Host groupsTemplatesHostsMaintenanceActionsEvent correlationDiscoveryIT services

Triggers

All hosts / 192.168.56.11EnabledZBXSNMPJMXIPMIApplications 10Items 51Triggers 23Graphs 9Discovery rules 2

TriggerDependencies

Name

trigger_check_tomcat (ssh)

Severity

Not classifiedInformationWarningAverageHighDisaster

Expression

{192.168.56.11:net.tcp.service[ssh,192.168.56.10,22].last()=0}

Add

Not classified	trigger_check_tomcat (80)	{192.168.56.11:net.tcp.service[http,192.168.56.11,80].last()=0}	Enabled
Not classified	trigger_check_tomcat (8080)	{192.168.56.11:net.tcp.service[http,192.168.56.11,8080].last()=0}	Enabled
High	trigger_check_tomcat (ssh)	{192.168.56.11:net.tcp.service[ssh,192.168.56.10,22].last()=0}	Enabled

zabbix-server/zabbix.php?action=dashboard.view

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

DashboardProblemsOverviewWebLatest dataTriggersGraphsScreensMapsDiscoveryIT services

Dashboard

Favourite graphs

No graphs added.

Graphs

Favourite screens

No screens added.

ScreensSlide shows

Favourite maps

No maps added.

Maps

Status of Zabbix

Parameter	Value	Details
Zabbix server is running	Yes	localhost10051
Number of hosts (enabled/disabled/templates)	41	3 / 0 / 38
Number of items (enabled/disabled/not supported)	162	158 / 0 / 4
Number of triggers (enabled/disabled (problem/ok))	85	85 / 0 [5 / 80]
Number of users (online)	2	1
Required server performance, new values per second	217	

Updated: 15:32:12

System status

Host group	Disaster	High	Average	Warning	Information	Not classified
Discovered hosts	0	2	0	0	0	1
Linux servers	0	2	0	0	0	1
Zabbix servers	0	0				

Host status

Host	Issue	Age	Info	Ack	Actions
192.168.56.11	trigger_check_tomcat (ssh)	1m 1s		No	
192.168.56.11	Change_number_of_items	1h 14m 3s		No	

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Item and trigger for tomcat 8080

zabbix-server/items.php?form=update&hostid=10106&itemid=25452

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Items

All hosts / 192.168.56.11 Enabled **ZBX** SNMP JMX IPMI Applications 10 Items 36 Triggers 18 Graphs 5 Discovery rules 2 Web scenarios

Name:

Type:

Key:

Host interface:

User name:

Password:

Type of information:

Data type:

Units:

Use custom multiplier: ☐

Update interval (in sec):

Custom intervals

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

[Add](#) [Remove](#)

History storage period (in days):

Trend storage period (in days):

zabbix-server/triggers.php?form=update&hostid=10106&triggerid=13597

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Triggers

All hosts / 192.168.56.11 Enabled **ZBX** SNMP JMX IPMI Applications 10 Items 36 Triggers 18 Graphs 5 Discovery rules 2 Web scenarios

Trigger Dependencies

Name:

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

Expression:

[Expression constructor](#)

Item and trigger for tomcat 80

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

Host groupsTemplatesHostsMaintenanceActionsEvent correlationDiscoveryIT services

Items

All hosts / 192.168.56.11EnabledZBXSNMPJMXPMIAApplications 10Items 50Triggers 22Graphs 9Discovery rules 2Web scenarios

Name

Chec_tomcat(80)

Type

Simple check

Key

net.tcp.service[http,192.168.56.11,80]

Select

Host interface

192.168.56.11:10050

User name

Password

Type of information

Numeric (unsigned)

Data type

Decimal

Check_tomcat(8080)

Triggers 1

net.tcp.service[http,192.168.56.11,8080]

30s

90d

365d

Simple check

Enabled

Chec_tomcat(80)

Triggers 1

net.tcp.service[http,192.168.56.11,80]

30s

90d

365d

Simple check

Enabled

Stop tomcat and see that triggers are working

zabbix-server/zabbix.php?action=dashboard.view

Search

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

DashboardProblemsOverviewWebLatest dataTriggersGraphsScreensMapsDiscoveryIT services

Dashboard

Favourite graphs

No graphs added.

Graphs

Favourite screens

No screens added.

ScreensSlide shows

Favourite maps

No maps added.

Maps

Status of Zabbix

Parameter	Value	Details
Zabbix server is running	Yes	localhost10051
Number of hosts (enabled/disabled/templates)	41	3 / 0 / 38
Number of items (enabled/disabled/not supported)	133	129 / 0 / 4
Number of triggers (enabled/disabled [problem/ok])	76	76 / 0 [5 / 71]
Number of users (online)	2	1
Required server performance, new values per second	1.74	

Updated: 14:32:25

System status

Host group	Disaster	High	Average	Warning	Information	Not classified
Discovered hosts	0	1	0	0	0	2
Linux servers	0	1	0	0	0	2
Zabbix servers	0	0	2	0	0	0

Host status

Host	Issue	Age	Intf
192.168.56.11	trigger_check_tomcat (8080)	3m 13s	
192.168.56.11	trigger_check_tomcat (80)	3m 14s	

And now start tomcat

zabbix-server/tr_status.php?ddreset=1

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

DashboardProblemsOverviewWebLatest dataTriggersGraphsScreensMapsDiscoveryIT services

Triggers

Filter ▲

Trigger status

AnyRecent problemsProblems

Acknowledge status

Any

Events

Hide all

Minimum trigger severity

Not classified

Age less than

☐ 14 days

Name

Application

Host inventory

Type

Add

Show hosts in maintenance

☒

Show details

☐

Apply

Reset

<input type="checkbox"/> Severity	Status	Info	Time ▼	Age	Ack	Host	Name
<input type="checkbox"/> Not classified	OK		2017-07-26 14:41:12	7m 59s	No 2	192.168.56.11	trigger_check_tomcat(8080)

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T2

#Create new items (Calculated)

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

Host groupsTemplatesHostsMaintenanceActionsEvent correlationDiscoveryIT services

Items

All hosts / 192.168.56.11EnabledZBXSNMPJMXIPMIApplications 10Items 53Triggers 24Graphs 10Discovery rules 2Web scenarios

NameCPU_calculated

TypeCalculated

Key

system.cpu.load[all,avg1]

Select

Formula

100*last("system.cpu.load[all,avg1]"/last("system.cpu.num[max]"))

Type of informationNumeric (unsigned)

Data typeDecimal

☐CPU_calculatedsystem.cpu.load[all,avg1]

☐Enabled.itemsTriggers 1zabbix[host,items]

T3

#Create new items for monitoring number of items and number of monitored hosts

<input type="checkbox"/>	Enabled items		zabbix[host,items]	30s	90d	365d	Zabbix internal		Enabled
<input type="checkbox"/>	Mounted filesystem discovery: Free disk space on /		vfs.fs.size[/,free]	1m	7d	365d	Zabbix agent	Filesystems	Enabled
<input type="checkbox"/>	Mounted filesystem discovery: Free disk space on /boot		vfs.fs.size[/boot,free]	1m	7d	365d	Zabbix agent	Filesystems	Enabled
<input type="checkbox"/>	Mounted filesystem discovery: Free disk space on /boot (percentage)	Triggers 1	vfs.fs.size[/boot,free]	1m	7d	365d	Zabbix agent	Filesystems	Enabled
<input type="checkbox"/>	Mounted filesystem discovery: Free disk space on / (percentage)	Triggers 1	vfs.fs.size[/,pfree]	1m	7d	365d	Zabbix agent	Filesystems	Enabled
<input type="checkbox"/>	Mounted filesystem discovery: Free inodes on /boot (percentage)	Triggers 1	vfs.fs.inode[/boot,pfree]	1m	7d	365d	Zabbix agent	Filesystems	Enabled
<input type="checkbox"/>	Mounted filesystem discovery: Free inodes on / (percentage)	Triggers 1	vfs.fs.inode[/,pfree]	1m	7d	365d	Zabbix agent	Filesystems	Enabled
<input type="checkbox"/>	Template OS Linux: Free swap space		system.swap.size[,free]	1m	7d	365d	Zabbix agent	Memory	Enabled
<input type="checkbox"/>	Template OS Linux: Free swap space in %	Triggers 1	system.swap.size[,pfree]	1m	7d	365d	Zabbix agent	Memory	Enabled
<input type="checkbox"/>	Template OS Linux: Host boot time		system.boottime	10m	7d	365d	Zabbix agent	General, OS	Enabled
<input type="checkbox"/>	Template OS Linux: Host local time		system.localtime	1m	7d	365d	Zabbix agent	General, OS	Enabled
<input type="checkbox"/>	*** Template OS Linux: Host name	Triggers 1	system.hostname	1h	7d		Zabbix agent	General, OS	Enabled
<input type="checkbox"/>	*** Template App Zabbix Agent: Host name of zabbix_agentd running	Triggers 1	agent.hostname	1h	7d		Zabbix agent	Zabbix agent	Enabled
<input type="checkbox"/>	Network interface discovery: Incoming network traffic on enp0s8		net.if.in[enp0s8]	1m	7d	365d	Zabbix agent	Network interfaces	Enabled
<input type="checkbox"/>	Network interface discovery: Incoming network traffic on enp0s3		net.if.in[enp0s3]	1m	7d	365d	Zabbix agent	Network interfaces	Enabled
<input type="checkbox"/>	Template OS Linux: Interrupts per second		system.cpu.intr	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled
<input type="checkbox"/>	Template OS Linux: Maximum number of opened files	Triggers 1	kernel.maxfiles	1h	7d	365d	Zabbix agent	OS	Enabled
<input type="checkbox"/>	Template OS Linux: Maximum number of processes	Triggers 1	kernel.maxproc	1h	7d	365d	Zabbix agent	OS	Enabled
<input type="checkbox"/>	Monitored hosts		zabbix[hosts]	30s	90d	365d	Zabbix internal		Enabled

zabbix-server/items.php?form=update&hostid=10108&itemid=25448

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Items

All hosts / 192.168.56.11 Enabled **ZBX** SNMP JMX IPMI Applications 10 **Items 49** Triggers 19 Graphs 9 Discovery rules 2 Web scenarios

Name: Enabled items

Type: Zabbix internal

Key: zabbix[host.items] [Select](#)

Type of information: Numeric (unsigned)

Data type: Decimal

Units:

Use custom multiplier: ☐ 1

Update interval (in sec): 30

Custom intervals

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

[Add](#)

History storage period (in days): 90

Trend storage period (in days): 365

Store value: As is

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

zabbix-server/items.php?form=update&hostid=10108&itemid=25449

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Items

All hosts / 192.168.56.11 Enabled **ZBX** SNMP JMX IPMI Applications 10 **Items 49** Triggers 19 Graphs 9 Discovery rules 2 Web scenarios

Name: Monitored_hosts

Type: Zabbix internal

Key: zabbix[hosts] [Select](#)

Type of information: Numeric (unsigned)

Data type: Decimal

Units:

Use custom multiplier: ☐ 1

Update interval (in sec): 30

Custom intervals

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

[Add](#)

History storage period (in days): 90

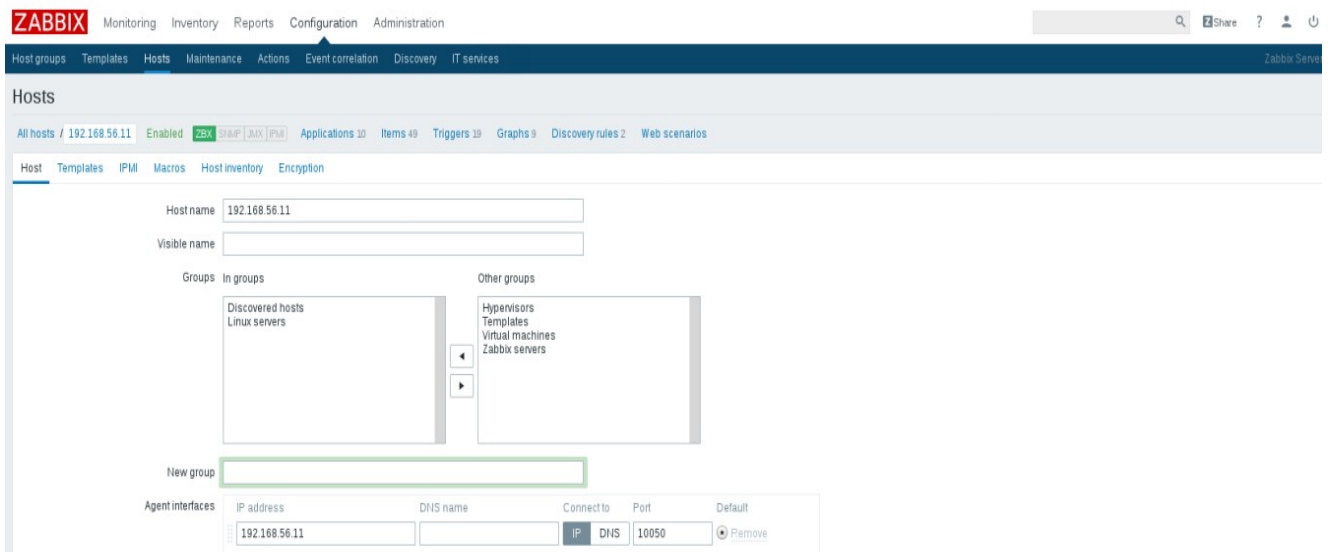
Trend storage period (in days): 365

Store value: As is

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

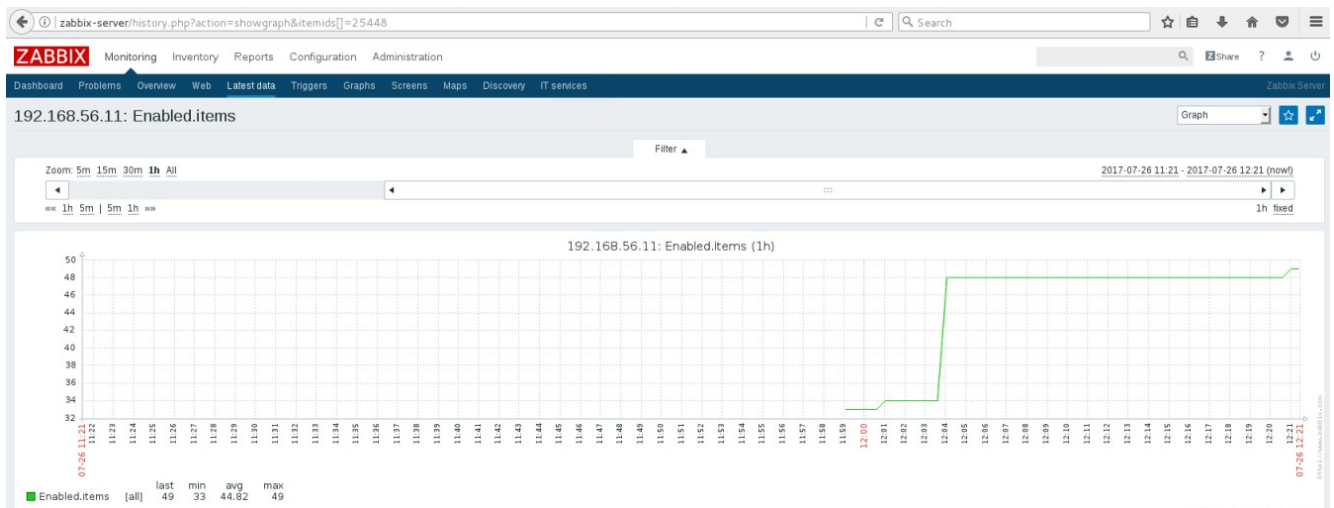
New application:

We see that we have 49 items



The screenshot shows the Zabbix web interface for configuring a host. The top navigation bar includes Monitoring, Inventory, Reports, Configuration, and Administration. The 'Hosts' section is active, showing a list of hosts with columns for Host name, Visible name, Groups, and Agent interfaces. The host '192.168.56.11' is selected, and its configuration is displayed. The 'Groups' section shows 'Discovered hosts' and 'Linux servers' in the 'In groups' list, and 'Hypervisors', 'Templates', 'Virtual machines', and 'Zabbix servers' in the 'Other groups' list. The 'Agent interfaces' section shows a single interface with IP address '192.168.56.11', DNS name, and port '10050'.

Now we open our graphs and see diagram with all items



Add a new trigger of number of items

zabbix-server/triggers.php?form=update&hostid=10108&triggerid=13604

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Triggers

All hosts / 192.168.56.11 Enabled ZBX SNMP JMX IPMI Applications 10 Items 48 **Triggers 20** Graphs 9 Discovery rules 2 Web scenarios

Trigger Dependencies

Name

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

Expression

[Expression constructor](#)

Delete one item (was 49 and now 48)

zabbix-server/hosts.php?form=update&hostid=10108&groupid=5

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Hosts

All hosts / 192.168.56.11 Enabled ZBX SNMP JMX IPMI Applications 10 Items 48 Triggers 20 Graphs 9 Discovery rules 2 Web scenarios

Host Templates IPMI Macros Host inventory Encryption

Host name

Visible name

Groups In groups Other groups

Discovered hosts Linux servers

Hypervisors Templates Virtual machines Zabbix servers

New group

Agent interfaces

IP address	DNS name	Connect to	Port	Default
192.168.56.11		<input checked="" type="radio"/> IP <input type="radio"/> DNS	10050	<input checked="" type="radio"/> Remove

[Add](#)

And our trigger is working

Last 20 issues						
Host	Issue	Last change	Age	Info	Ack	Actions
192.168.56.11	Change_number_of_items	2017-07-26 12:35:08	41s		No	
Zabbix server	Zabbix agent on Zabbix server is unreachable for 5 minutes	2017-07-26 11:23:30	1h 12m 19s		No	
Zabbix server	Zabbix discoverer processes more than 75% busy	2017-07-26 11:18:35	1h 17m 14s		No	
3 of 3 issues are shown Updated: 12:35:49						

Create item and develop custom trigger for log monitoring

For that task I create vh in httpd section with ProxyPass (80 → 192.168.56.11:8080)

```
<VirtualHost *:80>
    ProxyPass / http://192.168.56.11:8080/
</VirtualHost>
```

Change owners for httpd log files (chown zabbix -R)

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Items

All hosts / 192.168.56.11 Enabled ZBX SNMP JMX IPMI Applications 10 Items 52 Triggers 24 Graphs 10 Discovery rules 2 Web scenarios

Name

Type

Key

Type of information

Update interval (in sec)

History storage period (in days)

Log time format

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery IT services

Triggers

All hosts / 192.168.56.11 Enabled ZBX SNMP JMX IPMI Applications 10 Items 52 Triggers 24 Graphs 10 Discovery rules 2

Trigger Dependencies

Name

Severity

Expression

[Expression constructor](#)

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

DashboardProblemsOverviewWebLatest dataTriggersGraphsScreensMapsDiscoveryIT services

Dashboard

Favourite graphs

No graphs added.

Graphs

Favourite screens

No screens added.

ScreensSlide shows

Favourite maps

No maps added.

Maps

Status of Zabbix

Parameter	Value	Details
Zabbix server is running	Yes	localhost:10051
Number of hosts (enabled/disabled/templates)	41	3 / 0 / 38
Number of items (enabled/disabled/not supported)	165	161 / 0 / 4
Number of triggers (enabled/disabled [problem/ok])	88	88 / 0 [6 / 82]
Number of users (online)	2	1
Required server performance, new values per second	2.27	

Updated: 18:29:35

System status

Host group	Disaster	High	Average	Warning	Information	Not classified
Discovered hosts	1	2	0	0	1	0
Linux servers	1	2	0	0	1	0
Zabbix servers	0	0	2	0	0	0

Updated: 18:29:35

And after 1 minute we see empty Disaster block

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

DashboardProblemsOverviewWebLatest dataTriggersGraphsScreensMapsDiscoveryIT services

Dashboard

Favourite graphs

No graphs added.

Graphs

Favourite screens

No screens added.

ScreensSlide shows

Favourite maps

No maps added.

Maps

Status of Zabbix

Parameter	Value	Details
Zabbix server is running	Yes	localhost:10051
Number of hosts (enabled/disabled/templates)	41	3 / 0 / 38
Number of items (enabled/disabled/not supported)	165	161 / 0 / 4
Number of triggers (enabled/disabled [problem/ok])	88	88 / 0 [5 / 83]
Number of users (online)	2	1
Required server performance, new values per second	2.27	

Updated: 18:30:36

System status

Host group	Disaster	High	Average	Warning	Information	Not classified
Discovered hosts	0	2	0	0	1	0
Linux servers	0	2	0	0	1	0
Zabbix servers	0	0	2	0	0	0

Updated: 18:30:36