

EPAM Systems, RD Dep.**MTN.NIX.Zabbix_Java**

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

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Task. Java Monitoring with Java

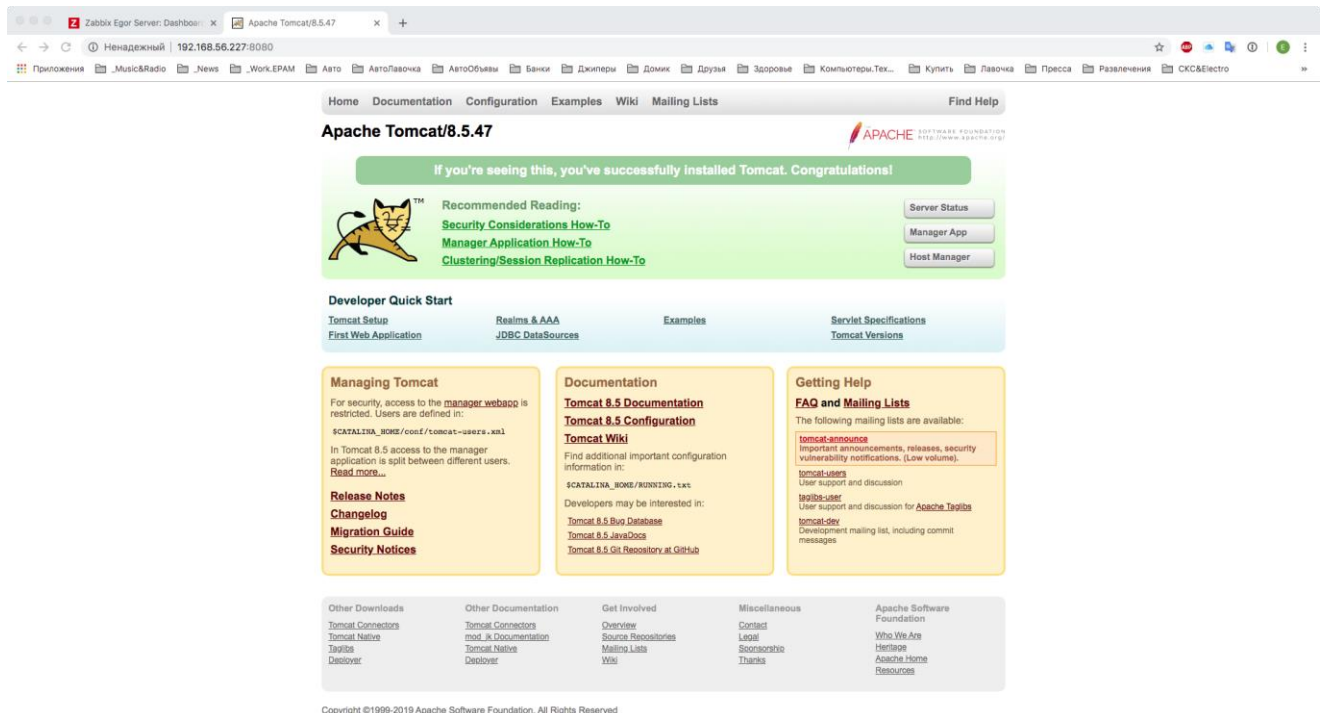
Task:

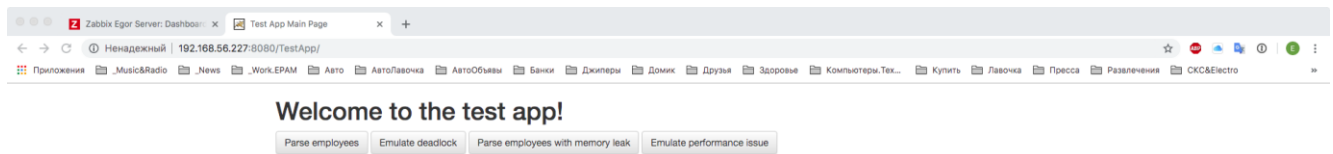
You should install and configure Zabbix server and agents.

Testing Infrastructure:

Vagrantfile to spin up 2 VMs (virtualbox):

- zabbix server, provisioned by Vagrant provisioner
- Zabbix agents on both VMs, provisioned by Vagrant provisioner
- Install Tomcat 7 on 2nd VM



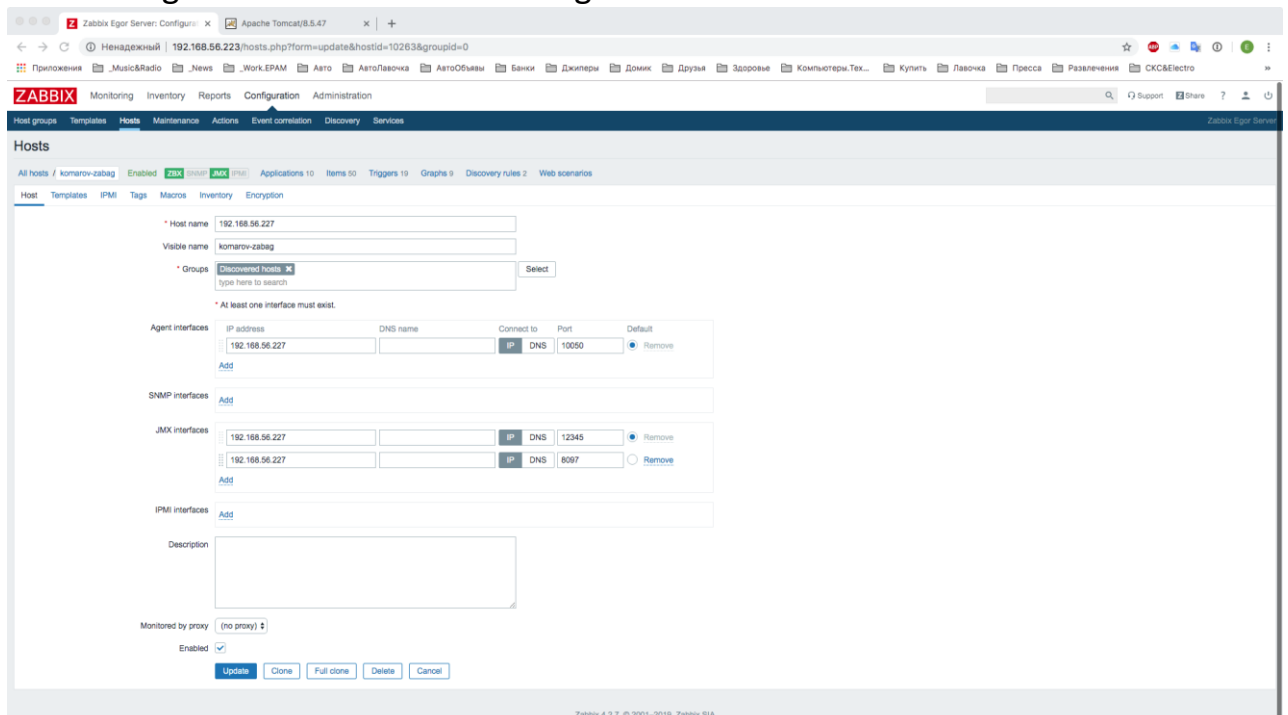


Other settings, Java GW install and configuration see on scripts.

Tasks:

1. Configure Zabbix to examine Java parameters via Java Gateway (<http://jmxmonitor.sourceforge.net/jmx.html>)

Let's configure JMX on komarov-zabag host:



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The screenshot shows the Zabbix 4.2.7 web interface. The 'Hosts' tab is active, displaying a form to add a new host. The form includes fields for Name, Templates, DNS, IP, and Port. There are also checkboxes for 'Monitored by' (Any, Server, Proxy), 'Proxy', and 'Tags'. Below the form is a table of existing hosts.

Name	Applications	Items	Triggers	Graphs	Discovery	Web	Interface	Templates	Status	Availability	Agent encryption	Info	Tags	
komarov-zabbix	Applications 10	Items 50	Triggers 19	Graphs 9	Discovery 2	Web	192.168.56.227:10050	Template OS Linux (Template App Zabbix Agent)	Enabled	ZBX	SNMP	JMX	PHP	NONE
Zabbix server	Applications 11	Items 53	Triggers 52	Graphs 15	Discovery 2	Web	192.168.56.223:10050	Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent)	Enabled	ZBX	SNMP	JMX	PHP	NONE

Let's configure item-parameters to observation:

```
jmx["java.lang:type=Memory",HeapMemoryUsage.committed]
```

```
jmx["java.lang:type=Runtime",VmVersion]
```

```
jmx["java.lang:type=Runtime",VmName]
```

```
jmx["java.lang:type=Runtime",Uptime]
```

The screenshot shows the Zabbix 4.2.7 web interface. The 'Item' configuration page is active, displaying a form to add a new item. The form includes fields for Name, Type, Key, Host interface, JMX endpoint, User name, Password, Type of information, Units, Update interval, Custom intervals, History storage period, Trend storage period, Show value, New application, Applications, Populates host inventory field, and Description.

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The screenshot displays the Zabbix web interface for configuring a new item. The browser address bar shows the URL: `192.168.56.223/items.php?form=update&hostid=10263&itemid=28700`. The Zabbix logo and navigation tabs (Monitoring, Inventory, Reports, Configuration, Administration) are visible at the top. The 'Items' section is active, showing a list of items for host 'komarov-zabbix'. The configuration form for the item 'Java Runtime Name' is displayed, with the following fields and values:

- Name: Java Runtime Name
- Type: JMX agent
- Key: `jmx[\"java.lang:type=Runtime\",VmName]`
- Host interface: `192.168.56.227:8097`
- JMX endpoint: `service(jmxmri://jmxmri@HOST.CONN)(HOST.PORT)/jmxmri`
- User name: (empty)
- Password: (empty)
- Type of information: Text
- Update interval: 30s
- Custom intervals: (empty)
- History storage period: Do not keep history
- New application: (empty)
- Applications: (dropdown menu showing options like None, CPU, Filesystems, General, Memory, Network interfaces, OS, Performance, Processes, Security)
- Populates host inventory field: -None-
- Description: (empty)

The second screenshot shows the configuration of a new item named 'Java Runtime Uptime'. The configuration form is similar to the first one, but with the following differences:

- Name: Java Runtime Uptime
- Type: JMX agent
- Key: `jmx[\"java.lang:type=Runtime\",Uptime]`
- Host interface: `192.168.56.227:8097`
- JMX endpoint: `service(jmxmri://jmxmri@HOST.CONN)(HOST.PORT)/jmxmri`
- User name: (empty)
- Password: (empty)
- Type of information: Numeric (unsigned)
- Units: (empty)
- Update interval: 30s
- Custom intervals: (empty)
- History storage period: Do not keep history
- Trend storage period: Do not keep trends
- Show value: As is
- New application: (empty)
- Applications: (dropdown menu showing options like None, CPU, Filesystems, General, Memory, Network interfaces, OS, Performance, Processes, Security)
- Populates host inventory field: -None-

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Name: Java Runtime Version
Type: JMX agent
Key: jmx[\"java.lang.type=Runtime\",VmVersion]
Host interface: 192.168.56.227: 8097
JMX endpoint: service(jmxm1://jndim1:([HOST.CONN])(HOST.PORT)/jmxm1)
User name:
Password:
Type of information: Text
Update interval: 30s
Custom intervals:

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

History storage period: Do not keep history | Storage period: 90d
New application:
Applications: JMX agent, CPU, Filesystems, General, Memory, Network interfaces, OS, Performance, Processes, Security
Populates host inventory field: -None-
Description:
Enabled: ☒
Buttons: Update, Clone, Check now, Clear history and trends, Delete, Cancel

Subfilter affects only filtered data

APPLICATIONS
CPU 0 | Filesystems 0 | General 0 | Memory 0 | Network interfaces 0 | OS 0 | Performance 0 | Processes 0 | Security 0 | Zabbix agent 0

TYPES
JMX agent 4 | Zabbix agent 449 | Zabbix trapper 1

TYPE OF INFORMATION
Character 0 | Numeric (float) 0 | Numeric (unsigned) 2 | Text 2

TEMPLATE
Inherited items 0 | Not inherited items 4

WITH TRIGGERS
Without triggers 4 | With triggers 0

DISCOVERY
Discovered 0 | Regular 4

HISTORY
7d 0 | 3m 4

INTERVAL
30s 4 | 1m 0 | 10m 0 | 1h 0

Wizard	Name	Triggers	Key	Interval	History	Trends	Type	Applications	Status	Info
<input type="checkbox"/>	Java Heap Memory Used	---	jmx[\"java.lang.type=Memory\",HeapMemoryUsage.committed]	30s	90d	365d	JMX agent		Enabled	
<input type="checkbox"/>	Java Runtime Name	---	jmx[\"java.lang.type=Runtime\",VmName]	30s	90d		JMX agent		Enabled	
<input type="checkbox"/>	Java Runtime Uptime	---	jmx[\"java.lang.type=Runtime\",Uptime]	30s	90d	365d	JMX agent		Enabled	
<input type="checkbox"/>	Java Runtime Version	---	jmx[\"java.lang.type=Runtime\",VmVersion]	30s	90d		JMX agent		Enabled	

0 selected | Enable | Disable | Check now | Clear history | Copy | Mass update | Delete

Displaying 4 of 4 found

See data from komarov-zabag host:

The screenshot shows the Zabbix 4.2.7 'Latest data' page for the host 'komarov-zabbix'. The page displays a list of monitored items grouped by categories. The 'Java Runtime' group is expanded, showing several items with their latest values and timestamps.

Host	Name	Last check	Last value	Change
komarov-zabbix	CPU (15 items)			
komarov-zabbix	Filesystems (10 items)			
komarov-zabbix	General (5 items)			
komarov-zabbix	Memory (5 items)			
komarov-zabbix	Network interfaces (4 items)			
komarov-zabbix	OS (8 items)			
komarov-zabbix	Performance (15 items)			
komarov-zabbix	Processes (2 items)			
komarov-zabbix	Security (2 items)			
komarov-zabbix	Zabbix agent (3 items)			
komarov-zabbix	- other - (5 items)			
	Java Heap Memory Used	2019-10-20 00:04:37	26198016	Graph
	Java Runtime Name	2019-10-20 00:04:37	OpenJDK 64-Bit Server VM	History
	Java Runtime Uptime	2019-10-20 00:04:37	1722597	Graph
	Java Runtime Version	2019-10-20 00:04:37	25.222-b10	History
	trap.testkey	2019-10-19 19:57:38	Simple text to trap key	History

2. Configure triggers to alert once these parameters changed.
Java RunTime is changed on {HOST.NAME} (for example):

The screenshot shows the Zabbix 4.2.7 'Triggers' configuration page. A new trigger is being configured with the name 'Java RunTime is changed on {HOST.NAME}'. The trigger is set to 'Enabled' and 'High' severity. The expression is '(192.168.56.227[trap[\"java.lang:type=Runtime\"].Uptime].diff()>0)'. The trigger is configured with 'Expression' for OK event generation, 'Single' for problem event generation mode, and 'All problems' for OK event closes. The trigger is also configured with 'Allow manual close' checked.

Name: Java RunTime is changed on {HOST.NAME}

Severity: Not classified | Information | Warning | Average | High | Disaster

Expression: (192.168.56.227[trap[\"java.lang:type=Runtime\"].Uptime].diff())>0

Expression constructor

OK event generation: Expression | Recovery expression | None

PROBLEM event generation mode: Single | Multiple

OK event closes: All problems | All problems if tag values match

Allow manual close: ☒

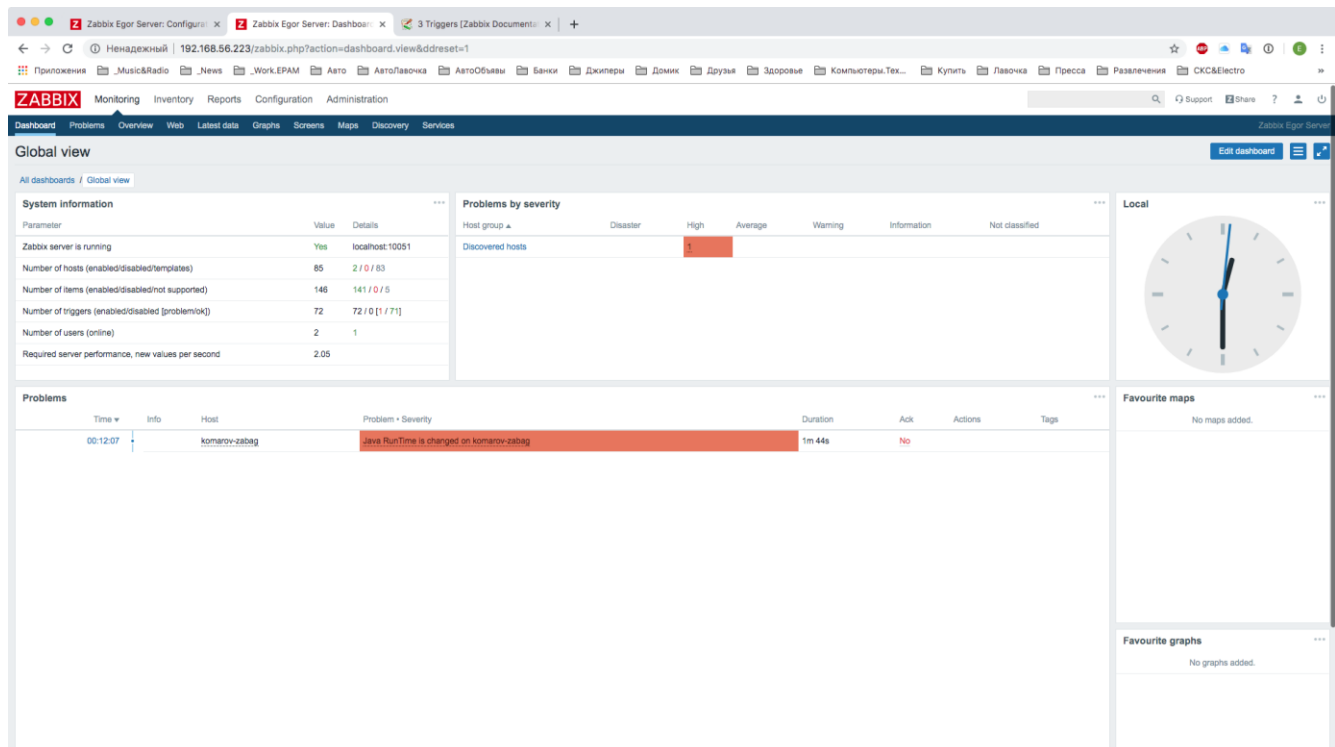
URL:

Description:

Enabled: ☒

Buttons: Update | Clone | Delete | Cancel

See the trigger configured:



For both VMs use vagrant box "sbeliakou/centos-7.3-x86_64-minimal"