

EPAM Systems, RD Dep., RD Dep.

MTN.NIX.05.Zabbix.Java

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

Legal Notice

This document contains privileged and/or confidential information and may not be disclosed, distributed or reproduced without the prior written permission of EPAM Systems.

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

Tasks:

1. Configure Zabbix to examine Java parameters via Java Gateway (<http://jmxmonitor.sourceforge.net/jmx.html>)
2. Configure triggers to alert once these parameters changed.

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

Modify /etc/tomcat/server.xml

```
<Server port="8005" shutdown="SHUTDOWN">
  <Listener className="org.apache.catalina.startup.VersionLoggerListener" />
  <!-- Security listener. Documentation at /docs/config/listeners.html
  <Listener className="org.apache.catalina.security.SecurityListener" />
  -->
  <!--APR library loader. Documentation at /docs/apr.html -->
  <Listener className="org.apache.catalina.core.AprLifecycleListener" SSLEngine="on" />
  <!--Initialize Jasper prior to webapps are loaded. Documentation at /docs/jasper-howto.html -->
  <Listener className="org.apache.catalina.core.JasperListener" />
  <!-- Prevent memory leaks due to use of particular java/javax APIs-->
  <Listener className="org.apache.catalina.core.JreMemoryLeakPreventionListener" />
  <Listener className="org.apache.catalina.mbeans.GlobalResourcesLifecycleListener" />
  <Listener className="org.apache.catalina.core.ThreadLocalLeakPreventionListener" />
  <Listener className="org.apache.catalina.mbeans.JmxRemoteLifecycleListener" rmiRegistryPortPlatform="8097" rmiServerPortPlatform="8098" />
```

Modify /etc/tomcat/tomcat.conf

```
# This variable is used to figure out if config is loaded or not.
TOMCAT_CFG_LOADED=""

# In new-style instances, if CATALINA_BASE isn't specified, it will
# be constructed by joining TOMCATS_BASE and NAME.
TOMCATS_BASE="/var/lib/tomcats/"

# Where your java installation lives
JAVA_HOME="/usr/lib/jvm/jre"

# Where your tomcat installation lives
CATALINA_HOME="/usr/share/tomcat"

# System-wide temp
CATALINA_TMPDIR="/var/cache/tomcat/temp"

# You can pass some parameters to java here if you wish to
JAVA_OPTS="-Xmx1024m -Xms64m"
#JAVA_OPTS="-Dcom.sun.management.jmxremote -Djava.rmi.server.hostname=192.168.56.11 -Dcom.sun.management.jmxremote.local.only=false -Dcom.sun.management.jmxremote.port=12345 -Dcom.sun.management.jmxremote.rmi.port=12345 -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.management.jmxremote.ssl=false"
# Use JAVA_OPTS to set java.library.path for libicnative.so
#JAVA_OPTS="-Djava.library.path=/usr/lib"
```

Add GW block to /etc/zabbix/zabbix_server.conf

```
JavaGateway=127.0.0.1

### Option: JavaGatewayPort
#   Port that Zabbix Java gateway listens on.
#
# Mandatory: no
# Range: 1024-32767
# Default:
JavaGatewayPort=10052

### Option: StartJavaPollers
#   Number of pre-forked instances of Java pollers.
#
# Mandatory: no
# Range: 0-1000
# Default:
StartJavaPollers=5
```

```
2017-07-25 11:37:07 (124 KB/s) - 'jmxterm-1.0-alpha-4-uber.jar' saved [1640799/1640799]

[root@host-agent1 lib]# java -jar jmxterm-1.0-alpha-4-uber.jar -n -l 127.0.0.1:8097
Welcome to JMX terminal. Type "help" for available commands.
get -b java.lang:type=Memory HeapMemoryUsage
#mbean = java.lang:type=Memory:
HeapMemoryUsage = {
  committed = 23674880;
  init = 16777216;
  max = 253427712;
  used = 20616568;
};
```

Add new item and triggers

zabbix-server/hosts.php?form=update&hostid=10106&groupid=0

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 49 Triggers 21 Graphs 9 Discovery rules 2 Web scenarios

Host Templates IPMI Macros Host inventory Encryption

Host name: 192.168.56.11
Visible name:

Groups

In groups: Discovered hosts, Linux servers

Other groups: Hypervisors, Templates, Virtual machines, Zabbix servers

New group:

Agent interfaces

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

[Add](#)

SNMP interfaces

[Add](#)

JMX interfaces

192.168.56.11		IP DNS	12345	<input checked="" type="radio"/> Remove
192.168.56.11		IP DNS	8097	<input type="radio"/> Remove

zabbix-server/items.php?form=update&hostid=10106&itemid=25531

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

Host groupsTemplatesHostsMaintenanceActionsEvent correlationDiscoveryIT services

Items

All hosts / 192.168.56.11EnabledZBXSNMPJMXIPMIApplications 10Items 49Triggers 21Graphs 9Discovery rules 2Web scenarios

Name

Java Heap Memory Used

Type

JMX agent

Key

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

Select

Host interface

192.168.56.11 : 8097

User name

Password

Type of information

Numeric (unsigned)

Data type

Decimal

Units

Use custom multiplier

☐

1

Update interval (in sec)

30

zabbix-server/triggers.php?form=update&hostid=10106&triggerid=13626

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

Host groupsTemplatesHostsMaintenanceActionsEvent correlationDiscoveryIT services

Triggers

All hosts / 192.168.56.11EnabledZBXSNMPJMXIPMIApplications 10Items 49Triggers 21Graphs 9Discovery rules 2Web scenarios

TriggerDependencies

Name

trig_jmx

Severity

Not classifiedInformationWarningAverageHighDisaster

Expression

{192.168.56.11:jmx["java.lang:type=Memory",HeapMemoryUsage.committed].fuzz ytime(1)}=0

Add

Expression constructor

OK event generation

ExpressionRecovery expressionNone

PROBLEM event generation mode

SingleMultiple

OK event closes

All problemsAll problems if tag values match

Tags

tagvalueRemove

Add

© EPAM Systems, 2017

Page: 4/5

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

Linux servers	0	2	0	0	0	0
Zabbix servers	0	0	2	0	0	0

Updated: 15:48:33

Host status

Host group	Without problems	With problems	Total
Discovered hosts	0	1	1
Linux servers	0	1	1
Zabbix servers	0	1	1

Updated: 15:48:33

Last 20 issues

Host	Issue	Last change	Age	Info	Ack	Actions
192.168.56.11	trig_jmx	2017-07-25 15:38:37	9m 56s		No	
192.168.56.11	Heap Memory Trigger	2017-07-25 15:35:36	12m 57s		No	
Zabbix server	Zabbix agent on Zabbix server is unreachable for 5 minutes	2017-07-25 14:34:30	1h 14m 3s		No	
Zabbix server	Zabbix discoverer processes more than 75% busy	2017-07-25 14:29:35	1h 18m 58s		No	

4 of 4 issues are shown Updated: 15:48:33