Task. Zabbix Tools

Testing Infrastructure:

Vagrantfile to spin up 2 VMs (virtualbox):

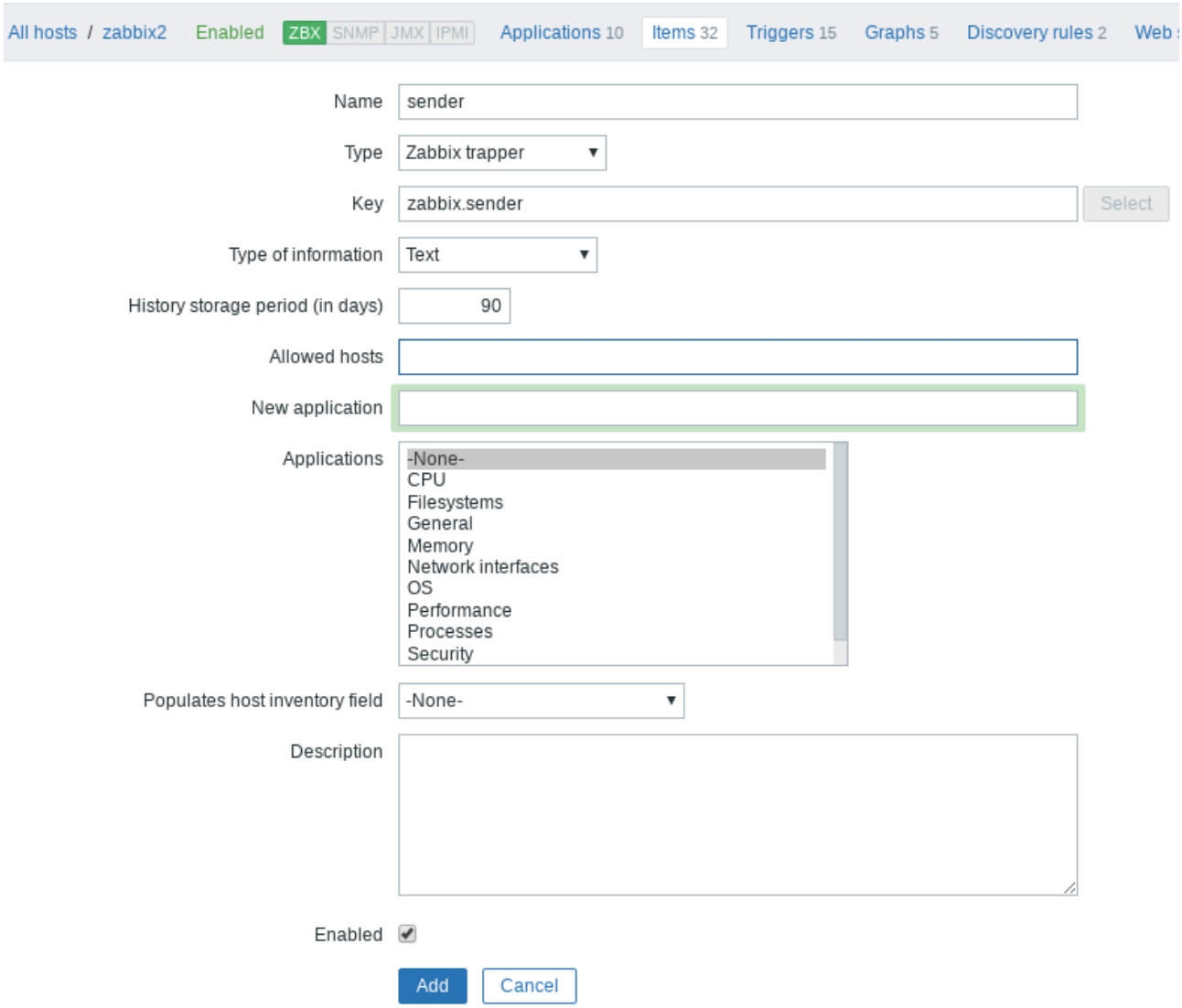
- zabbix server, provisioned by Vagrant provisioner
- Linux VM with zabbix agent, script for registration on zabbix server, all provisioned by Vagrant provisioner

Task:

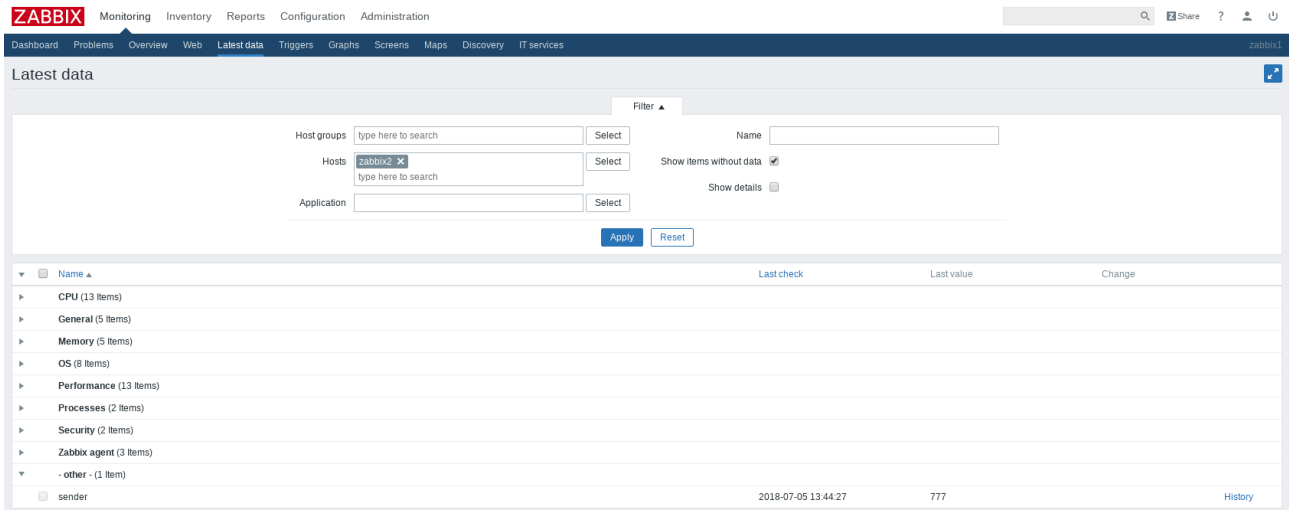
1. Configure the agent for replying to the specific server in passive and active mode.

sed -i -e '/Server=127.0.0.1/s/127.0.0.1/192.168.33.11/' /etc/zabbix/zabbix_agentd.conf
sed -i -e '/ServerActive=127.0.0.1/s/127.0.0.1/192.168.33.11/' /etc/zabbix/zabbix_agentd.conf

2. Use zabbix_sender to send data to server manually (use zabbix_sender with key –vv for maximal verbosity).




```
[root@zabbix2 ~]# zabbix_sender -z 192.168.33.11 -s "zabbix2" -k zabbix.sender -o 777 -vv
zabbix_sender [22647]: DEBUG: answer [{"response":"success","info":"processed: 1; failed: 0; total: 1;
seconds spent: 0.000237"}]
info from server: "processed: 1; failed: 0; total: 1; seconds spent: 0.000237"
sent: 1; skipped: 0; total: 1
[root@zabbix2 ~]#
```



3. Use zabbix_get as data receiver and examine zabbix agent sending's. For both VMs use vagrant box "sbeliakou/centos-7.3-x86_64-minimal"

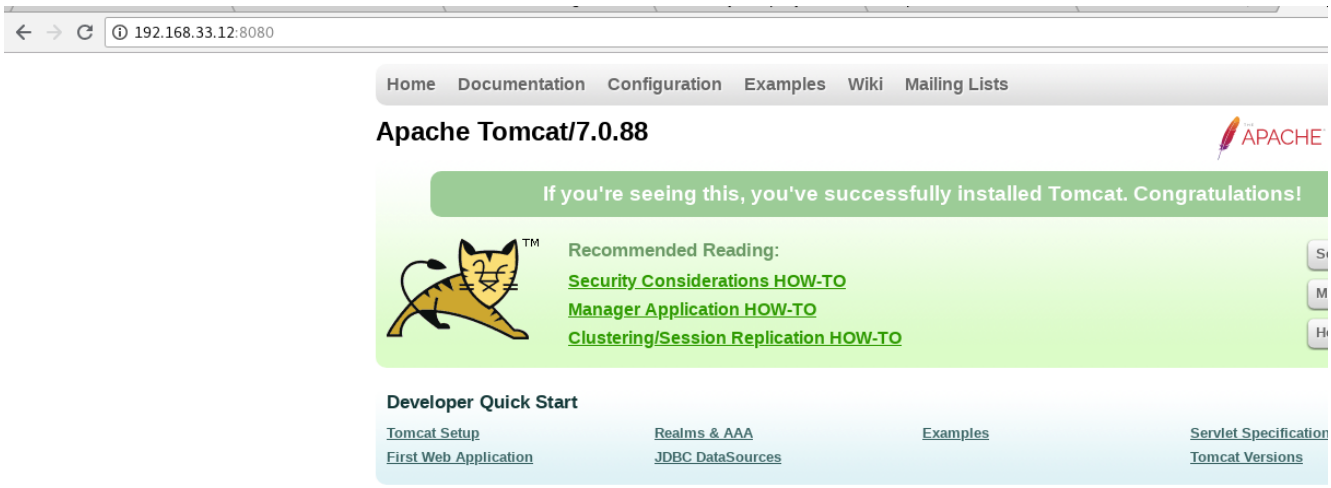
```
[root@zabbix1 ~]# zabbix_get -s 192.168.33.12 -p 10050 -k 'system.users.num'
1
[root@zabbix1 ~]# zabbix_get -s 192.168.33.12 -p 10050 -k 'system.hostname'
zabbix2
[root@zabbix1 ~]# zabbix_get -s 192.168.33.12 -p 10050 -k 'vm.memory.size[total]'
1928577024
[root@zabbix1 ~]#
```

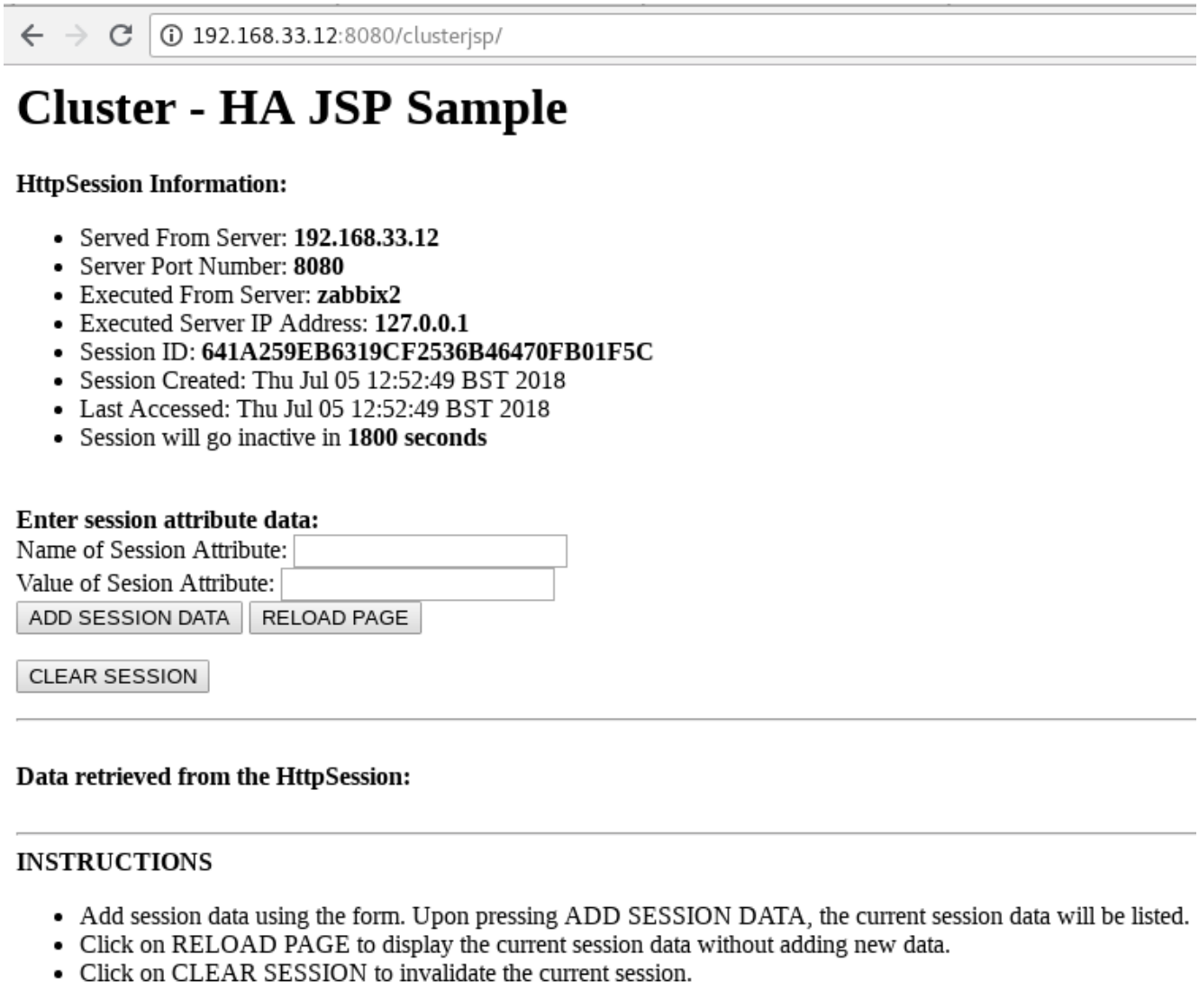
Task. Web Monitoring with Zabbix

Testing Infrastructure:

Vagrantfile to spin up 2 VMs (virtualbox):

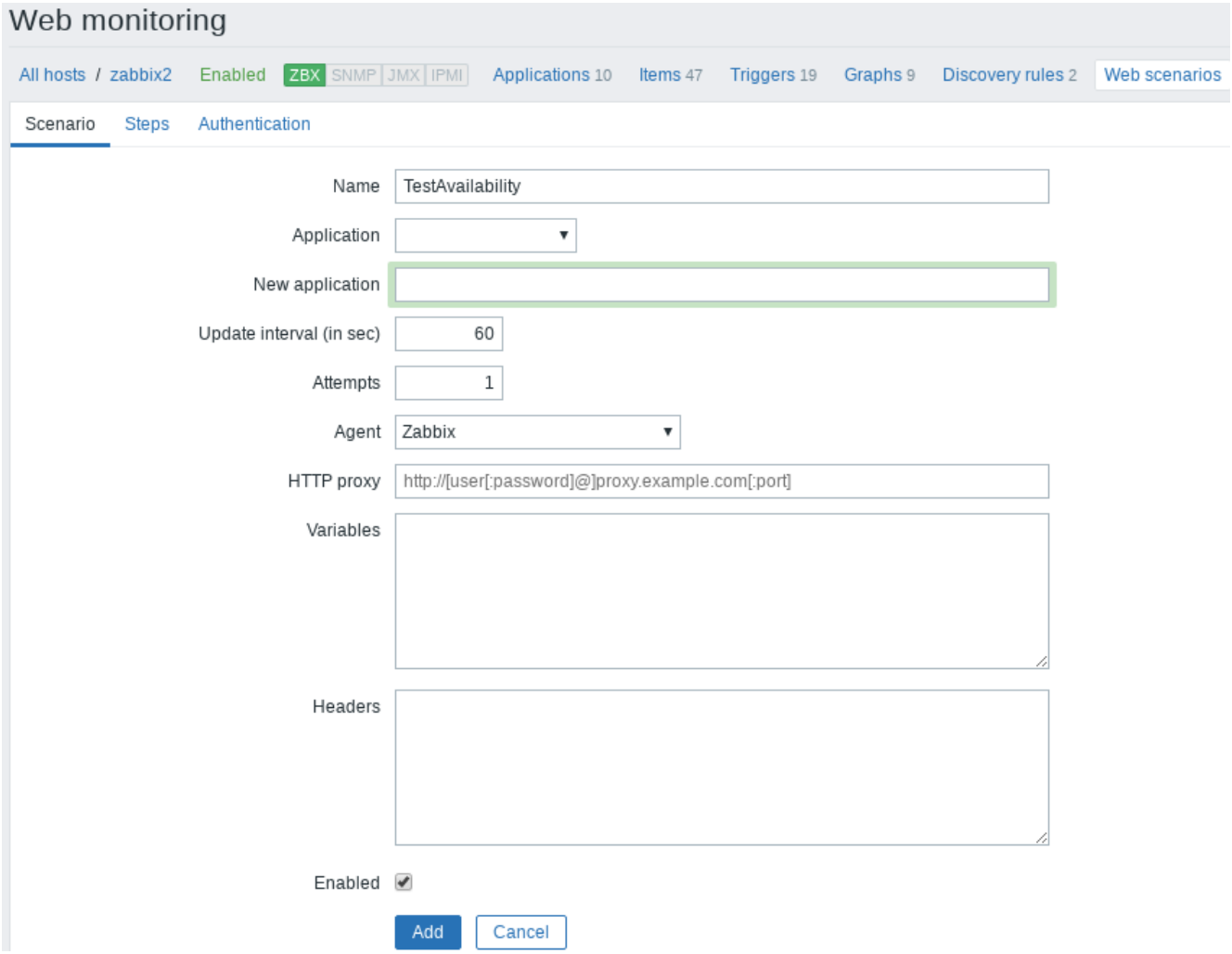
- zabbix server, provisioned by Vagrant provisioner
- Zabbix agents on both VMs, provisioned by Vagrant provisioner
- Install Tomcat 7 on 2nd VM, deploy any “hello world” application





Tasks:

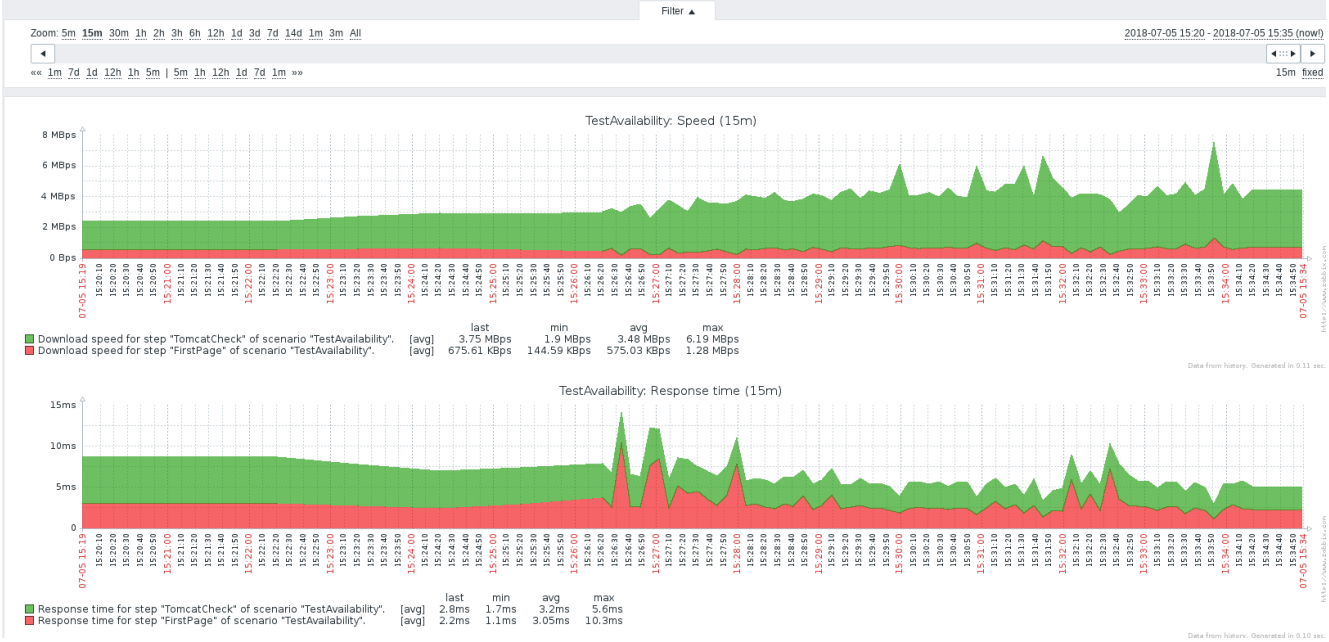
4. Configure WEB check:
    1. Scenario to test Tomcat availability as well as Application heath



Name	TomcatCheck
URL	http://192.168.33.12:8080
Post	
Variables	
Headers	
Follow redirects	☑
Retrieve only headers	☐
Timeout	15
Required string	
Required status codes	200

Name	FirstPage
URL	http://192.168.33.12:8080/clusterjsp
Post	
Variables	
Headers	
Follow redirects	☑
Retrieve only headers	☐
Timeout	15
Required string	
Required status codes	200

TomcatCheck	3.75 MBps	2.8ms	200	OK
FirstPage	675.61 KBps	2.2ms	200	OK
TOTAL		**5ms**		OK



After Tomcat restart:

Step	Speed	Response time	Response code	Status
TomcatCheck	2.06 MBps	5.2ms	200	OK
FirstPage	472.99 KBps	3.2ms	200	OK
TOTAL		**8.4ms**		OK

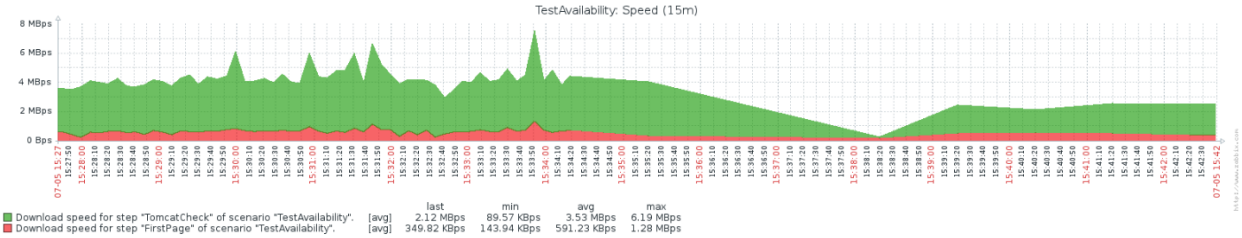
Filter ▲

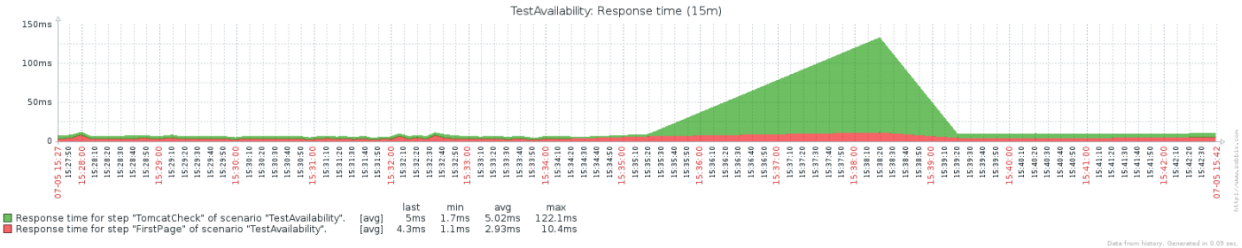
Zoom: 5m **15m** 30m 1h 2h 3h 6h 12h 1d 3d 7d 14d 1m 3m All

2018-07-05 15:27 - 2018-07-05 15:42 (now

«« 1m 7d 1d 12h 1h 5m | 5m 1h 12h 1d 7d 1m »»

15m fixe





5. Configure Triggers to alert once WEB resources become unavailable

Trigger | Dependencies

Name: UnavailableResource

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

Problem expression: {zabbix2:web.test.fail[TestAvailability].last(0)}>0 — Add

Expression constructor

OK event generation: Expression | Recovery expression | None

Recovery expression: {zabbix2:web.test.fail[TestAvailability].last(0)}=0 — Add

Expression constructor

PROBLEM event generation mode: Single | Multiple

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

Tags: tag | value — Remove

Add

Allow manual close

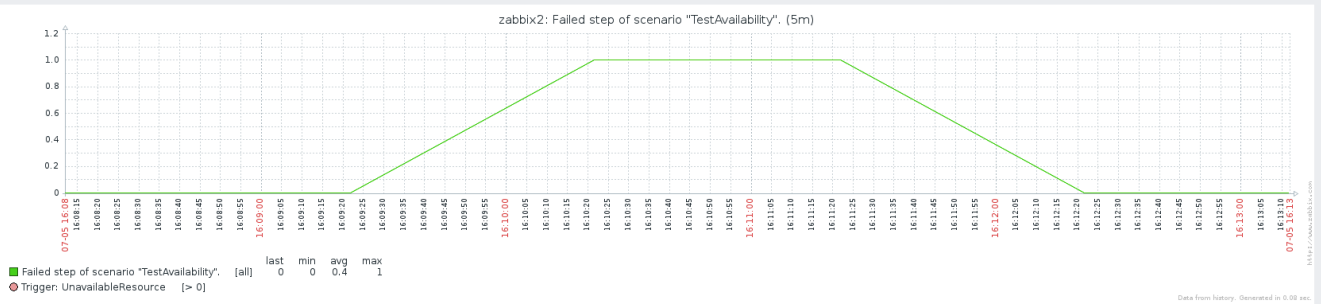
URL

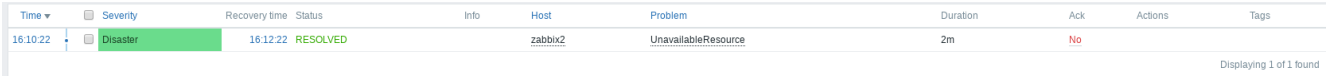
Description

Enabled

Add | Cancel

After Tomcat restart





Time	Severity	Recovery time	Status	Info	Host	Problem	Duration	Ack	Actions	Tags
16:10:22	Disaster	16:12:22	RESOLVED		zabbix2	UnavailableResource	2m	No		

Displaying 1 of 1 found

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

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:

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

[root@zabbix2 tomcat]# vim apache-tomcat-7.0.88/bin/setenv.sh

```
CATALINA_OPTS=" \
-Dcom.sun.management.jmxremote \
-Djava.rmi.server.hostname=192.168.33.12 \
-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 \
-Djava.net.preferIPv4Stack=true"
```

[root@zabbix2 tomcat]# chmod +x apache-tomcat-7.0.88/bin/setenv.sh
[root@zabbix2 tomcat]# source apache-tomcat-7.0.88/bin/setenv.sh

[root@zabbix2 tomcat]# cp catalina-jmx-remote.jar apache-tomcat-7.0.88/lib/

```
[root@zabbix2 tomcat]# ll apache-tomcat-7.0.88/lib | grep catalina-jmx-remote.jar
-rw-r--r-- 1 root root   13081 Jul  5 15:41 catalina-jmx-remote.jar
[root@zabbix2 tomcat]#
```

[root@zabbix2 tomcat]# vim apache-tomcat-7.0.88/conf/server.xml

```
  <Listener className="org.apache.catalina.mbeans.JmxRemoteLifecycleListener"
            rmiRegistryPortPlatform="8097"
            rmiServerPortPlatform="8098" />
```

[root@zabbix1 ~]# yum -y install zabbix-java-gateway (on Zabbix server)
[root@zabbix1 ~]# systemctl start zabbix-java-gateway

```
[root@zabbix1 ~]# systemctl enable zabbix-java-gateway
Created symlink from /etc/systemd/system/multi-user.target.wants/zabbix-java-gateway.service to /usr/lib/systemd/system/zabbix-java-gateway.service.
[root@zabbix1 ~]# systemctl restart zabbix-server
[root@zabbix1 ~]#
```

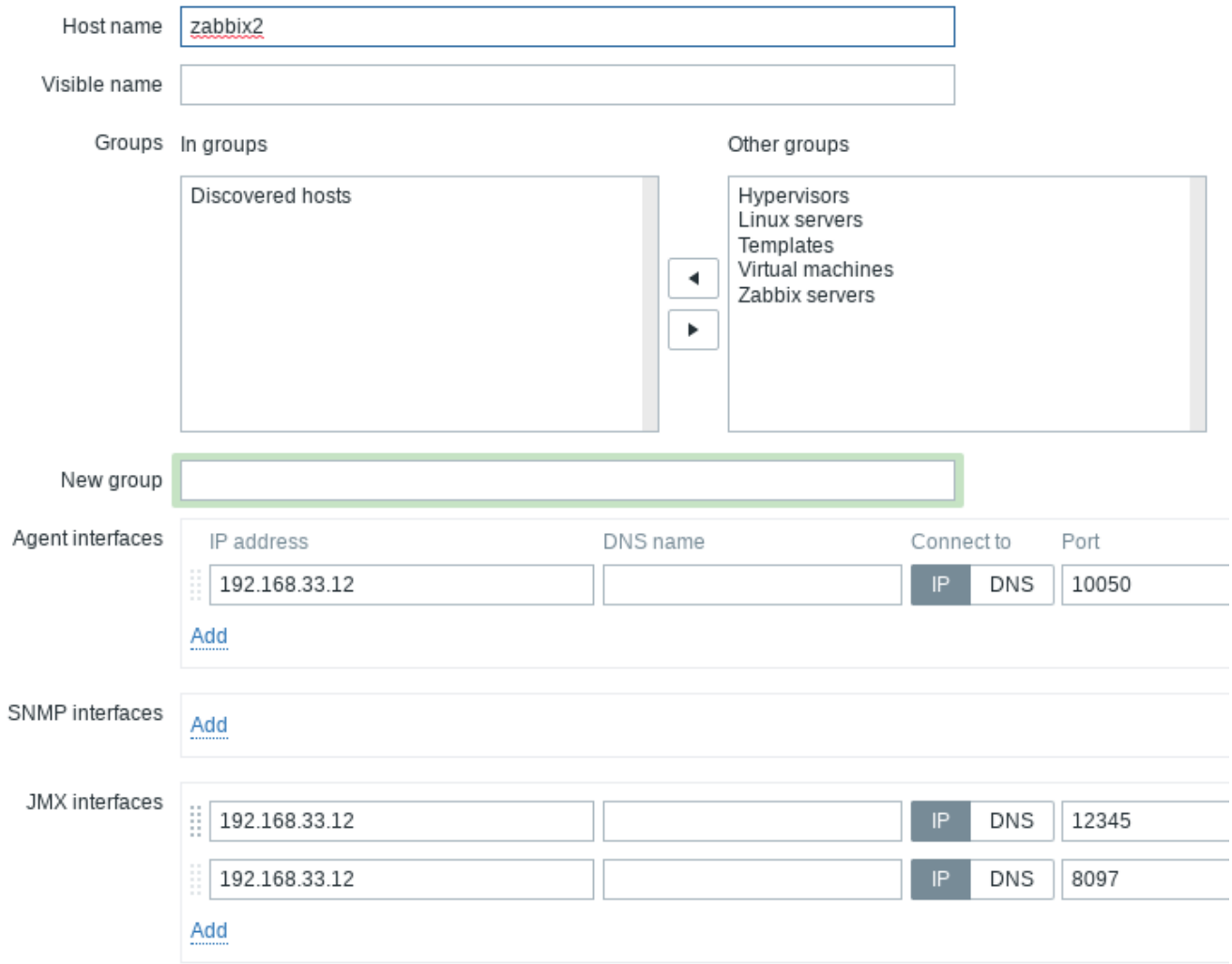
[root@zabbix1 ~]# vim /etc/zabbix/zabbix_server.conf (on Zabbix server):

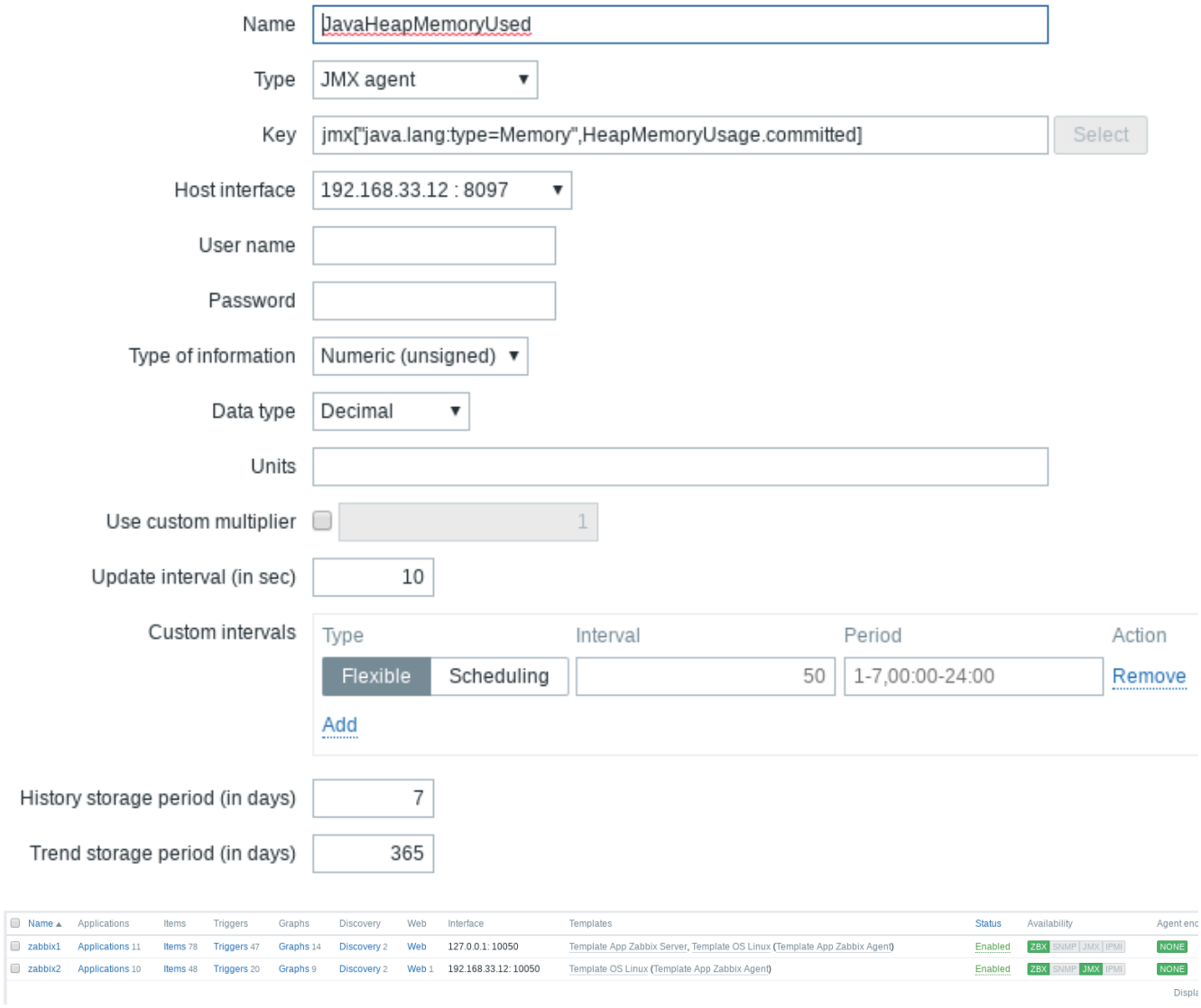
```
### Option: JavaGateway
#       IP address (or hostname) of Zabbix Java gateway.
#       Only required if Java pollers are started.
#
# Mandatory: no
# Default:
JavaGateway=192.168.33.11

### 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
```

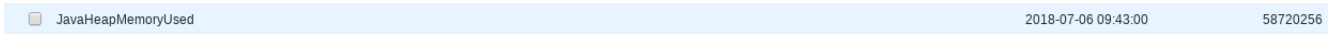
Add JMX interfaces in UI:



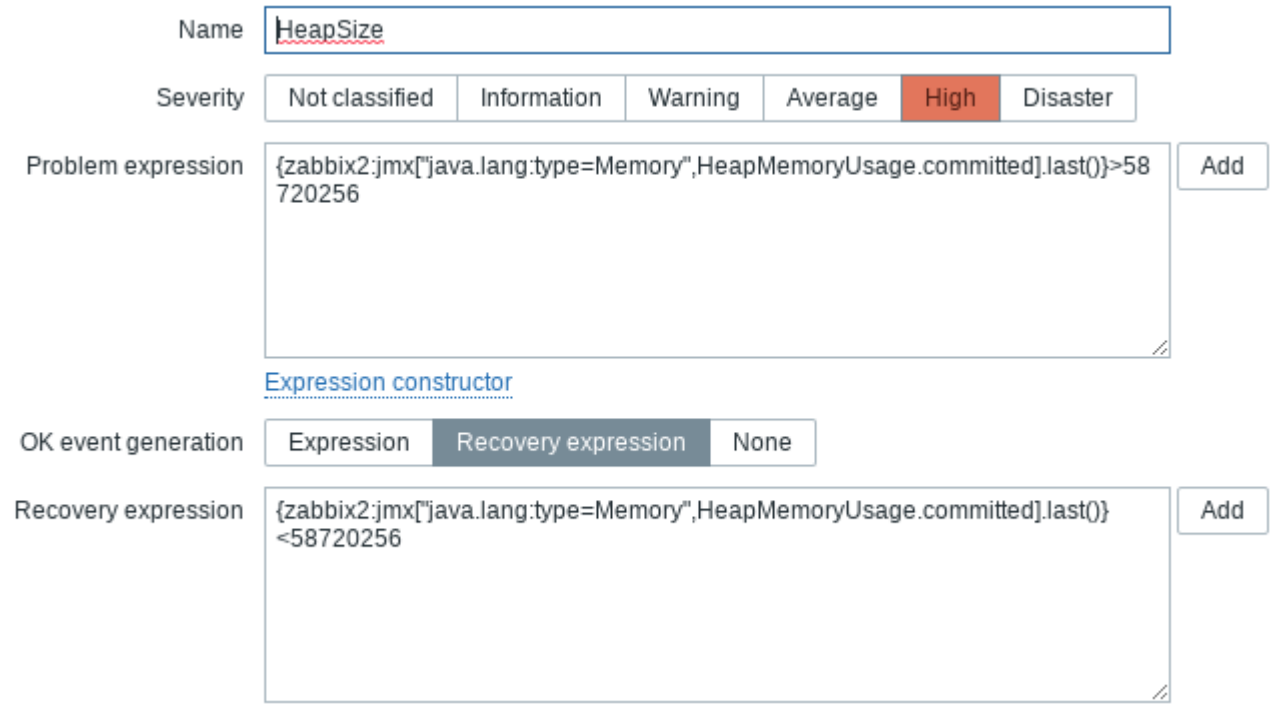


7. Configure triggers to alert once these parameters changed.

Java Heap Size ~58M

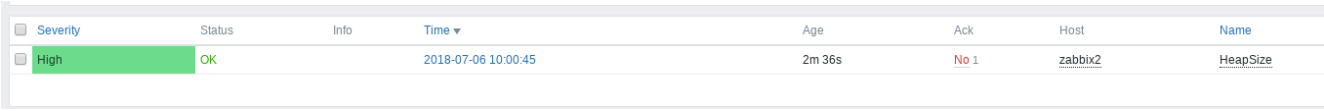


Configure trigger

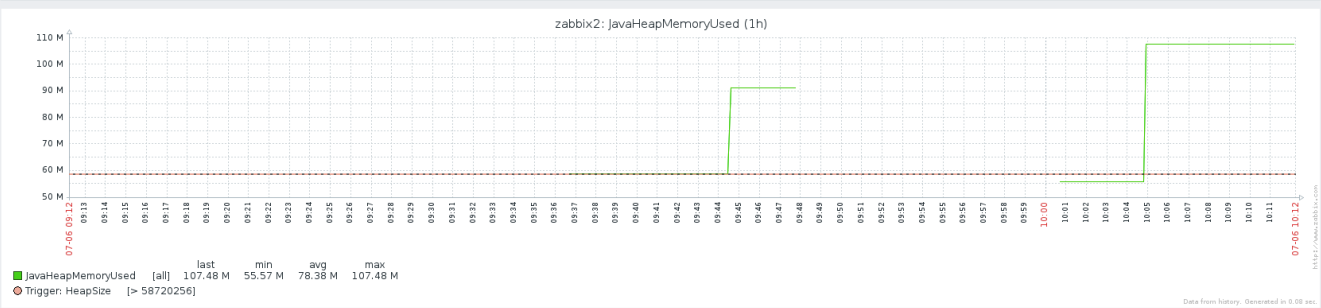


After Tomcat shutdown

After removing one of an application and starting Tomcat



At start Java Heap Size ~55M, then it starts raising



Time	Severity	Recovery time	Status	Info	Host	Problem	Duration	Ack
10:05:00	High		PROBLEM		zabbix2	HeapSize	14m 18s	No
10:00								
09:47:40	High	10:00:45	RESOLVED		zabbix2	HeapSize	13m 5s	No

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

Task. Zabbix API

Task:

You should develop a script (on Python 2.x) which registers given host in Zabbix.

Testing Infrastructure:

Vagrantfile to spin up 2 VMs (virtualbox):

- zabbix server, provisioned by Vagrant provisioner
- Linux VM with zabbix agent, script for registration on zabbix server, all provisioned by Vagrant provisioner

Registering Script requirements:

8. Written on Python 2.x
9. Starts at VM startup or on provision phase

10. Host registered in Zabbix server should belong to ”CloudHosts” group
11. Host registered in Zabbix server should be linked with Custom template
12. Host registered in Zabbix server should have Name = Hostname (not IP)

13. This script should create group “CloudHosts” id it doesn’t exist

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

```
#!/bin/bash

path=/home/vagrant
hostname=$(hostname)

#Generate an authentication token
curl -d '{"jsonrpc": "2.0","method": "user.login","params":
{"user":"Admin","password":"zabbix"},"id": 1}' -H "Content-Type: application/json-rpc" -X POST
http://192.168.33.13/api_jsonrpc.php > $path/token.tmp
token=$(sed -e 's/^.*"result":"\([^"]*\)".*$/\1/' $path/token.tmp)

#Create Host Group CloudHosts if it does not exist
curl -d '{"jsonrpc": "2.0","method": "hostgroup.get","params": {"output": "extend","filter":
{"name":"CloudHosts"}},"auth": "'$token'","id": 1}' -H "Content-Type: application/json-rpc" -X
POST http://192.168.33.13/api_jsonrpc.php > $path/group.tmp

if ! grep 'CloudHosts' $path/group.tmp;
  then
    curl -d '{"jsonrpc": "2.0","method": "hostgroup.create","params": {"name":"CloudHosts"},"auth":
'"$token"'","id": 1}' -H "Content-Type: application/json-rpc" -X POST
http://192.168.33.13/api_jsonrpc.php > $path/group.tmp
    group=$(sed -e 's/^.*"groupids":\["\([^"]*\)"\].*$/\1/' $path/group.tmp)
fi

#Create a Custom template
curl -d '{"jsonrpc": "2.0","method": "template.create","params":{"host":"CustomTemplate","groups":
{"groupid": "'$group'"}},"auth": "'$token'","id":1}' -H "Content-Type: application/json-rpc" -X POST
http://192.168.33.13/api_jsonrpc.php > $path/template.tmp
template=$(sed -e 's/^.*"templateids":\["\([^"]*\)"\].*$/\1/' $path/template.tmp)
```

#Create a Host
curl -d '{"jsonrpc": "2.0","method": "host.create","params":{"host":"'$hostname'","interfaces": [{"type": 1,"main": 1,"useip": 1,"ip": "192.168.33.14","dns": "","port": "10050"}],"groups": [{"groupid": "'$group'"}],"templates": [{"templateid":"'$template'"}]},"auth": "'$token'","id": 1}' -H "Content-Type: application/json-rpc" -X POST http://192.168.33.13/api_jsonrpc.php