

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

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. Zabbix. Basics

Testing Infrastructure:

Vagrantfile to spin up 2 VMs (virtualbox):

- zabbix server, provisioned by Vagrant provisioner
- Zabbix agents on both VMs, provisioned by Vagrant provisioner

Configure zabbix to work on the server directly without /zabbix

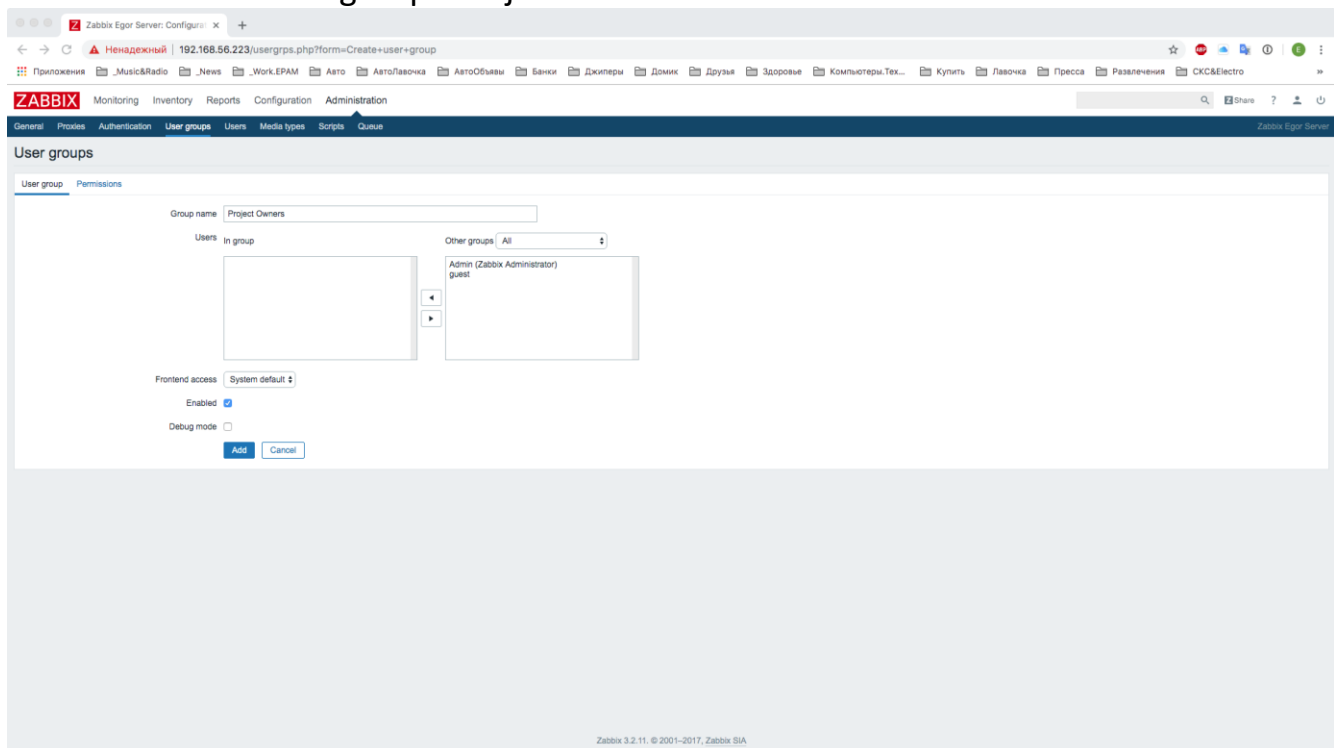
<http://zabbix-server/zabbix> -> <http://zabbix-server>

See Vagrant file and corresponding scripts, zabsrv-config.sh and zabag-config.sh, please.

Task:

You should install and configure Zabbix server and agents.

- Using Zabbix UI:
 - Create User group “Project Owners”



- Create User (example “Siarhei Beliakou”), assign user to “Project Owners”, set email

The image shows two overlapping screenshots of the Zabbix 3.2.11 web interface. The top screenshot displays the 'Users' configuration page, and the bottom screenshot shows a 'Media' configuration popup.

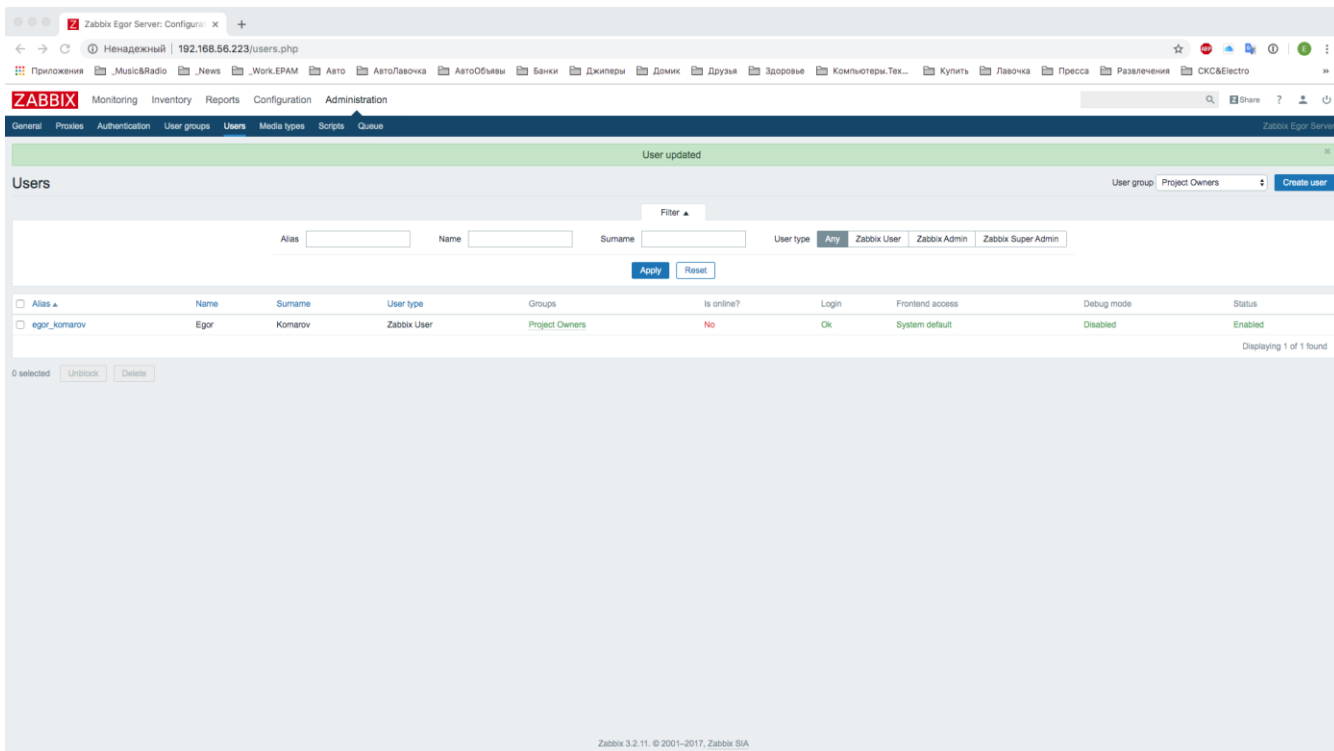
Users Configuration Page:

- Navigation:** Monitoring, Inventory, Reports, Configuration, Administration (selected). Sub-navigation: General, Profiles, Authentication, User groups, Users (selected), Media types, Scripts, Queue.
- Form Fields:**
 - Alias: egor_komarov
 - Name: Egor
 - Surname: Komarov
 - Groups: Project Owners (selected), type here to search, Select
 - Password: *****
 - Password (once again): *****
 - Language: English (en_GB)
 - Theme: System default
 - Auto-login: ☐
 - Auto-logout (min 90 seconds): 900
 - Refresh (in seconds): 30
 - Rows per page: 50
 - URL (after login):
- Buttons:** Add, Cancel

Media Configuration Popup:

- Navigation:** Zabbix Egor Server: Media
- Form Fields:**
 - Type: Email
 - Send to: komaroveas@mail.ru
 - When active: 1-7,00:00-24:00
 - Use if severity:
 - ☒ Not classified
 - ☒ Information
 - ☒ Warning
 - ☒ Average
 - ☒ High
 - ☒ Disaster
 - Enabled: ☒
- Buttons:** Add, Cancel

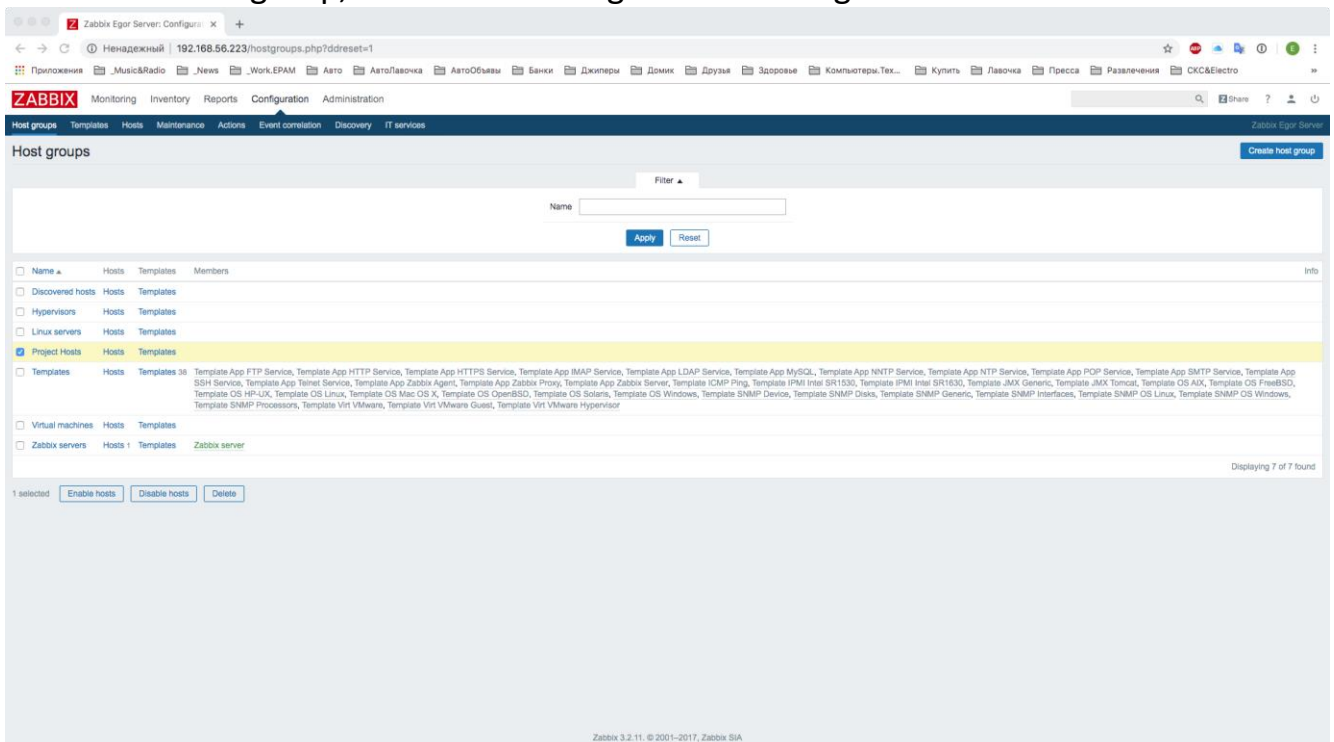
Saved: 18-Oct-2019 11:29



The screenshot shows the Zabbix web interface at the 'Users' page. A green banner at the top indicates 'User updated'. The page title is 'Users'. There is a search bar and a 'Filter' button. Below the search bar, there are input fields for 'Alias', 'Name', and 'Surname', and a 'User type' dropdown menu with options: 'Any', 'Zabbix User', 'Zabbix Admin', and 'Zabbix Super Admin'. There are 'Apply' and 'Reset' buttons. Below this, a table lists the users. The table has columns: 'Alias', 'Name', 'Surname', 'User type', 'Groups', 'Is online?', 'Login', 'Frontend access', 'Debug mode', and 'Status'. One user is listed: 'egor_komarov' with Name 'Egor', Surname 'Komarov', User type 'Zabbix User', Groups 'Project Owners', Is online? 'No', Login 'OK', Frontend access 'System default', Debug mode 'Disabled', and Status 'Enabled'. At the bottom, it says 'Displaying 1 of 1 found'.

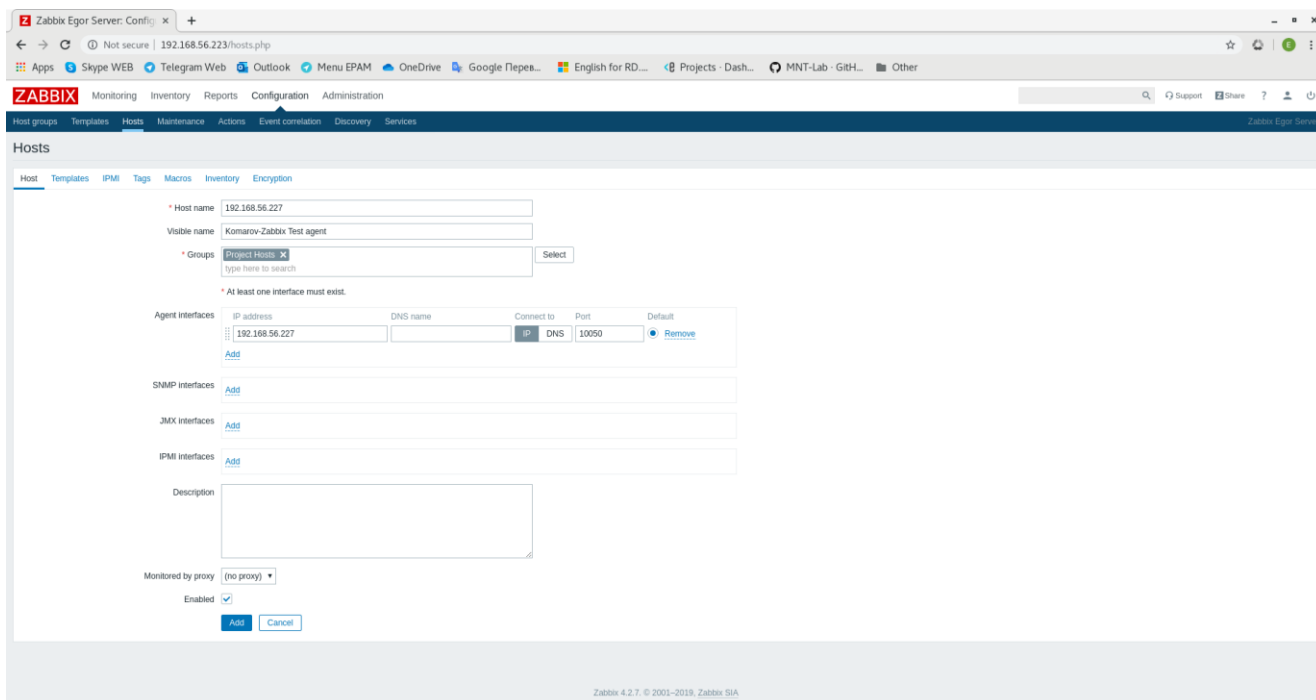
Alias	Name	Surname	User type	Groups	Is online?	Login	Frontend access	Debug mode	Status
egor_komarov	Egor	Komarov	Zabbix User	Project Owners	No	OK	System default	Disabled	Enabled

- Add 2nd VM to zabbix: create Host group ("Project Hosts"), create Host in this group, enable ZABBIX Agent monitoring



The screenshot shows the Zabbix web interface at the 'Host groups' page. The page title is 'Host groups'. There is a search bar and a 'Filter' button. Below the search bar, there is a 'Name' input field and 'Apply' and 'Reset' buttons. Below this, a table lists the host groups. The table has columns: 'Name', 'Hosts', 'Templates', and 'Members'. One host group is listed: 'Project Hosts' with Hosts '38' and Templates '38'. Below the table, it says 'Displaying 7 of 7 found'.

Name	Hosts	Templates	Members
Project Hosts	38	38	Template App FTP Service, Template App HTTP Service, Template App HTTPS Service, Template App IMAP Service, Template App LDAP Service, Template App MySQL, Template App NNTP Service, Template App NTP Service, Template App POP Service, Template App SMTP Service, Template App SSH Service, Template App Telnet Service, Template App Zabbix Agent, Template App Zabbix Proxy, Template App Zabbix Server, Template ICMP Ping, Template IPMI Intel SR1030, Template IPMI Intel SR1630, Template JMX Generic, Template JMX Tomcat, Template OS AIX, Template OS FreeBSD, Template OS HP-UX, Template OS Linux, Template OS Mac OS X, Template OS OpenBSD, Template OS Solaris, Template OS Windows, Template SNMP Device, Template SNMP Disk, Template SNMP Generic, Template SNMP Interfaces, Template SNMP OS Linux, Template SNMP OS Windows, Template SNMP Processors, Template VIRT VMWare, Template VIRT VMWare Guest, Template VIRT VMWare Hypervisor

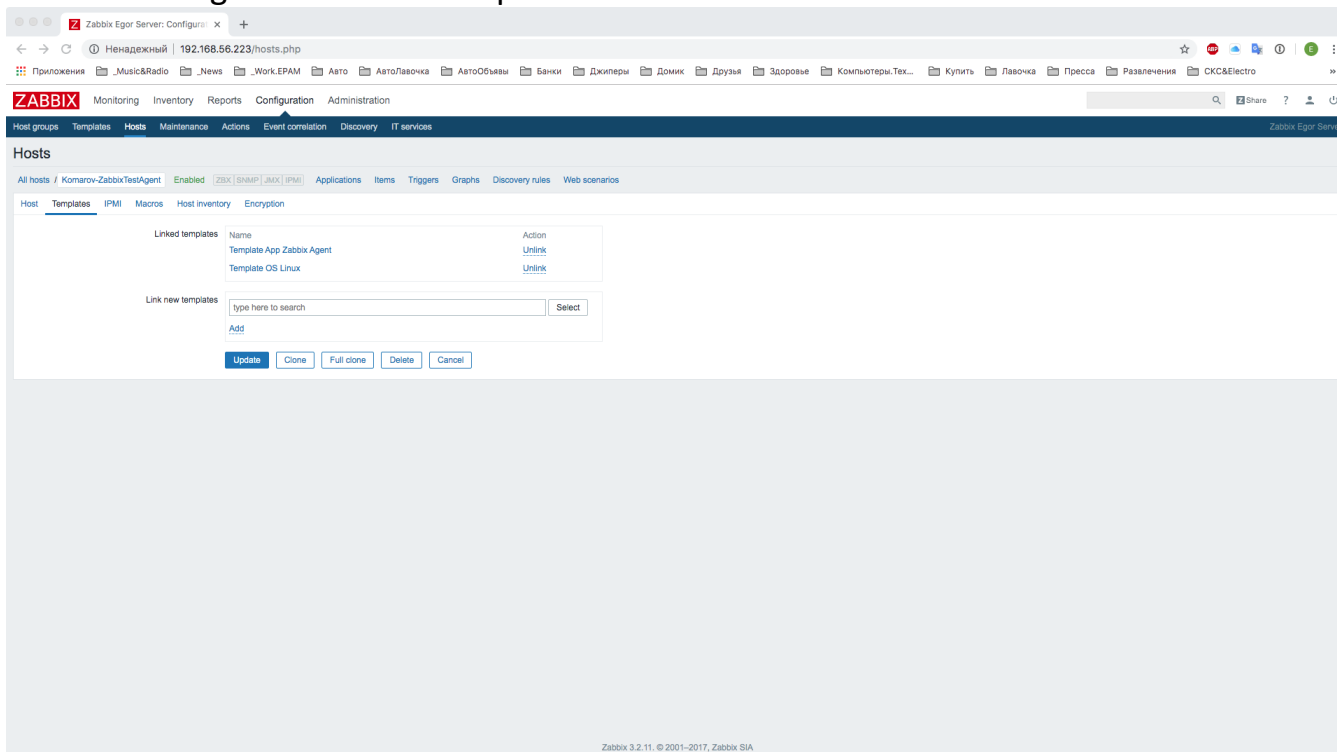


The screenshot shows the Zabbix 4.2.7 web interface for configuring a new host. The 'Hosts' tab is active, and the 'Host' sub-tab is selected. The form contains the following fields and options:

- Host name:** 192.168.56.227
- Visible name:** Komarov-Zabbix Test agent
- Groups:** Project Hosts (selected from a dropdown)
- Agent interfaces:** A table with columns for IP address, DNS name, Connect to, Port, and Default. The first row shows IP: 192.168.56.227, DNS: (empty), Connect to: IP, Port: 10050, and Default: (selected). There is an 'Add' button below the table.
- SNMP interfaces:** An 'Add' button.
- JMX interfaces:** An 'Add' button.
- IPMI interfaces:** An 'Add' button.
- Description:** A large text area.
- Monitored by proxy:** (no proxy) (dropdown menu)
- Enabled:** ☒
- Buttons:** 'Add' and 'Cancel' at the bottom.

The footer indicates 'Zabbix 4.2.7. © 2001–2019, Zabbix SIA'.

- Assign to this host template of Linux



The screenshot shows the Zabbix 3.2.11 web interface for configuring a host template. The 'Hosts' tab is active, and the 'Templates' sub-tab is selected. The form contains the following fields and options:

- Linked templates:** A table with columns for Name and Action. The first row shows Name: Template App Zabbix Agent, Action: Unlink. The second row shows Name: Template OS Linux, Action: Unlink.
- Link new templates:** A text input field with a 'Select' button.
- Buttons:** 'Update', 'Clone', 'Full clone', 'Delete', and 'Cancel' at the bottom.

The footer indicates 'Zabbix 3.2.11. © 2001–2017, Zabbix SIA'.

Заббик

Мониторинг

Inventory

Reports

Configuration

Administration

Host groups

Templates

Hosts

Maintenance

Actions

Event correlation

Discovery

IT services

Hosts

Groupall

Create Host

Import

Filter

Name

DNS

IP

Port

Apply

Reset

Name	Applications	Items	Triggers	Graphs	Discovery	Web	Interface	Templates	Status	Availability	Agent encryption	Info
Komarow-ZabbixTestAgent	Applications 10	Items 32	Triggers 15	Graphs 5	Discovery 2	Web	192.168.56.227:10050	Template OS Linux (Template App Zabbix Agent)	Enabled	ZBXSNMPJMXIPMI	NONE	
Zabbix server	Applications 11	Items 64	Triggers 43	Graphs 10	Discovery 2	Web	192.168.56.223:10050	Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent)	Enabled	ZBXSNMPJMXIPMI	NONE	

0 selectedEnableDisableExportMass updateDelete

Заббик

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Create Host

Import

Filter

Name

DNS

IP

Port

Apply

Reset

Name	Applications	Items	Triggers	Graphs	Discovery	Web	Interface	Templates	Status	Availability	Agent encryption	Info
Komarow-ZabbixTestAgent	Applications 10	Items 32	Triggers 15	Graphs 5	Discovery 2	Web	192.168.56.227:10050	Template OS Linux (Template App Zabbix Agent)	Enabled	ZBXSNMPJMXIPMI	NONE	
Zabbix server	Applications 11	Items 64	Triggers 43	Graphs 10	Discovery 2	Web	192.168.56.223:10050	Template App Zabbix Server, Template OS Linux (Template App Zabbix Agent)	Enabled	ZBXSNMPJMXIPMI	NONE	

0 selectedEnableDisableExportMass updateDelete

Заббик 3.2.11. © 2001–2017, Заббик SIA

- Create custom checks (CPU Load, Memory load, Free space on file systems, Network load)

Zabbix Egor Server: Config - x

+

←→↻⚠ Ненадежный | 192.168.56.223/items.php?form=update&itemid=25399

☆🔴☁️📧🌐🛡️⋮

Приложения📂_Music&Radio📂_News📂_Work EPAM📂Авто📂АвтоЛавочка📂АвтоОбъемы📂Банки📂Джиперы📂Домик📂Друзья📂Здоровье📂Компьютеры, Тех...📂Купиты📂Лавочка📂Пресса📂Развлечения📂СКК&Electro

»

Items

All hosts / Комarov-ZabbixTestAgent Enabled ZBX [SNMP] [JMX] [IPMI] Applications 10 Items 32 Triggers 15 Graphs 5 Discovery rules 2 Web scenarios

Parent items Template OS Linux

NameHost nameTypeZabbix agentKeysystem.hostnameHost interface192.168.56.227-10050Type of informationCharacterUpdate interval (in sec)30Custom intervals

Type	Interval	Period	Action
FlexibleScheduling	50	1-7,00:00-24:00	Remove

Add

History storage period (in days)7Show valueAs isshow value mappingsNew application

ApplicationsCPUFilesystemsGeneralMemoryNetwork interfacesOSPerformanceProcessesSecurityZabbix agent

Populates host inventory fieldNameDescriptionSystem host name.

Enabled☒

UpdateCloneClear history and trendsDeleteCancel

Zabbix Egor Server: Config

Not secure | 192.168.56.223/items.php?filter_hostid=10105&filter_application=CPU&filter_name=&filter_key=&filter_type=-1&filter_delay=&filter_snmp_community=&filter_snmpv3_securityname=&filter_snmp_oid=&filter_port=&filter_value_type=-1&...

Apps Skype WEB Telegram Web Outlook Menu EPAM OneDrive Google Пепеас... English for RD... Projects - Dash... MNT-Lab - GITH... Other

Items

All hosts / Komarov-Zabbix Test agent Enabled 20x [GROUP] [DATA] [ITEM] Applications 10 Items 46 Triggers 19 Graphs 9 Discovery rules 2 Web scenarios

Filter

Host group: type here to search Select Type: all Update interval (in sec): History (in days): Trends (in days): State: Status: Triggers: Template:

Host: Komarov-Zabbix Te... Select Application: CPU Name: Key:

Apply

Subfilter affects only filtered data

APPLICATIONS
CPU 13 Performance 13

TYPE OF INFORMATION
Numeric (float) 11 Numeric (unsigned) 2

WITH TRIGGERS
Without triggers 11 With triggers 2

Wizard	Name ^	Triggers	Key	Interval	History	Trends	Type	Applications	Status	Info
[icon]	Template OS Linux: Context switches per second		system.cpu.switches	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU nice time		system.cpu.util[nice]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU system time		system.cpu.util[system]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU steal time		system.cpu.util[steal]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU iowait time	Triggers 1	system.cpu.util[iowait]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU interrupt time		system.cpu.util[interrupt]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU idle time		system.cpu.util[idle]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU user time		system.cpu.util[user]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: CPU sortirq time		system.cpu.util[sortirq]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: Interrupts per second		system.cpu.intr	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: Processor load (1 min average per core)	Triggers 1	system.cpu.load[percpu.avg1]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: Processor load (5 min average per core)		system.cpu.load[percpu.avg5]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	
[icon]	Template OS Linux: Processor load (15 min average per core)		system.cpu.load[percpu.avg15]	1m	7d	365d	Zabbix agent	CPU, Performance	Enabled	

Displaying 13 of 13 found

- Create trigger with Severity HIGH, check if it works (Problem/Recovery)

The screenshot shows the Zabbix 3.2.11 web interface. The top navigation bar includes links for Monitoring, Inventory, Reports, Configuration, and Administration. The main header shows the trigger configuration for 'Processor 1min load is more than 10% on (HOST.NAME)'. The trigger is enabled and has a severity of 'High'. The expression is '(192.168.56.227.system.cpu.load[percpu,avg1].avg[1m])>10'. The trigger is configured with 'Expression' as the OK event generation, 'Single' as the problem event generation mode, and 'All problems' as the OK event closes. The trigger is also configured with 'tag' as the tag and 'value' as the value. The trigger is enabled and has buttons for 'Update', 'Clone', 'Delete', and 'Cancel'.

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The screenshot shows the Zabbix 3.2.11 web interface. The 'Triggers' page is active, displaying a list of triggers. One trigger is highlighted with a 'PROBLEM' status. A terminal window is overlaid on the right, showing the output of the 'uptime' command and the 'stress' command. The terminal output shows system uptime and various system metrics.

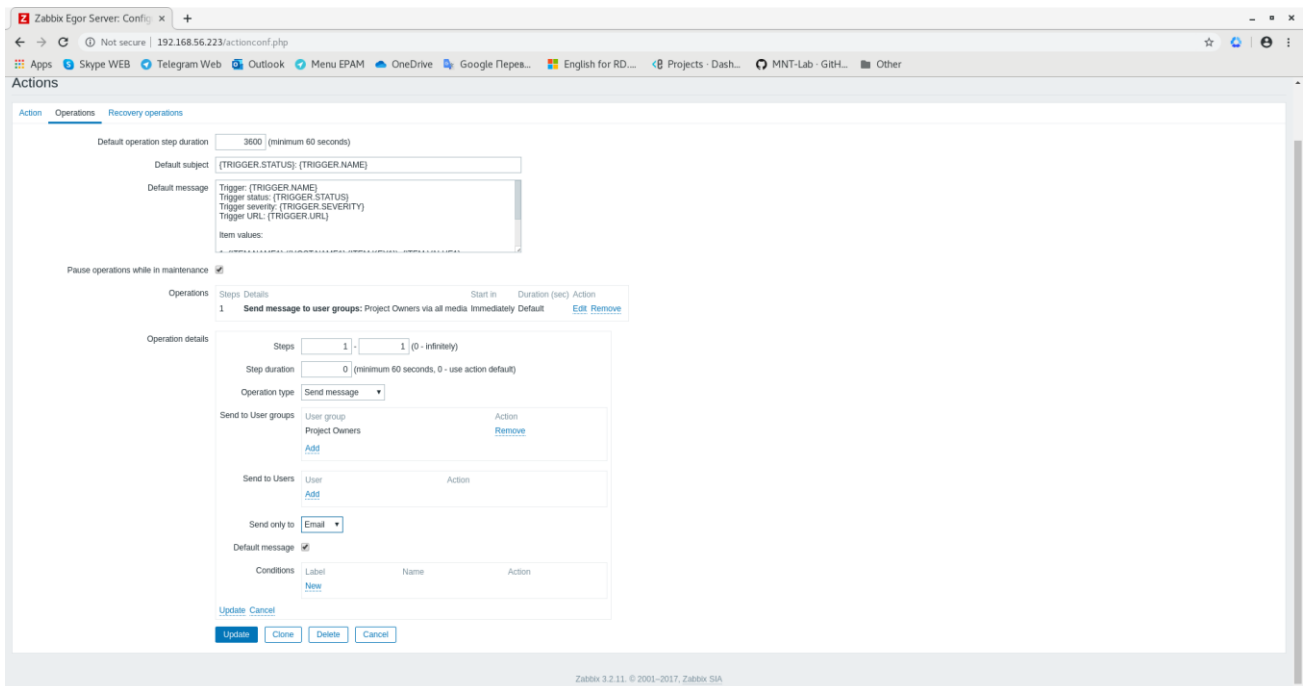
```
root@komarov-zabag:~# uptime
Fri Oct 18 09:01:25 2019
09:01:26 up 3:01, 2 users, load average: 28.43, 8.92, 3.16

root@komarov-zabag:~# stress --cpu 8 --io 4 --vm 2 --vm-bytes 128M --timeout 10s
Note: Numbers may be suffixed with s,m,h,d,y (time) or B,K,M,G (size).
[root@komarov-zabag ~]# watch uptime
08:55:00 up 2:55, 1 user, load average: 0.00, 0.01, 0.05
[root@komarov-zabag ~]# stress --cpu 40 --timeout 10s
stress: info: [15161] dispatching hogs: 40 cpu, 0 io, 0 vm, 0 hdd
stress: info: [15161] successful run completed in 10s
[root@komarov-zabag ~]# stress --cpu 40 --timeout 2m
stress: info: [15216] dispatching hogs: 40 cpu, 0 io, 0 vm, 0 hdd
```

- Create Action to inform “Project Owners” if HIGH triggers happen

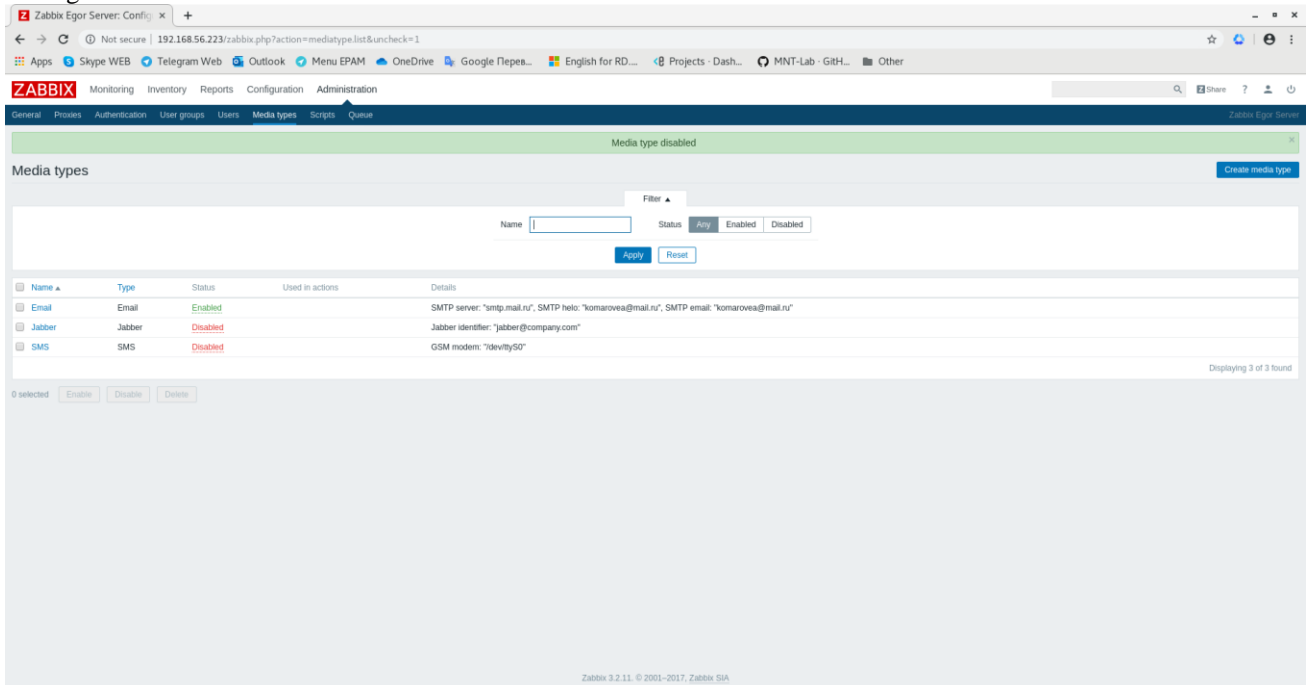
The screenshot shows the Zabbix 3.2.11 web interface, specifically the 'Actions' page. The 'New condition' section is visible, where a condition is being defined for the trigger 'Trigger name' with a severity of 'High'.

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The screenshot shows the Zabbix Actions configuration page. The 'Operations' tab is active. The 'Default operation step duration' is set to 3600 seconds. The 'Default subject' is '(TRIGGER.STATUS): (TRIGGER.NAME)'. The 'Default message' contains placeholders for trigger status, severity, and URL. The 'Pause operations while in maintenance' checkbox is checked. Under 'Operations', there is a table with one step: 'Send message to user groups: Project Owners via all media'. The 'Send to User groups' section shows 'Project Owners' as the selected user group. The 'Send to Users' section is empty. The 'Send only to' dropdown is set to 'Email'. The 'Default message' checkbox is checked. The 'Conditions' section is empty. At the bottom, there are buttons for 'Update', 'Clone', 'Delete', and 'Cancel'.

Configure mail:

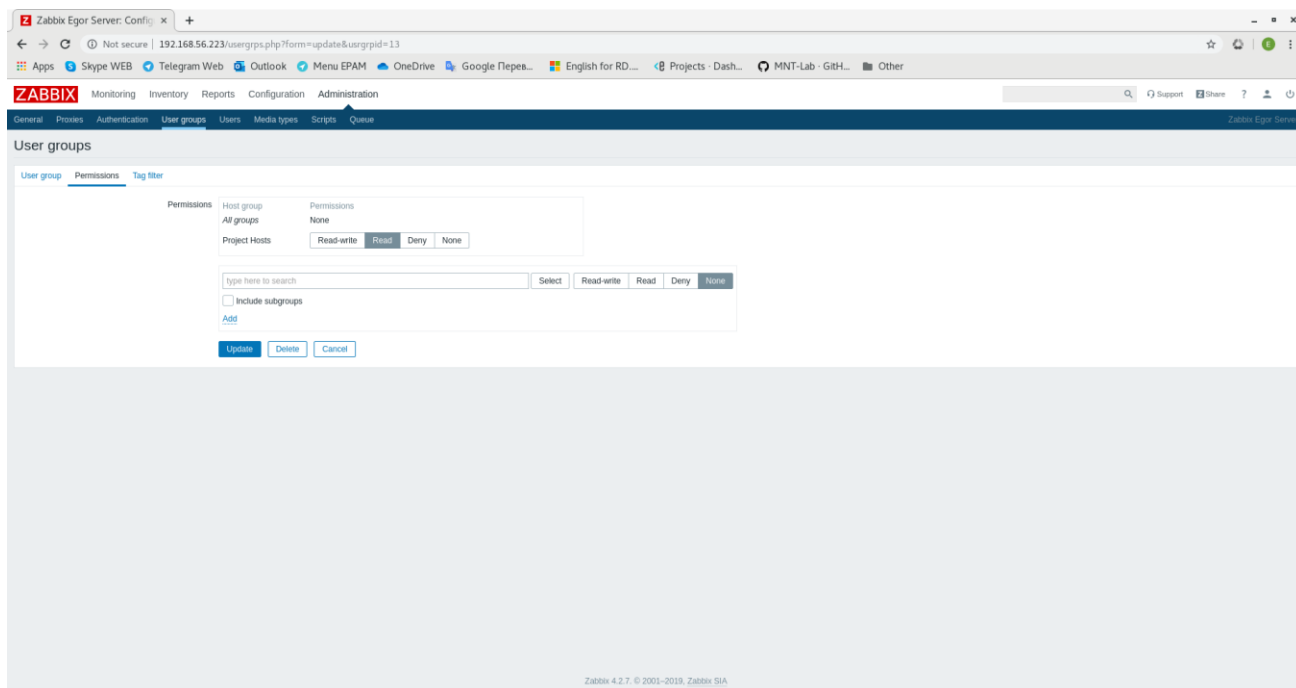


The screenshot shows the Zabbix Media types configuration page. The 'Media types' tab is active. A green banner at the top indicates 'Media type disabled'. Below this, there is a table with columns: Name, Type, Status, Used in actions, and Details. The table contains three rows: 'Email' (Status: Enabled), 'Jabber' (Status: Disabled), and 'SMS' (Status: Disabled). At the bottom, there are buttons for 'Enable', 'Disable', and 'Delete'.

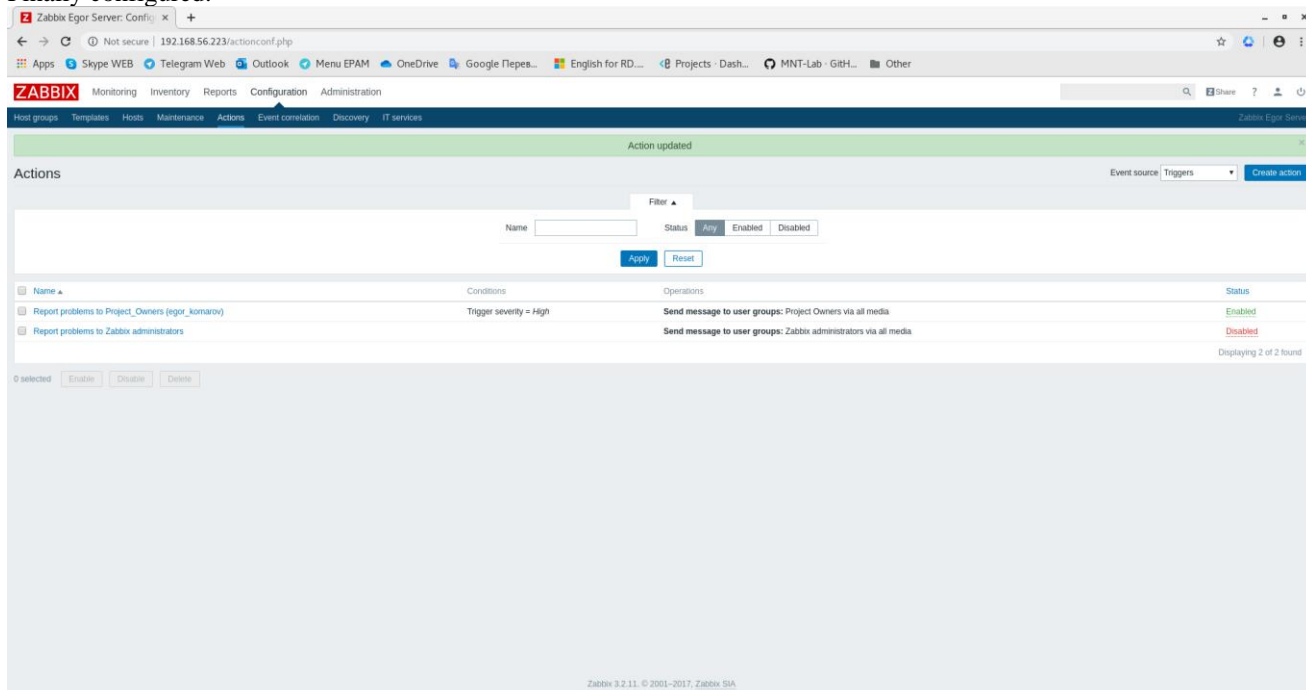
Name	Type	Status	Used in actions	Details
Email	Email	Enabled		SMTP server: "smtp.mail.ru", SMTP helo: "komarova@mail.ru", SMTP email: "komarova@mail.ru"
Jabber	Jabber	Disabled		Jabber identifier: "jabber@company.com"
SMS	SMS	Disabled		GSM modem: "devtty50"

Add "Project Owners" rights to read Templates:

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Finally configured:



Test Action "Mail":

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The screenshot shows the Zabbix 3.2.11 web interface. A terminal window is open, displaying the output of a stress test. The test results show a successful run completed in 120s. The terminal output includes the following commands and results:

```
Example: stress --cpu 8 --io 4 --vm 2 --vm-bytes 128M --timeout 10s
Note: Numbers may be suffixed with s,m,h,d,y (time) or B,K,M,G (size).
[root@komarov-zabag ~]# watch uptime
08:55:00 up 2:55, 1 user, load average: 0.00, 0.01, 0.05
[root@komarov-zabag ~]# stress --cpu 40 --timeout 10s
stress: info: [15161] dispatching hogs: 40 cpu, 0 io, 0 vm, 0 hdd
stress: info: [15161] successful run completed in 10s
[root@komarov-zabag ~]# stress --cpu 40 --timeout 2m
stress: info: [15216] dispatching hogs: 40 cpu, 0 io, 0 vm, 0 hdd
stress: info: [15216] successful run completed in 120s
[root@komarov-zabag ~]# stress --cpu 40 --timeout 2m
stress: info: [17792] dispatching hogs: 40 cpu, 0 io, 0 vm, 0 hdd
```

The Zabbix interface shows a list of triggers. The first trigger is a 'PROBLEM' with a severity of 'High', titled 'Processor 1min load is more than 10% on Komarov-Zabbix Test agent'. The second trigger is 'OK' with a severity of 'High', titled 'Processor load is too high on Komarov-Zabbix Test agent'.

(Action wasn't work so we upgrade Zabbix up to ver.4.2.7 and see)

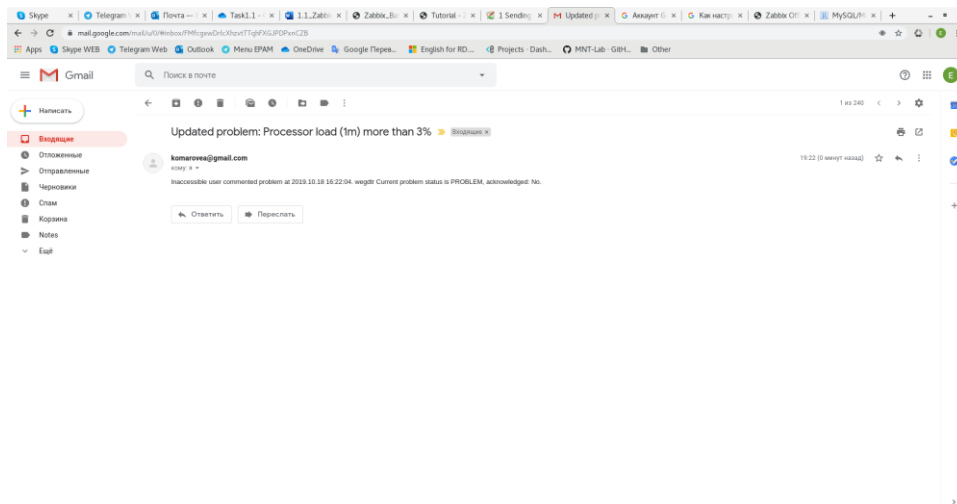
The screenshot shows the Zabbix 4.2.7 web interface. The 'System information' section displays the following data:

Parameter	Value	Details
Zabbix server is running	Yes	localhost:10051
Number of hosts (enabled/disabled/templates)	85	2 / 0 / 83
Number of items (enabled/disabled/not supported)	141	135 / 0 / 6
Number of triggers (enabled/disabled/problem/ok)	72	72 / 0 / 2 / 70
Number of users (online)	3	1
Required server performance, new values per second	1.91	

The 'Problems' section shows a list of problems. The first problem is a 'PROBLEM' with a severity of 'High', titled 'Processor load (1m) more than 3%'. The second problem is a 'PROBLEM' with a severity of 'High', titled 'Processor load is too high on Komarov-Zabbix Test agent'.

The 'Local' section shows a clock and a 'Favourite maps' section with no maps added.

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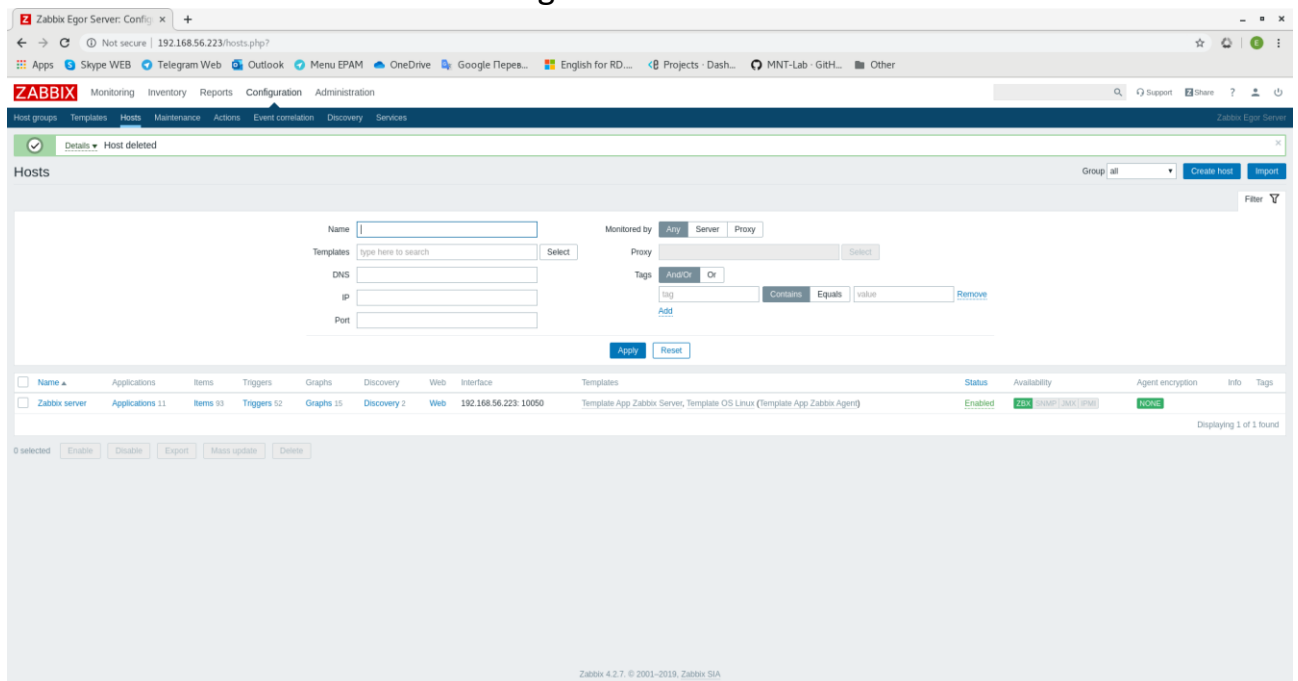
See attached screenshots, please

For both VMs use vagrant box “sbeliakou/centos”

2. Using Zabbix UI:

- Configure “Network discovery” so that, 2nd VM will be joined to Zabbix (group “Project Hosts”, Template “Template OS Linux”)

Let’s delete Komarov-Zabbix Test agent host...:



...and configure autodiscovery to add it:

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The image displays two screenshots of the Zabbix 4.2.7 web interface, showing configuration pages for Discovery rules and Actions.

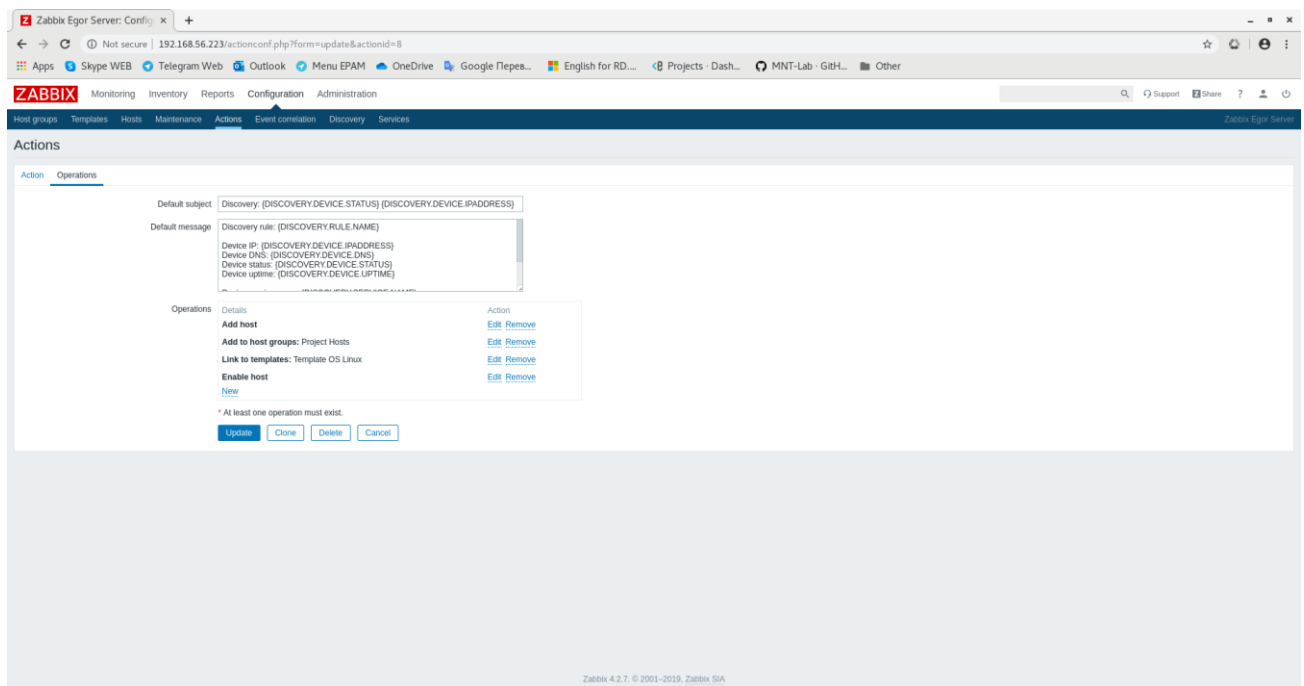
Top Screenshot: Discovery rules

- Name:** Local network
- Discovery by proxy:** No proxy
- IP range:** 192.168.56.1-254
- Update interval:** 10m
- Checks:** Zabbix agent "system.uname" (with [Edit](#) and [Remove](#) links)
- Device uniqueness criteria:** IP address (selected), Zabbix agent "system.uname"
- Host name:** DNS name, IP address (selected), Zabbix agent "system.uname"
- Visible name:** Host name, DNS name, IP address (selected), Zabbix agent "system.uname"
- Enabled:** ☒
- Buttons:** [Update](#), [Clone](#), [Delete](#), [Cancel](#)

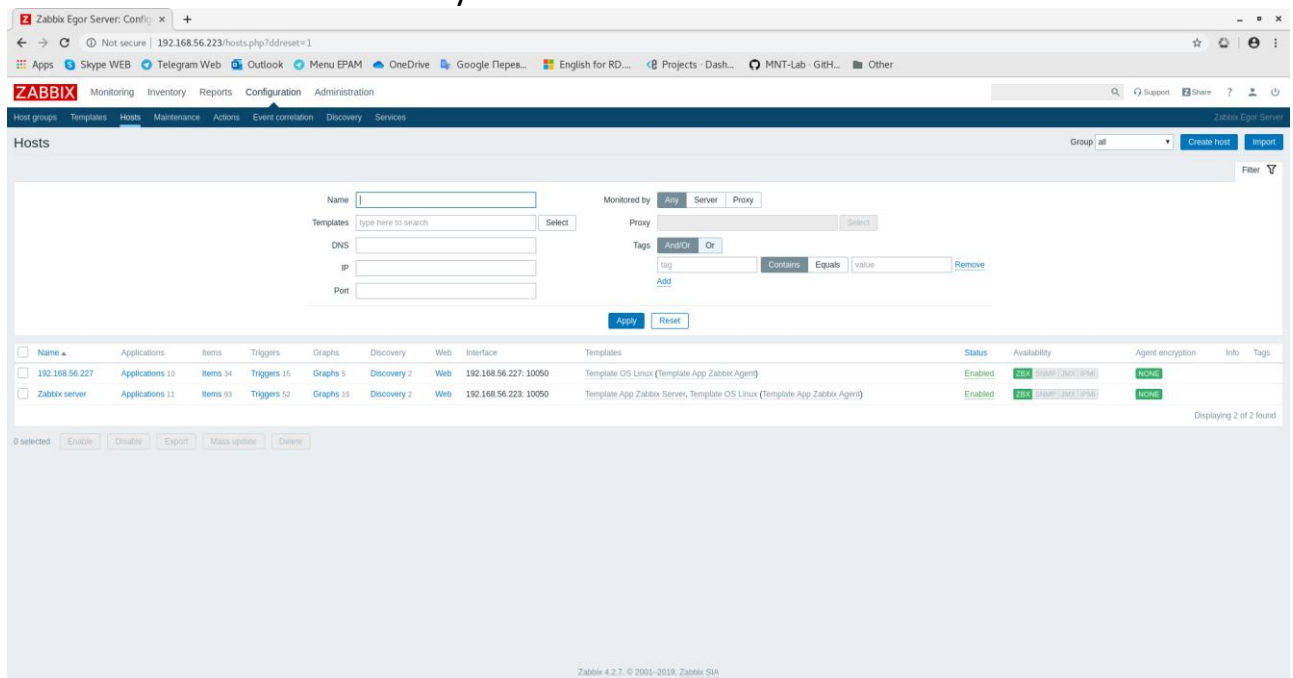
Bottom Screenshot: Actions

- Name:** Auto discovery hosts to group "Project Hosts", Template "Template OS Linux"
- Type of calculation:** And/Or (selected), B and C
- Conditions:**
 - Label:** B, **Name:** Uptime/Downtime is greater than or equals 60, **Action:** [Remove](#)
 - Label:** C, **Name:** Host IP equals 192.168.56.1-255, **Action:** [Remove](#)
- New condition:** Host IP equals 192.168.0.1-127.192.168.2.1 (with [Add](#) button)
- Enabled:** ☒
- Note:** *At least one operation must exist.
- Buttons:** [Add](#), [Cancel](#)

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Wait more than autodiscovery time interval and see:



For both VMs use vagrant box "sbeliakou/centos"