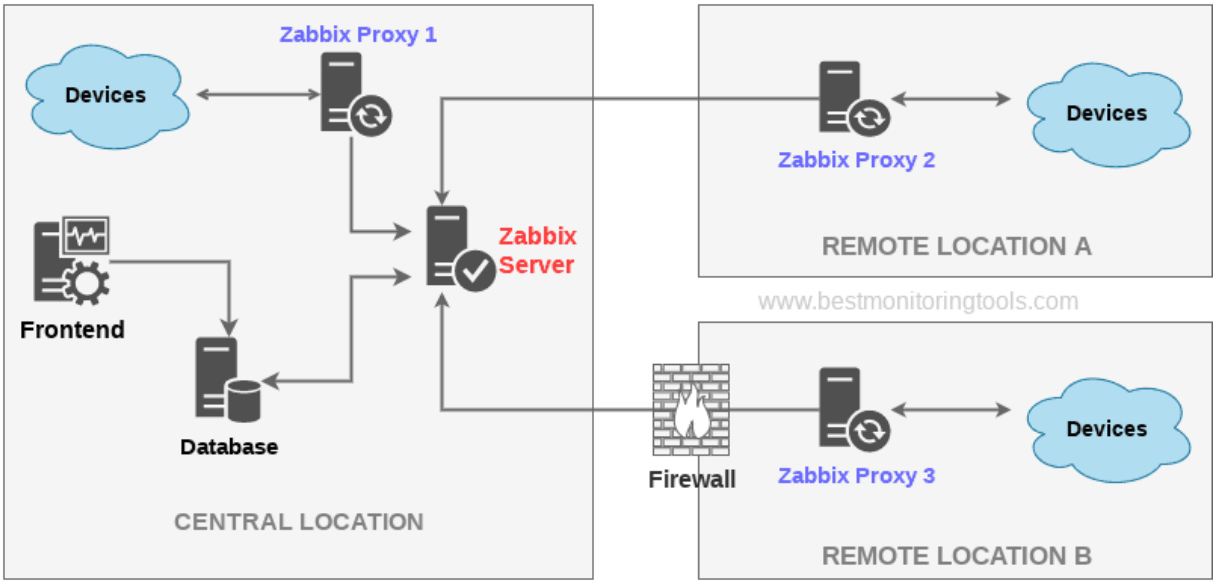
Install Zabbix-Proxy on CentOS 8 / RHEL 8 in 10 minutes!

In this tutorial, you will learn step-by-step how to install, optimize and configure Zabbix Proxy 5.0 on CentOS 8 / RHEL 8.

Zabbix proxy is a service that can collect performance and availability data from the end devices on behalf of the **Zabbix server**.

You can use proxy to **monitor remote locations behind the firewall** or locations that have unreliable communication and to offload the Zabbix server in large environments.



Zabbix proxy architecture example

Enough of talk lets do some work! We will install the latest version of the Zabbix proxy on CentOS 8 / RHEL 8 and make the key optimizations so that your proxy performs better.

This guide is for installing **Zabbix Proxy** on CentOS/RHEL while guides for installing **Zabbix monitoring system (Server)** on various Linux distribution can be found on these links: CentOS/RHEL, Ubuntu, Debian, Rasbian (Raspberry Pi).

Step 1: Set SELinux to permissive mode

It is recommended to have SELinux in permissive mode unless you know how to fix its issues:

```
setenforce 0 && sed -i 's/^SELINUX=.*/SELINUX=permissive/g' /etc/selinux/config
```

Step 2: Configure firewall

```
firewall-cmd --add-service={http,https} --permanent
firewall-cmd --add-port={10051/tcp,10050/tcp} --permanent
firewall-cmd –reload
```

Step 3: Install Zabbix Proxy on CentOS/RHEL

Before you start installing proxy, keep in mind that your **Zabbix proxy version must match the server version!**

You can check Zabbix server version with the command "`zabbix_server -V`":

```
root@zabbix-server-centos:~$ zabbix_server -V
zabbix_server (Zabbix) 5.0
```

To avoid error "`nothing provides libssh2.so.1()(64bit) needed by zabbix-proxy-mysql`" make sure that "`libssh2`" library is installed with command (ZBX-17081):

```
dnf -y install
http://mirror.centos.org/centos/8.0.1905/AppStream/x86_64/os/Packages/libssh2
-1.8.0-8.module_el8.0.0+189+f9babebb.1.x86_64.rpm
```

Setup Zabbix 5.0 LTS .rpm package and install proxy server with MySQL:

```
Zabbix 5.0 LTS version (supported until May 31, 2025)

rpm -Uvh https://repo.zabbix.com/zabbix/5.0/rhel/8/x86_64/zabbix-release-5.0-1.el8.noarch.rpm
dnf clean all
dnf -y install zabbix-proxy-mysql
```

You can find more information about Zabbix's life cycle and release policies on the official website.

Step 4: Configure database

In this installation, you will use password rootDBpass as root database password and zabbixDBpass as Zabbix database password. Consider changing your password for security reasons.

a. Install and start MariaDB

```
dnf -y install mariadb-server && systemctl start mariadb && systemctl enable mariadb
```

b. Reset root password for database

Secure MySQL by changing the default password for MySQL root:

```
mysql_secure_installation
Enter current password for root (enter for none): Press the Enter
Set root password? [Y/n]: Y
New password: <Enter root DB password>
Re-enter new password: <Repeat root DB password>
Remove anonymous users? [Y/n]: Y
Disallow root login remotely? [Y/n]: Y
Remove test database and access to it? [Y/n]:  Y
Reload privilege tables now? [Y/n]:  Y
```

c. Create database

```
mysql -uroot -p'rootDBpass' -e "create database zabbix_proxy character set utf8 collate utf8_bin;"
mysql -uroot -p'rootDBpass' -e "grant all privileges on zabbix_proxy.* to zabbix@localhost identified by 'zabbixDBpass';"
```

d. Import initial database schema

To avoid MySQL error "`ERROR 1118 (42000) at line 1278: Row size too large (> 8126).`" temporary disable strict mode (ZBX-16465):

```
mysql -uroot -p'rootDBpass' zabbix_proxy -e "set global innodb_strict_mode='OFF';"
```

Import database schema for proxy server (could last up to 5 minutes):

```
zcat /usr/share/doc/zabbix-proxy-mysql*/schema.sql.gz | mysql -uzabbix -p'zabbixDBpass' zabbix_proxy
```

Enable strict mode:

```
mysql -uroot -p'rootDBpass' zabbix_proxy -e "set global innodb_strict_mode='ON';"
```

Step 5: Zabbix Proxy configuration

In this setup, you will name the proxy as Zabbix proxy 01 and configure it to communicate with the Zabbix that has IP address 172.20.20.234 – please change those accordingly to match your environment.

Open file `zabbix_proxy.conf` with the command:

```
sudo nano /etc/zabbix/zabbix_proxy.conf
```

and add database password and configuration frequency in this format anywhere in the file:

```
DBPassword=zabbixDBpass
ConfigFrequency=100
```

"`ConfigFrequency`" parameter defines how often proxy retrieves configuration data from the Zabbix server in seconds. You can read more about proxy configuration parameters in the official documentation.

Don't close the file yet! Now, you need to change the current "`Server`", "`Hostname`", "`DBName`", and "`DB user`" parameter values to something like this:

```
Server=172.20.20.234
Hostname=Zabbix proxy 01
DBName=zabbix_proxy
DBUser=zabbix
```

Save and exit file (**ctrl**+**x**, followed by **y** and **enter**).

Step 6: Start and enable Zabbix Proxy service

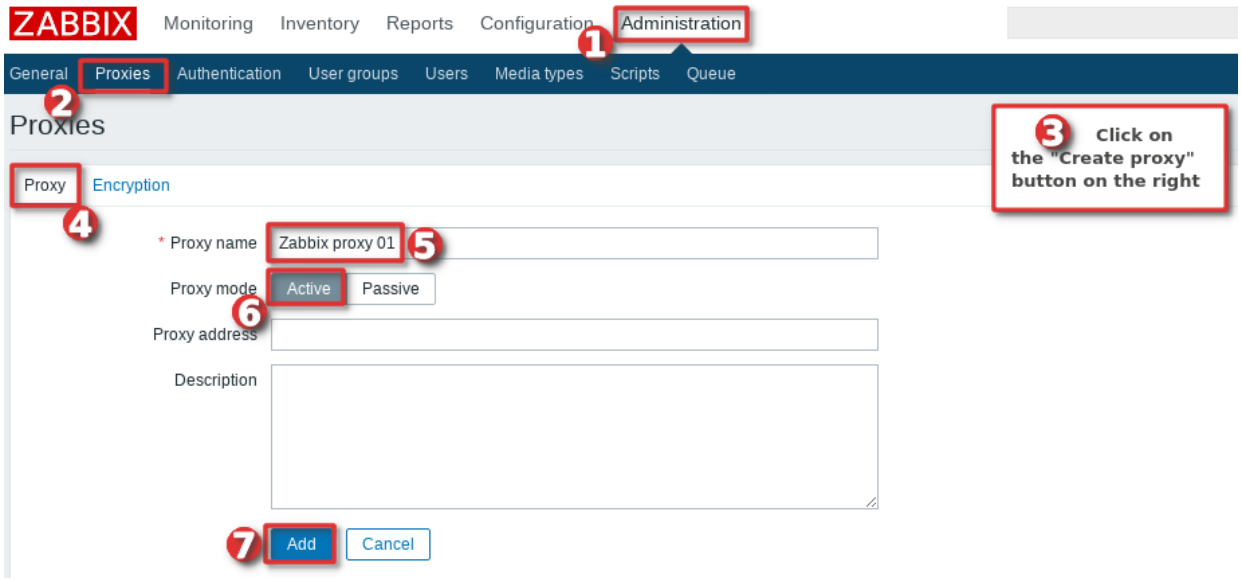
Restart proxy service and set it to boot on startup:

```
sudo systemctl restart zabbix-proxy
sudo systemctl enable zabbix-proxy
```

Step 7: Register Zabbix Proxy in the Zabbix frontend

Now that your proxy server is running, you need to register it in the Zabbix frontend using "*Proxies*" option under the "*Administration*" section. Click on the "*Create proxy*" button on the right, then set "*Proxy name*" to Zabbix proxy 01 and "*Proxy mode*" to "*Active*".

Note that for a proxy to work in active mode "*Proxy name"* must be the same as the "*hostname*" parameter in "`zabbix_proxy.conf`" file.



Picture showing how to register an active Proxy in Zabbix frontend

Immediately after adding a proxy to the frontend, you will be informed that the proxy has never been seen.

Name ▲	Mode	Encryption	Compression	Last seen (age)	Host count	Item count
Zabbix proxy 01	Active	NONE	ON	Never	0	0

However, if you wait for 100 seconds "*Last seen (age)*" status will display seconds instead "*Never*" which means that proxy is communicating with the server.

Name ▲	Mode	Encryption	Compression	Last seen (age)	Host count	Item count
Zabbix proxy 01	Active	NONE	ON	4s	0	0

Why 100 seconds? Remember what we have put under the "*ConfigFrequency*" parameter in "`zabbix_proxy.conf`" file? Whatever you put there that's how long will it take for proxy to contact the Zabbix server to retrieve configuration data. This rule only applies if the proxy is in active mode.

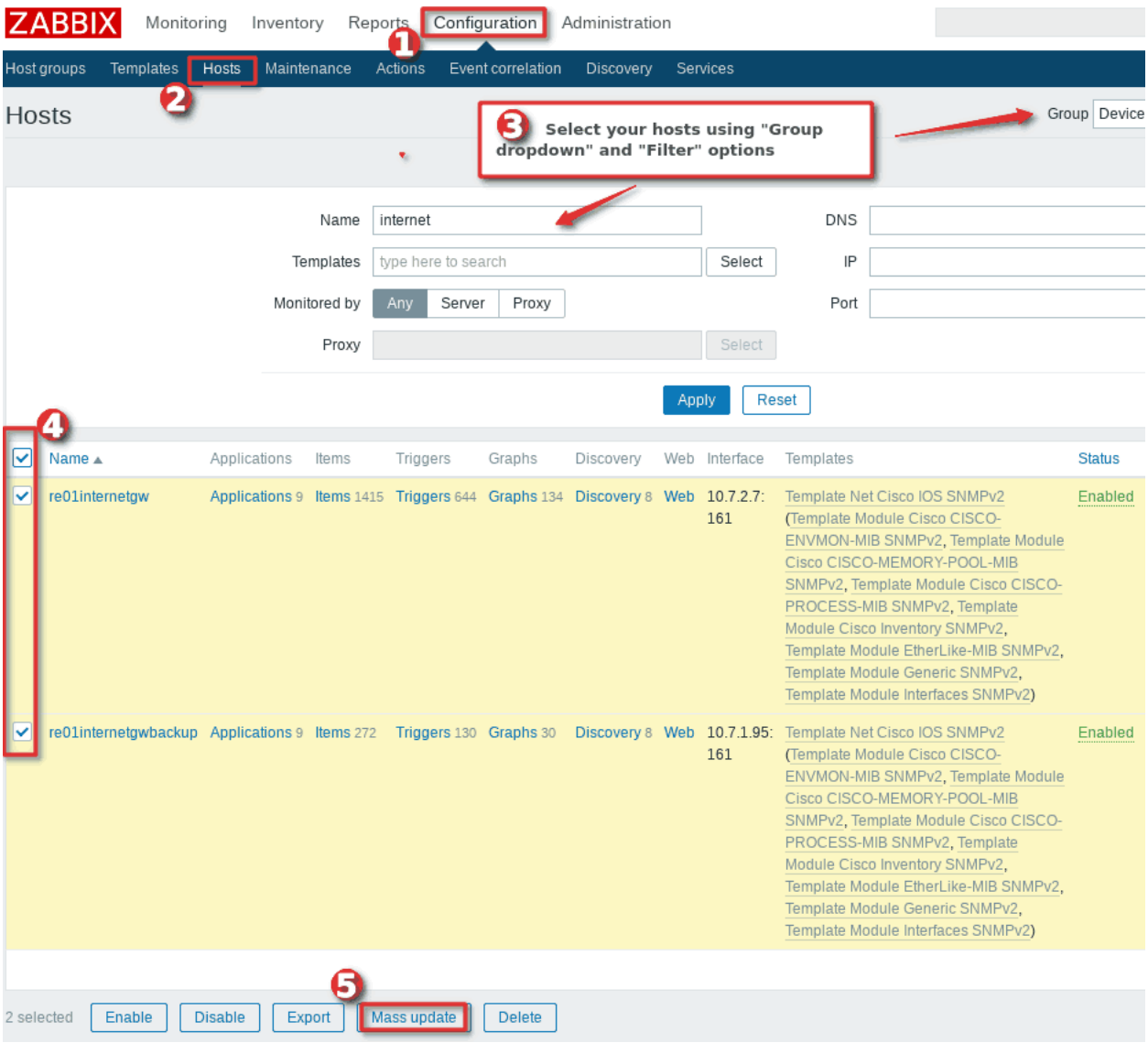
Note that "*Last seen (age)*" status should never go above 6 seconds if proxy-server communication is working.

Active proxy mod is recommended because it can work behind a firewall but you can check out the section "Understanding Active vs Passive Zabbix Proxy mod" If you need to set proxy to work in a passive mode.

Step 8: Configure hosts in Zabbix to be monitored by a Proxy Server

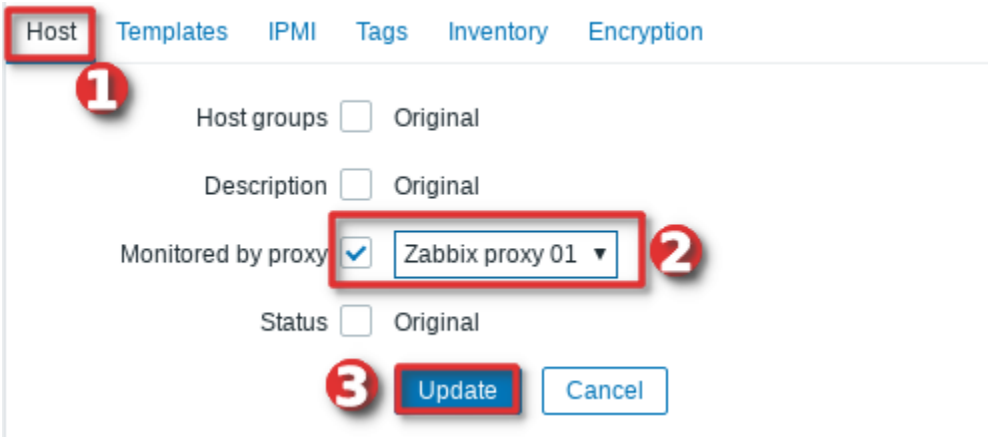
Proxy is running and communicating with the Zabbix server, but it is not gathering any data because we didn't do the last crucial step! We need to configure hosts in Zabbix to be monitored by the proxy server.

Let's do that together, go to the "*Host*" option under the "*Configuration*" section and select hosts that need to monitored by proxy.



Configure hosts in Zabbix to be monitored by a proxy server – Step 1

After you have selected hosts click on the "*Mass update*" button, then under the "*Host*" options select our newly added proxy in the "*Monitored by proxy*" dropdown and finally click the "*Update*" button just as shown in the image below.



Configure hosts in Zabbix to be monitored by a proxy server – Step 2

CONGRATULATIONS!

You have successfully installed and configured Zabbix Proxy on CentOS/RHEL!
No need to change anything else as other steps are optional.

CONTINUE TO LEARN MORE:

Configuring encryption (PSK) on proxy server
Optimizing proxy server and MySQL database
How to manage Proxy and MySQL service
Understanding Active vs Passive Proxy mod
Learn about common Proxy errors

Step 7: Configuring PSK encryption on Zabbix proxy (optional)

Zabbix supports encrypted communications between Zabbix server and proxy using Transport Layer Security (TLS) protocol v.1.2. You can use certificate-based and pre-shared key-based encryption (PSK), but in this tutorial you will configure the latter.

a. Generate PSK key on proxy server

Generate 256-bit (32 bytes) PSK key with openssl command:

```
$ openssl rand -hex 32
 382eb0250c365cc207cc4980cdb1bb1814c19d882b7fddcda00281311a8fb955
```

Create and open file "`zabbix_proxy.psk`" with command

```
sudo nano /etc/zabbix/zabbix_proxy.psk
```

and copy & paste that newly generated key into it.

Save and exit the file (**ctrl**+**x**, followed by **y** and **enter**) and set the correct file permission:

```
sudo chown zabbix:zabbix /etc/zabbix/zabbix_proxy.psk
sudo chmod 644 /etc/zabbix/zabbix_proxy.psk
```

b. Configure Zabbix proxy to support PSK encryption

Open `zabbix_proxy.conf` file with command:

```
sudo nano /etc/zabbix/zabbix_proxy.conf
```

and add this configuration anywhere in file:

```
TLSConnect=psk
TLSAccept=psk
TLSPSKFile=/etc/zabbix/zabbix_proxy.psk
TLSPSKIdentity=ZBX-PSK-01
```

Save and exit file (**ctrl**+**x**, followed by **y** and **enter**).

Keep in mind that "*TLSPSKIdentity*" can be anything, so for security reasons set something else – don't use the sample provided!

Don’t forget to restart proxy server after changing the configuration file:

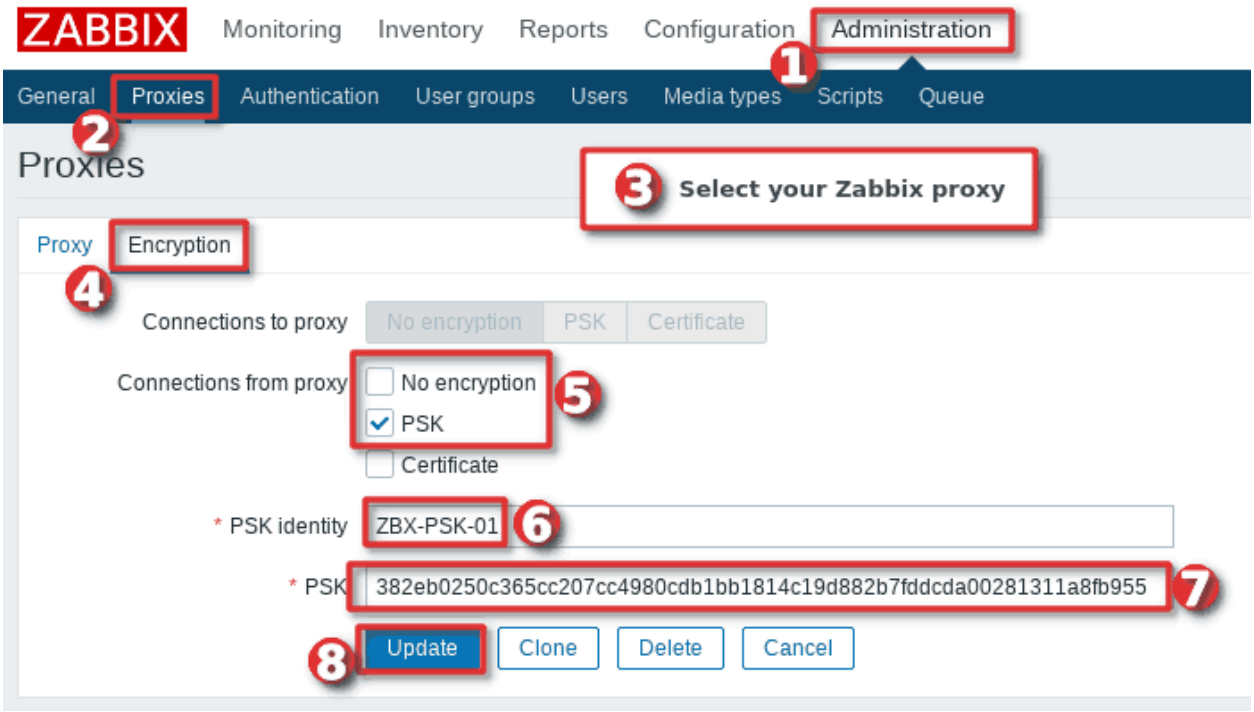
```
sudo systemctl restart zabbix-proxy
```

c. Enable PSK encryption on the proxy in Zabbix frontend

Communication between Zabbix proxy and server is not yet encrypted because we have enabled PSK encryption on the proxy side but not on the server-side.

We need to enable encryption on the server side so go to web frontend and select your proxy on the “*Proxies*” option under the “*Administration*” section. Next, on the “Encryption” tab set PSK under “Connections from proxy” option and copy and paste “PSK identity” and “PSK” (key) that you have configured on the proxy. If you ever lose your generated PSK key check it with command “`cat /etc/zabbix/zabbix_proxy.psk`” on the proxy server.

When you are done with configuration click the “*Update*” button just as shown in the image below.



Configuring PSK encryption for proxy on the Zabbix frontend

If you have done everything right you should see something like this:

Checking proxy encryption status on the Zabbix web frontend

Step 8: Optimizing Proxy server (optional)

Don't bother with this optimization if you are monitoring a small number of devices, but if you are planning to monitor a large number of devices then continue with this step.

Open `zabbix_proxy.conf` file with command:

```
sudo nano /etc/zabbix/zabbix_proxy.conf
```

and add this configuration anywhere in file:

```
StartPollers=100
StartPollersUnreachable=50
StartPingers=50
StartTrappers=10
StartDiscoverers=15
StartHTTPPollers=5
CacheSize=128M
HistoryCacheSize=64M
HistoryIndexCacheSize=32M
```

Save and exit file (**ctrl**+**x**, followed by **y** and **enter**).

This is not a perfect configuration, keep in mind that you can optimize it even more. Let's say if you don't use ICMP checks then set the "`StartPingers`" parameter to 1 or if you don't use active agents then set "`StartTrappers`" to 1 and so on. You can find out more about the parameters supported in a proxy configuration file in the official documentation.

If you try to start the proxy server you will receive an error "`[Z3001] connection to database 'zabbix_proxy' failed: [1040] Too many connections`" in the log "`/var/log/zabbix/zabbix_proxy.log`" because we are using more proxy processes than MySQL can handle. We need to increase the maximum permitted number of simultaneous client connections and optimize MySQL – so move to the next step.

Step 9: Optimizing MySQL database (optional)

a. Create custom MySQL configuration file

Create file "`10_my_tweaks.cnf`" with

```
sudo nano /etc/my.cnf.d/10_my_tweaks.cnf
```

and paste this configuration:

```
[mysqld]
max_connections                = 280
innodb_buffer_pool_size        = 1G

innodb-log-file-size           = 128M
innodb-log-buffer-size         = 128M
innodb-file-per-table          = 1
innodb_buffer_pool_instances   = 8
innodb_old_blocks_time         = 1000
innodb_stats_on_metadata       = off
innodb-flush-method            = O_DIRECT
innodb-log-files-in-group      = 2
innodb-flush-log-at-trx-commit = 2

tmp-table-size                 = 96M
max-heap-table-size            = 96M
open_files_limit               = 65535
max_connect_errors             = 1000000
connect_timeout                = 60
wait_timeout                   = 28800
```

Save and exit the file (**ctrl**+**x**, followed by **y** and **enter**) and set the correct file permission:

```
sudo chown mysql:mysql /etc/my.cnf.d/10_my_tweaks.cnf
sudo chmod 644 /etc/my.cnf.d/10_my_tweaks.cnf
```

Two things to remember!

Configuration parameter **max_connections** must be larger than the total number of all proxy processes plus 50. You can use the command below to automatically check the number of Zabbix processes and add 50 to that number:

```
root@centos:~ $  egrep "^Start.+=[0-9]"  /etc/zabbix/zabbix_proxy.conf  |  awk -F "=" '{s+=$2} END {print s+50}'
 280
```

The second most important parameter is **innodb_buffer_pool_size**, which determines how much memory can MySQL get for caching InnoDB tables and index data. You should set that parameter to 70% of system memory if only database is installed on server.

However, in this case, you are sharing a server with the proxy so you should set **innodb_buffer_pool_size** to 50% of total system memory. That would be 1G because your CentOS server has 2G RAM.

I didn't have any problems with memory, but if your proxy server crashes because of lack of memory, reduce "`innodb_buffer_pool_size`" and restart MySQL server.

b. Restart Proxy server and MySQL service

Stop and start the services in the same order as below:

```
sudo systemctl stop zabbix-proxy
sudo systemctl stop mysql
sudo systemctl start mysql
sudo systemctl start zabbix-proxy
```

Step 10: How to manage Proxy and MySQL service

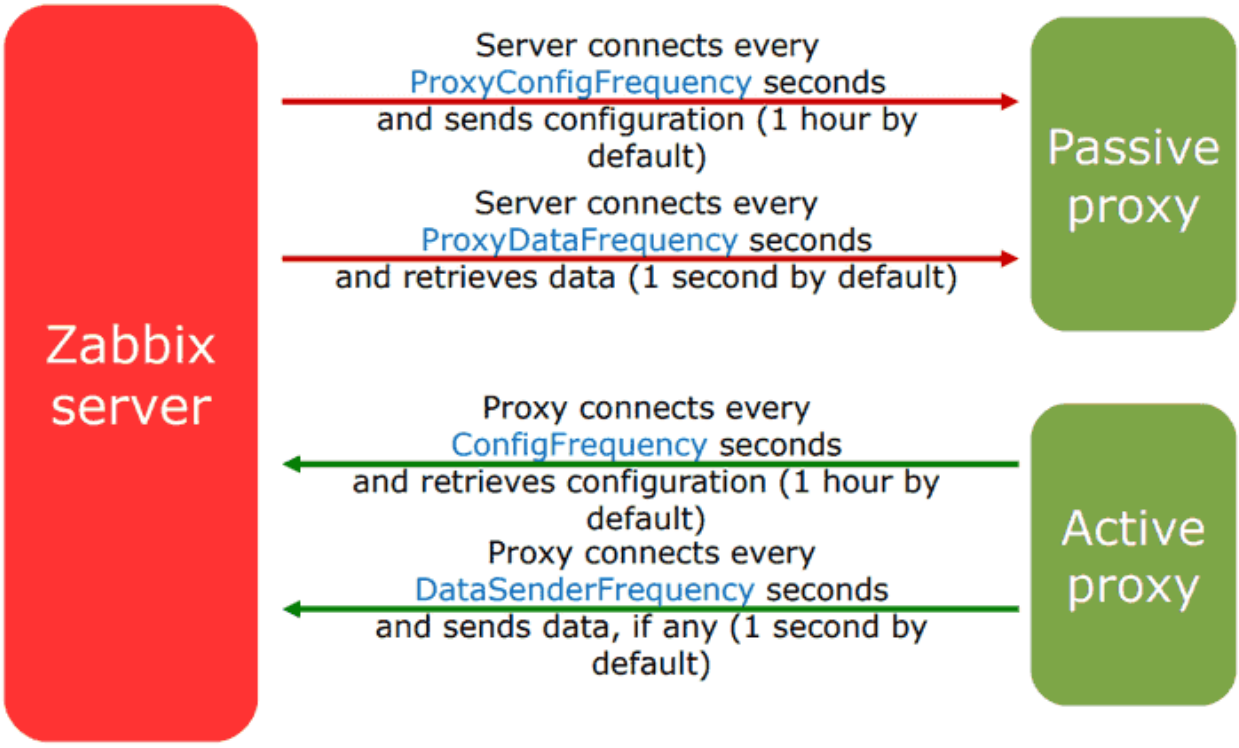
Sometimes you will need to check or restart Zabbix proxy or MySQL service – use commands below to do that.

```
Proxy Server
sudo systemctl <status/restart/start/stop> zabbix-proxy
MySQL Server
sudo systemctl <status/restart/start/stop> mysql
```

Step 11: Understanding Active vs Passive Zabbix Proxy mod

When you use a proxy in active mode, it will connect to the Zabbix server to retrieve configuration and send data. This is a great feature that enables active proxy server to work behind a firewall.

And if you use a proxy in passive mode Zabbix server will initiate a connection to the proxy to send configuration and retrieve data from the proxy.



Picture showing how active proxy works compared to a passive proxy (source: www.zabbix.com)

Before, in this tutorial, we have configured proxy server to work in active mode. Let me show you how can you configure the proxy to work in passive mode.

Open file `zabbix_proxy.conf` with the command:

```
sudo nano /etc/zabbix/zabbix_proxy.conf
```

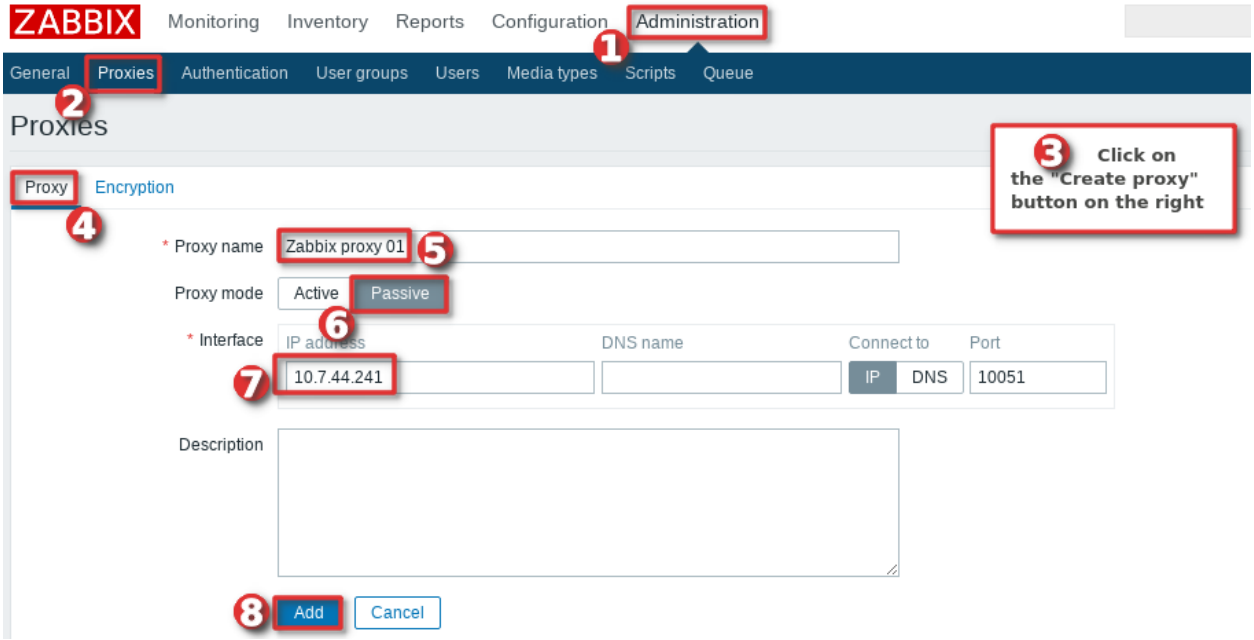
and turn on passive mode and define Zabbix server IP address by adding this anywhere in the file (change "*Server*" parameter to to match your Zabbix server):

```
ProxyMode=1
Server=172.20.20.234
```

Save and exit the file (**ctrl**+**x**, followed by **y** and **enter**).

Reboot proxy server with the command "`sudo systemctl restart zabbix-proxy`"

Now, you need to add the proxy in the Zabbix frontend using the "*Proxies*" option under the "*Administration*" section. Click on the "*Create proxy*" button on the right, then set "*Proxy name*" to anything you want and "*Proxy mode*" to "*Passive*". Define IP address of the proxy server under the "*Interfaces*" and click add button if you are done with the configuration.



Picture showing how to register an passive Proxy in the Zabbix frontend

Step 12: Learn about common Zabbix Proxy errors

No data in items because Zabbix proxy time differs from Zabbix server time

Starting from version 4.0 Zabbix server will no longer adjust value timestamps in cases when proxy time differs from Zabbix server time. This problem is easy to detect because server-proxy communication will work but there will be no data in the items.

Adjust Zabbix server and the proxy to use the same time server (NTP) or set the time manually.

Communication between Proxy and Server is not working

Zabbix proxy is using port **10051** to communicate with the Zabbix server so make sure that you permit traffic coming from port 10051 in your network.

Note that Zabbix is using compression for communication with Proxies. Compression improves performance because it drastically reduces network traffic.

However, this may cause some problems in environments that have security devices (IDS/IPS or NGFW) installed as they can drop network packets if they detect compression in the network stream. To avoid that problem, make sure the application definitions on the security devices are up-to-date, and if you have any problems, contact your device vendor.

Checking logs on the Proxy server

If you experience a problem with the proxy you can check last 500 lines of the log with the command:

```
tail -500 /var/log/zabbix/zabbix_proxy.log
```

Thank you for reading!

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