1 install Zabbix Server 5 on VM that includes:

- **Zabbix Server**
- **Database**
- **Apache**
- **PHP**
- **Zabbix Server-Modules for Apache & Database**
- **Zabbix Frontend**

```
samana@samana-vm:~$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libaio1 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-server-8.0 mysql-server-core-8.0
Suggested packages:
  libipc-sharedcache-perl mailx tinyca
The following NEW packages will be installed:
  libaio1 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-server mysql-server-8.0 mysql-server-core-8.0
0 upgraded, 16 newly installed, 0 to remove and 85 not upgraded.
Need to get 31.5 MB of archives.
After this operation, 262 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
samana@samana-vm:~$ sudo apt-get install apache2
[sudo] password for samana:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0
0 upgraded, 9 newly installed, 0 to remove and 85 not upgraded.
Need to get 1,820 kB of archives.
After this operation, 7,945 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
samana@samana-vm:~$ sudo apt install php libapache2-mod-php php-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-cli php7.4-common
  php7.4-json php7.4-mysql php7.4-opcache php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.4 php php-common php-mysql php7.4
  php7.4-cli php7.4-common php7.4-json php7.4-mysql php7.4-opcache
  php7.4-readline
0 upgraded, 12 newly installed, 0 to remove and 85 not upgraded.
Need to get 4,144 kB of archives.
After this operation, 18.5 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
samana@samana-vm:~$ wget https://repo.zabbix.com/zabbix/5.0/ubuntu/pool/main/z/
zabbix-release/zabbix-release_5.0-1+$(lsb_release -sc)_all.deb
--2021-12-03 14:28:42--  https://repo.zabbix.com/zabbix/5.0/ubuntu/pool/main/z/
zabbix-release/zabbix-release_5.0-1+focal_all.deb
Resolving repo.zabbix.com (repo.zabbix.com)... 178.128.6.101, 2604:a880:2:d0::2
062:d001
Connecting to repo.zabbix.com (repo.zabbix.com)|178.128.6.101|:443... connected
.
HTTP request sent, awaiting response... 200 OK
Length: 4244 (4.1K) [application/octet-stream]
Saving to: ‘zabbix-release_5.0-1+focal_all.deb’

zabbix-release_5.0- 100%[===================>]   4.14K  --.-KB/s    in 0s

2021-12-03 14:28:43 (138 MB/s) - ‘zabbix-release_5.0-1+focal_all.deb’ saved [42
44/4244]

samana@samana-vm:~$
```

```
samana@samana-vm:~$ sudo dpkg -i zabbix-release_5.0-1+focal_all.deb
Selecting previously unselected package zabbix-release.
(Reading database ... 185189 files and directories currently installed.)
Preparing to unpack zabbix-release_5.0-1+focal_all.deb ...
Unpacking zabbix-release (1:5.0-1+focal) ...
Setting up zabbix-release (1:5.0-1+focal) ...
samana@samana-vm:~$
```

```
samana@samana-vm:~$ sudo apt install zabbix-server-mysql zabbix-apache-conf
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  fonts-dejavu fonts-dejavu-extra fping libodbc1 libonig5 libopenipmi0
  php-bcmath php-gd php-ldap php-mbstring php-xml php7.4-bcmath php7.4-gd
  php7.4-ldap php7.4-mbstring php7.4-xml snmpd zabbix-frontend-php
Suggested packages:
  libmyodbc odbc-postgresql tdsodbc unixodbc-bin snmptrapd zabbix-nginx-conf
The following NEW packages will be installed:
  fonts-dejavu fonts-dejavu-extra fping libodbc1 libonig5 libopenipmi0
  php-bcmath php-gd php-ldap php-mbstring php-xml php7.4-bcmath php7.4-gd
  php7.4-ldap php7.4-mbstring php7.4-xml snmpd zabbix-apache-conf
  zabbix-frontend-php zabbix-server-mysql
0 upgraded, 20 newly installed, 0 to remove and 85 not upgraded.
Need to get 8,770 kB of archives.
After this operation, 38.4 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
samana@samana-vm:~$ sudo apt install zabbix-frontend-php
Reading package lists... Done
Building dependency tree
Reading state information... Done
zabbix-frontend-php is already the newest version (1:5.0.18-1+focal).
zabbix-frontend-php set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 85 not upgraded.
samana@samana-vm:~$
```

Now, we configure the mysql database for zabbix

```
samana@samana-vm:~$ sudo mysql -u root -p
[sudo] password for samana:
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.27-0ubuntu0.20.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input stat
```

Creating a database named zabbix.

```
mysql> create database zabbix character set utf8 collate utf8_bin;
Query OK, 1 row affected, 2 warnings (0.06 sec)
```

Creating a user named zabbix and password for that database user

```
mysql> create user zabbix@localhost identified by 'zabbixpass';
Query OK, 0 rows affected (0.07 sec)
```

Granting all privilege on all tables of zabbix database to zabbix user.

```
mysql> grant all privileges on zabbix.* to zabbix@localhost;
Query OK, 0 rows affected (0.06 sec)
```

In the end we flush privileges for security reasons

```
mysql> flush privileges;
Query OK, 0 rows affected (0.03 sec)

mysql>
```

We run the following command to set up the schema and import the data into the zabbix database

```
samana@samana-vm:~$ zcat /usr/share/doc/zabbix-server-mysql/create.sql.gz | mys
ql -u zabbix -p zabbix
Enter password:
```

We set up the timezone in the following files:
/etc/apache2/conf-available/zabbix.conf and /etc/zabbix/apache.conf

```
samana@samana-vm:/etc/apache2/conf-available$ sudo nano zabbix.conf
samana@samana-vm:/etc/apache2/conf-available$
```

```
GNU nano 4.8                    zabbix.conf
    Order allow,deny
    Allow from all

    <IfModule mod_php5.c>
        php_value max_execution_time 300
        php_value memory_limit 128M
        php_value post_max_size 16M
        php_value upload_max_filesize 2M
        php_value max_input_time 300
        php_value max_input_vars 10000
        php_value always_populate_raw_post_data -1
        php_value date.timezone Asia/Kathmandu
    </IfModule>
    <IfModule mod_php7.c>
        php_value max_execution_time 300
        php_value memory_limit 128M
        php_value post_max_size 16M
        php_value upload_max_filesize 2M
        php_value max_input_time 300
        php_value max_input_vars 10000
        php_value always_populate_raw_post_data -1
        php_value date.timezone Asia/Kathmandu
```

```
  GNU nano 4.8                    apache.conf
# Define /zabbix alias, this is the default
<IfModule mod_alias.c>
    Alias /zabbix /usr/share/zabbix
</IfModule>

<Directory "/usr/share/zabbix">
    Options FollowSymLinks
    AllowOverride None
    Order allow,deny
    Allow from all

    <IfModule mod_php5.c>
        php_value max_execution_time 300
        php_value memory_limit 128M
        php_value post_max_size 16M
        php_value upload_max_filesize 2M
        php_value max_input_time 300
        php_value max_input_vars 10000
        php_value always_populate_raw_post_data -1
        php_value date.timezone Asia/Kathmandu
    </IfModule>
    <IfModule mod_php7.c>
```

2. **Provide screenshot of**

- **Running Zabbix Server service,**

```
samana@samana-vm:/etc/zabbix$ sudo systemctl status zabbix-server.service
● zabbix-server.service - Zabbix Server
     Loaded: loaded (/lib/systemd/system/zabbix-server.service; disabled; vend>
     Active: active (running) since Fri 2021-12-03 17:41:01 +0545; 25s ago
    Process: 60671 ExecStart=/usr/sbin/zabbix_server -c $CONFFILE (code=exited>
   Main PID: 60673 (zabbix_server)
      Tasks: 38 (limit: 3518)
     Memory: 29.7M
     CGroup: /system.slice/zabbix-server.service
             ├─60673 /usr/sbin/zabbix_server -c /etc/zabbix/zabbix_server.conf
             ├─60676 /usr/sbin/zabbix_server: configuration syncer [synced con>
             ├─60680 /usr/sbin/zabbix_server: alert manager #1 [sent 0, failed>
             ├─60681 /usr/sbin/zabbix_server: alerter #1 started
             ├─60682 /usr/sbin/zabbix_server: alerter #2 started
             ├─60683 /usr/sbin/zabbix_server: alerter #3 started
             ├─60684 /usr/sbin/zabbix_server: preprocessing manager #1 [queued>
             ├─60685 /usr/sbin/zabbix_server: preprocessing worker #1 started
             ├─60686 /usr/sbin/zabbix_server: preprocessing worker #2 started
             ├─60687 /usr/sbin/zabbix_server: preprocessing worker #3 started
             ├─60688 /usr/sbin/zabbix_server: lld manager #1 [processed 0 LLD >
             ├─60689 /usr/sbin/zabbix_server: lld worker #1 started
             ├─60690 /usr/sbin/zabbix_server: lld worker #2 started
```

- **Database config parameter in server config file**

```
samana@samana-vm:~$ cd /etc/zabbix/
samana@samana-vm:/etc/zabbix$ ls
apache.conf  web  zabbix_server.conf
samana@samana-vm:/etc/zabbix$ sudo nano zabbix_server.conf
```

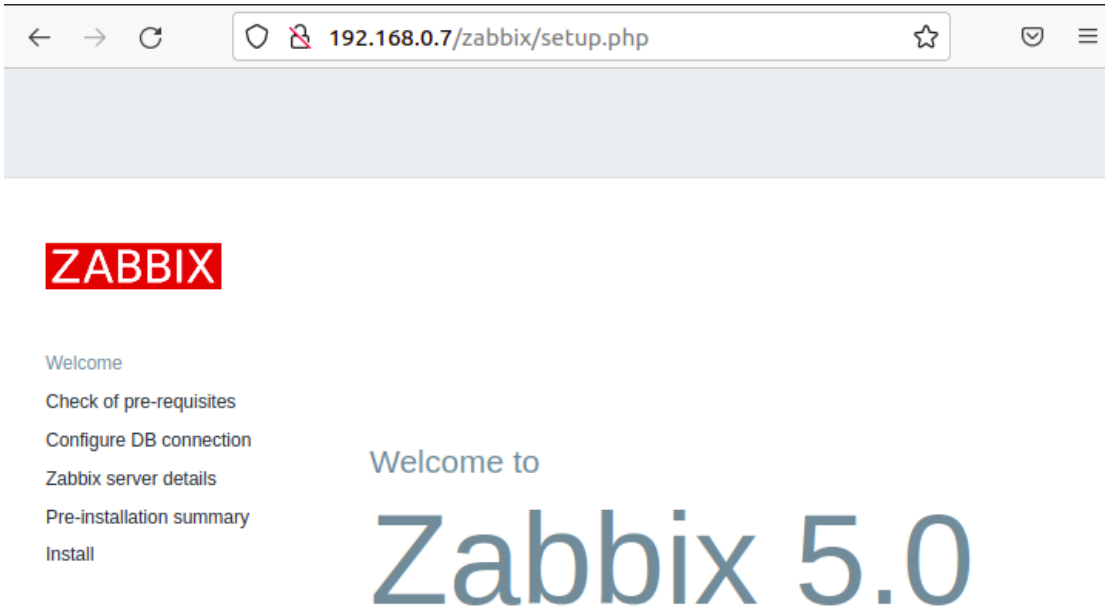
```
  GNU nano 4.8                    zabbix_server.conf                    Modified
# DBUser=

DBUser=zabbix

### Option: DBPassword
#       Database password.
#       Comment this line if no password is used.
#
# Mandatory: no
# Default:
 DBPassword=zabbixpass

### Option: DBSocket
#       Path to MySQL socket.
#
```

Server Dashboard



192.168.0.7/zabbix/setup.php 90%

ZABBIX

Welcome
Check of pre-requisites
Configure DB connection
Zabbix server details
Pre-installation summary
Install

Check of pre-requisites

	Current value	Required	
PHP version	7.4.3	7.2.0	OK
PHP option "memory_limit"	128M	128M	OK
PHP option "post_max_size"	16M	16M	OK
PHP option "upload_max_filesize"	2M	2M	OK
PHP option "max_execution_time"	300	300	OK
PHP option "max_input_time"	300	300	OK
PHP option "date.timezone"	Asia/Kathmandu		OK
PHP databases support	MySQL		OK
PHP bcmath	on		OK
PHP mbstring	on		OK

Back Next step

192.168.0.7/zabbix/setup.php 90%

ZABBIX

Welcome
Check of pre-requisites
Configure DB connection
Zabbix server details
Pre-installation summary
Install

Configure DB connection

Please create database manually, and set the configuration parameters for connection to this database.
Press "Next step" button when done.

Database type: MySQL
Database host: localhost
Database port: 0 — 0 - use default port
Database name: zabbix
User: zabbix
Password: ••••••••••

Database TLS encryption: *Connection will not be encrypted because it uses a socket file (on Unix) or shared memory (Windows).*

Back Next step

192.168.0.7/zabbix/setup.php 90%

ZABBIX

Welcome
Check of pre-requisites
Configure DB connection
Zabbix server details
Pre-installation summary
Install

Zabbix server details

Please enter the host name or host IP address and port number of the Zabbix server, as well as the name of the installation (optional).

Host	localhost
Port	10051
Name	Zabbix_Server

Back Next step

192.168.0.7/zabbix/setup.php 90%

ZABBIX

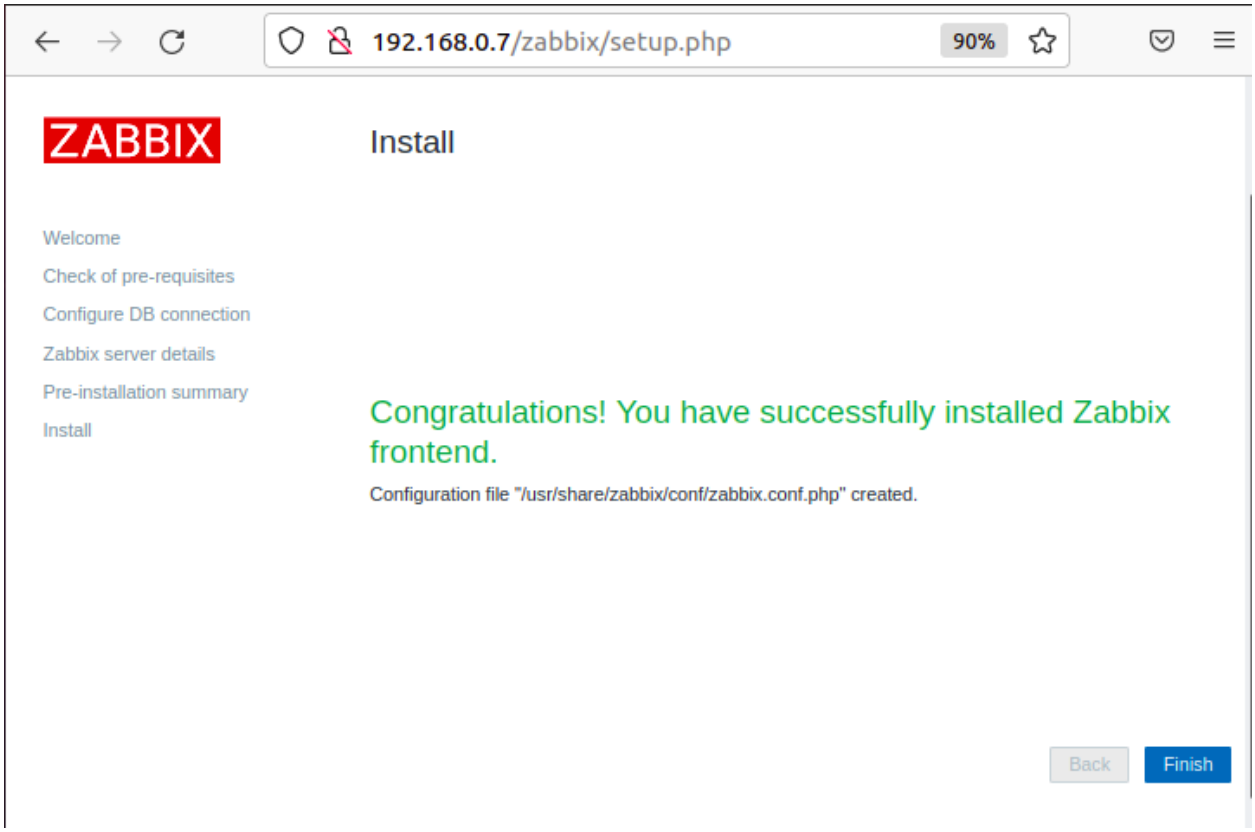
Welcome
Check of pre-requisites
Configure DB connection
Zabbix server details
Pre-installation summary
Install

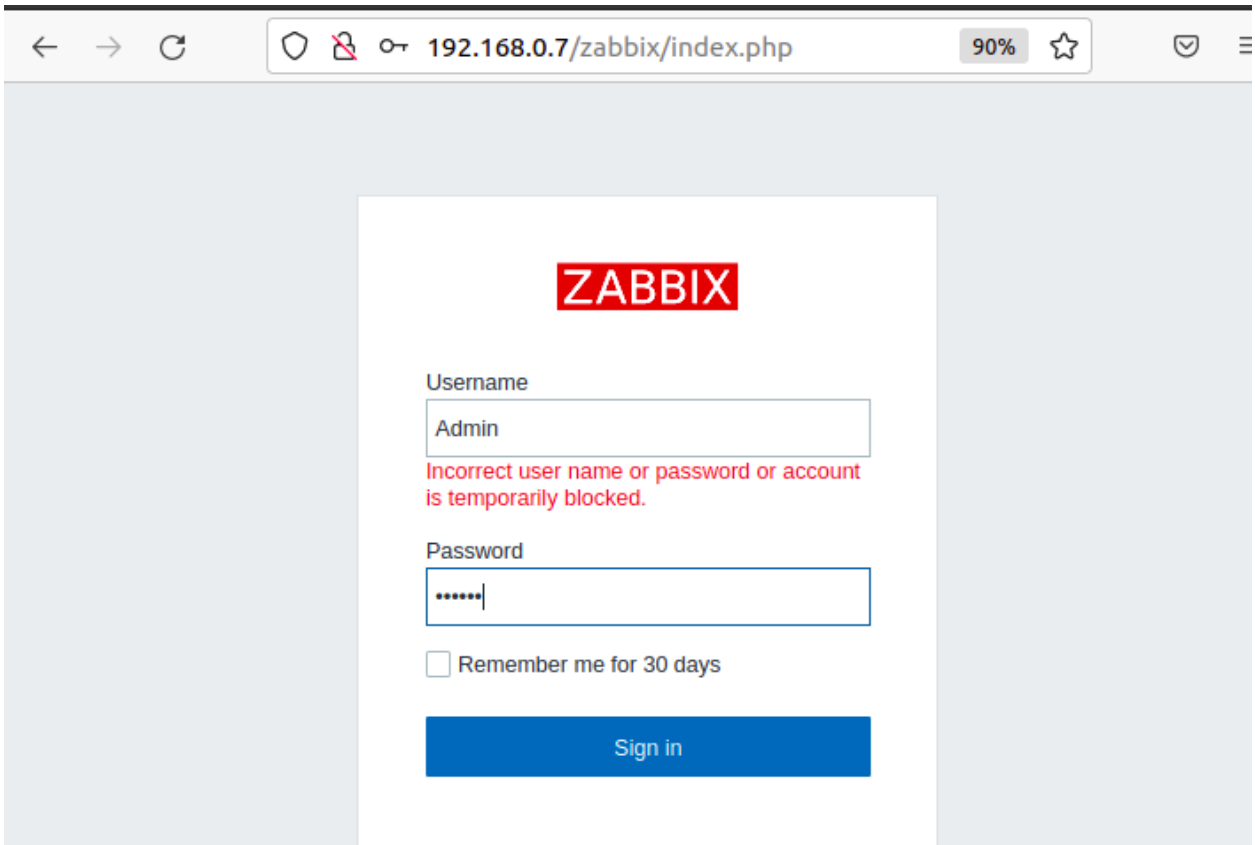
Pre-installation summary

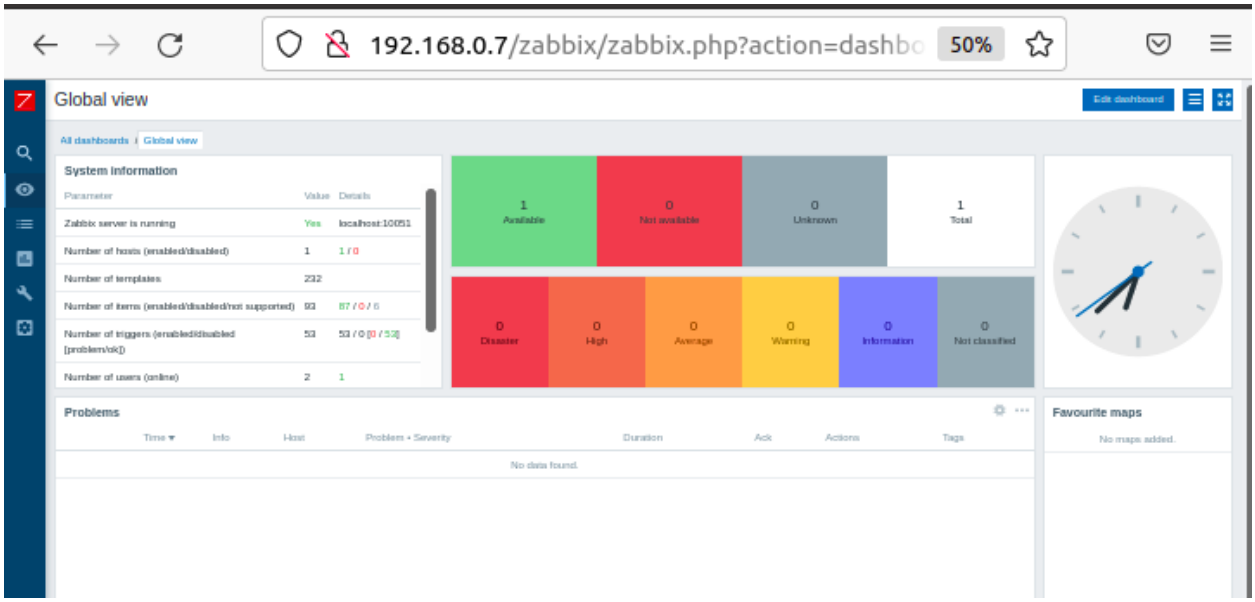
Please check configuration parameters. If all is correct, press "Next step" button, or "Back" button to change configuration parameters.

Database type	MySQL
Database server	localhost
Database port	default
Database name	zabbix
Database user	zabbix
Database password	**********
Database TLS encryption	false
Zabbix server	localhost
Zabbix server port	10051
Zabbix server name	Zabbix_Server

Back Next step


192.168.0.7/zabbix/setup.php
90%
ZABBIX
Install
Welcome
Check of pre-requisites
Configure DB connection
Zabbix server details
Pre-installation summary
Install
Congratulations! You have successfully installed Zabbix frontend.
Configuration file "/usr/share/zabbix/conf/zabbix.conf.php" created.
Back
Finish


192.168.0.7/zabbix/index.php
90%
ZABBIX
Username
Admin
Incorrect user name or password or account is temporarily blocked.
Password
Remember me for 30 days
Sign in


192.168.0.7/zabbix/zabbix.php?action=dashbo
50%
Global view
Edit dashboard
All dashboards / Global view
System information
Parameter
Value
Details
Zabbix server is running
Yes
localhost:10051
Number of hosts (enabled/disabled)
1
1 / 0
Number of templates
232
Number of items (enabled/disabled/not supported)
93
87 / 0 / 6
Number of triggers (enabled/disabled [problem/ok])
53
53 / 0 [0 / 53]
Number of users (online)
2
1
1
Available
0
Not available
0
Unknown
1
Total
0
Disaster
0
High
0
Average
0
Warning
0
Information
0
Not classified
Problems
Time
Info
Host
Problem • Severity
Duration
Ack
Actions
Tags
No data found.
Favourite maps
No maps added.

3. **Install Latest Zabbix Agent on VM or host machine or server itself to fetch logs, steps include:**
    - **Run as active check agent**
    - **Add a logging item to the same template for fetching /var/log/syslog(Ubuntu) or /var/log/messages (CentOS)**
    - **Fetch those logs from the host (Make sure required permissions are set for zabbix-agent to pull logs)**
    - **Provide agent configuration file & screenshots for target machine graph & logs**

Installing zabbix agent

```
samana@samana-vm:/etc/apache2/conf-available$ sudo apt install zabbix-agent
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  zabbix-agent
0 upgraded, 1 newly installed, 0 to remove and 85 not upgraded.
Need to get 210 kB of archives.
After this operation, 843 kB of additional disk space will be used.
Get:1 http://repo.zabbix.com/zabbix/5.0/ubuntu focal/main amd64 zabbix-agent am
d64 1:5.0.18-1+focal [210 kB]
Fetched 210 kB in 1s (243 kB/s)
Selecting previously unselected package zabbix-agent.
(Reading database ... 186689 files and directories currently installed.)
Preparing to unpack .../zabbix-agent_1%3a5.0.18-1+focal_amd64.deb ...
Unpacking zabbix-agent (1:5.0.18-1+focal) ...
Setting up zabbix-agent (1:5.0.18-1+focal) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3.11) ...
samana@samana-vm:/etc/apache2/conf-available$
```

Editing the configuration file for zabbix agent.

```
samana@samana-vm:/etc/apache2/conf-available$ cd /etc/zabbix/
samana@samana-vm:/etc/zabbix$ sudo nano zabbix_agentd.conf
```

```
  GNU nano 4.8                    zabbix_agentd.conf                    Modified
# Default:
# LogRemoteCommands=0

##### Passive checks related

### Option: Server
#       List of comma delimited IP addresses, optionally in CIDR notation, or >
#       Incoming connections will be accepted only from the hosts listed here.
#       If IPv6 support is enabled then '127.0.0.1', '::127.0.0.1', '::ffff:12>
#       and '::/0' will allow any IPv4 or IPv6 address.
#       '0.0.0.0/0' can be used to allow any IPv4 address.
#       Example: Server=127.0.0.1,192.168.1.0/24,::1,2001:db8::/32,zabbix.exam>
#
# Mandatory: yes, if StartAgents is not explicitly set to 0
# Default:
Server=127.0.0.1,192.168.0.7
```

```
  GNU nano 4.8                    zabbix_agentd.conf                    Modified
# Mandatory: no
# Default:
# ServerActive=

ServerActive=127.0.0.1

### Option: Hostname
#       Unique, case sensitive hostname.
#       Required for active checks and must match hostname as configured on th>
#       Value is acquired from HostnameItem if undefined.
#
# Mandatory: no
# Default:
# Hostname=

Hostname=Zabbixubuntu

### Option: HostnameItem
#       Item used for generating Hostname if it is undefined. Ignored if Hostn>
#       Does not support UserParameters or aliases.
#
# Mandatory: no
```

We can see that the zabbix-agent service is running successfully.

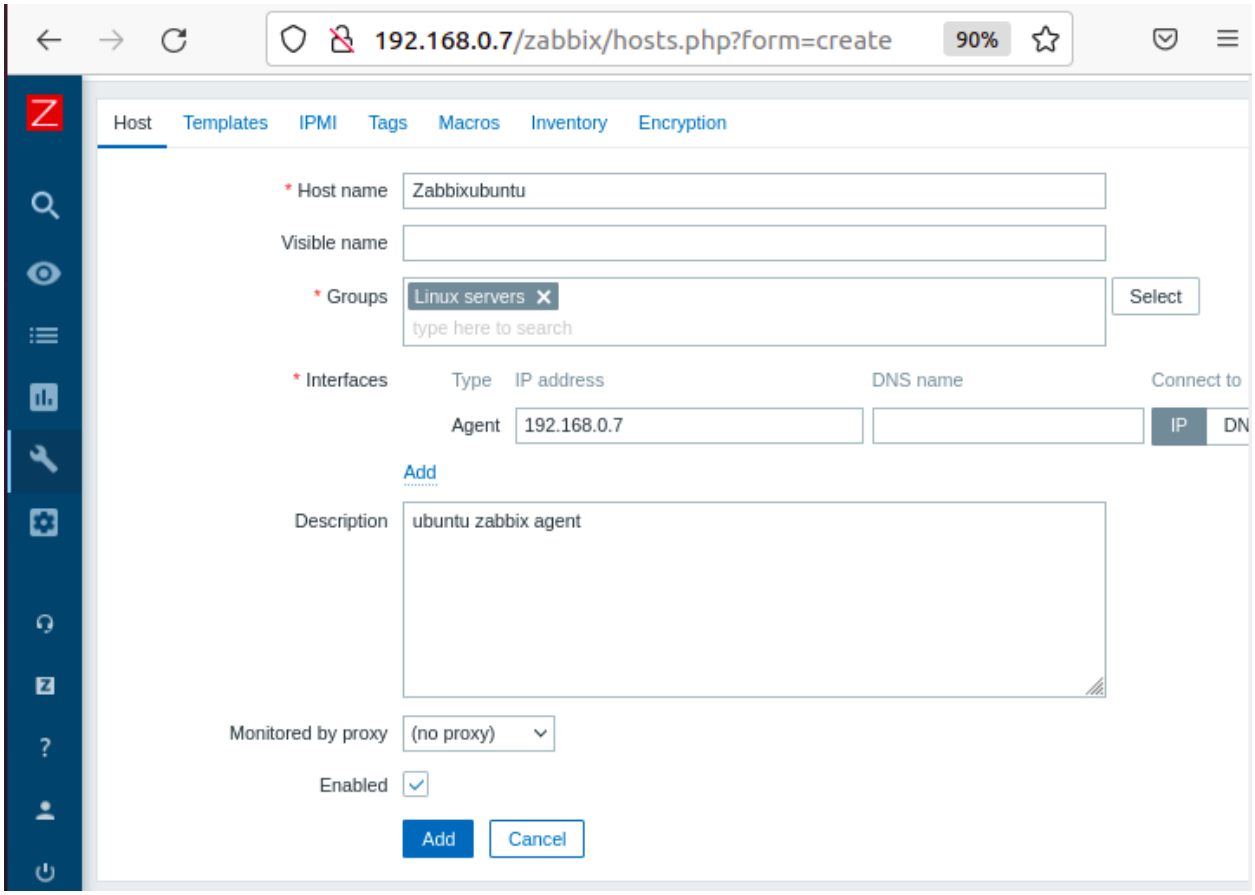
```
samana@samana-vm:/etc/zabbix$ sudo systemctl status zabbix-agent.service
● zabbix-agent.service - Zabbix Agent
     Loaded: loaded (/lib/systemd/system/zabbix-agent.service; disabled; vendo>
     Active: active (running) since Fri 2021-12-03 20:05:50 +0545; 40s ago
    Process: 63972 ExecStart=/usr/sbin/zabbix_agentd -c $CONFFILE (code=exited>
   Main PID: 63974 (zabbix_agentd)
      Tasks: 6 (limit: 3518)
     Memory: 4.4M
     CGroup: /system.slice/zabbix-agent.service
             ├─63974 /usr/sbin/zabbix_agentd -c /etc/zabbix/zabbix_agentd.conf
             ├─63975 /usr/sbin/zabbix_agentd: collector [idle 1 sec]
             ├─63976 /usr/sbin/zabbix_agentd: listener #1 [waiting for connect>
             ├─63977 /usr/sbin/zabbix_agentd: listener #2 [waiting for connect>
             ├─63978 /usr/sbin/zabbix_agentd: listener #3 [waiting for connect>
             └─63979 /usr/sbin/zabbix_agentd: active checks #1 [idle 1 sec]

दि सम्बर 03 20:05:50 samana-vm systemd[1]: Starting Zabbix Agent...
दि सम्बर 03 20:05:50 samana-vm systemd[1]: zabbix-agent.service: Can't open PID >
दि सम्बर 03 20:05:50 samana-vm systemd[1]: Started Zabbix Agent.
samana@samana-vm:/etc/zabbix$
```

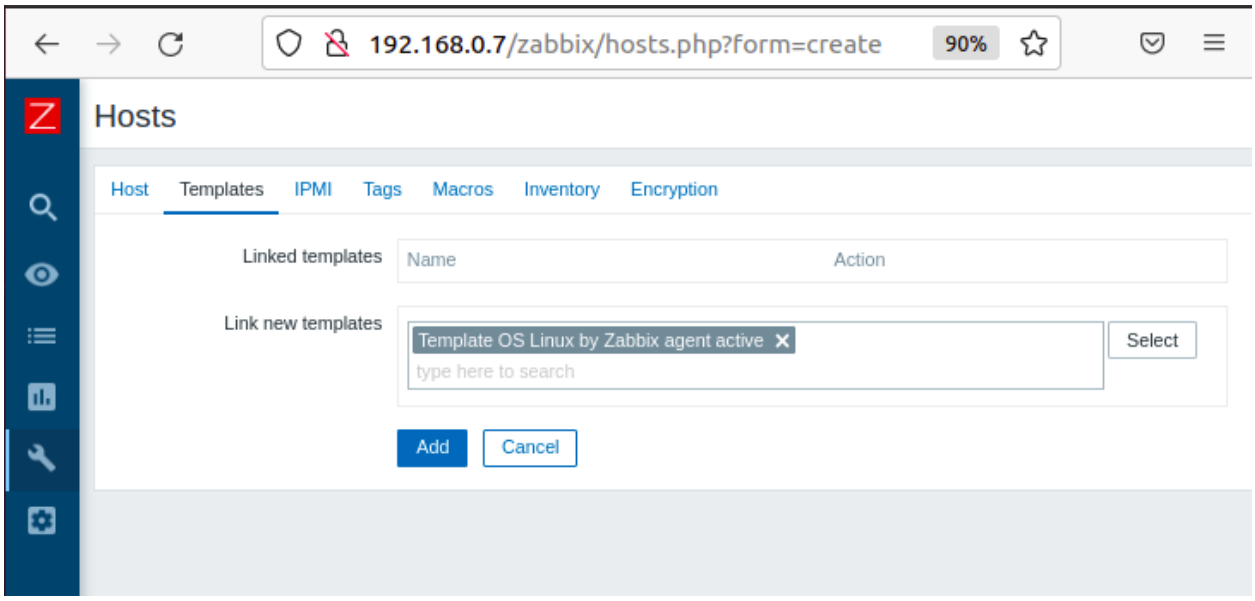
We add the zabbix user to adm group so that the user can read logs from /var/log/syslog

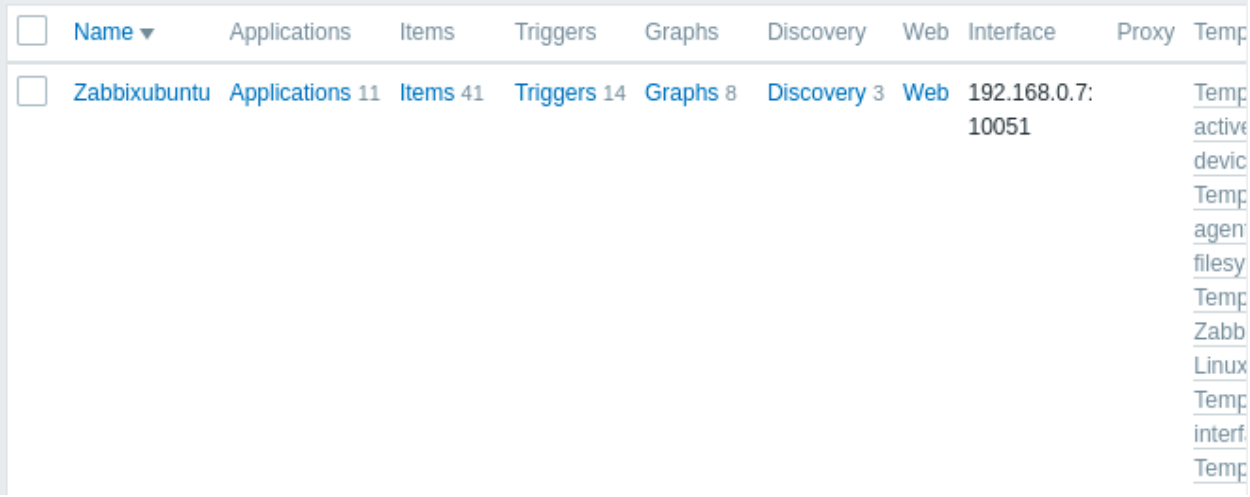
```
samana@samana-vm:~$ sudo usermod -aG adm zabbix
samana@samana-vm:~$
```

We create a host named Zabbixubuntu

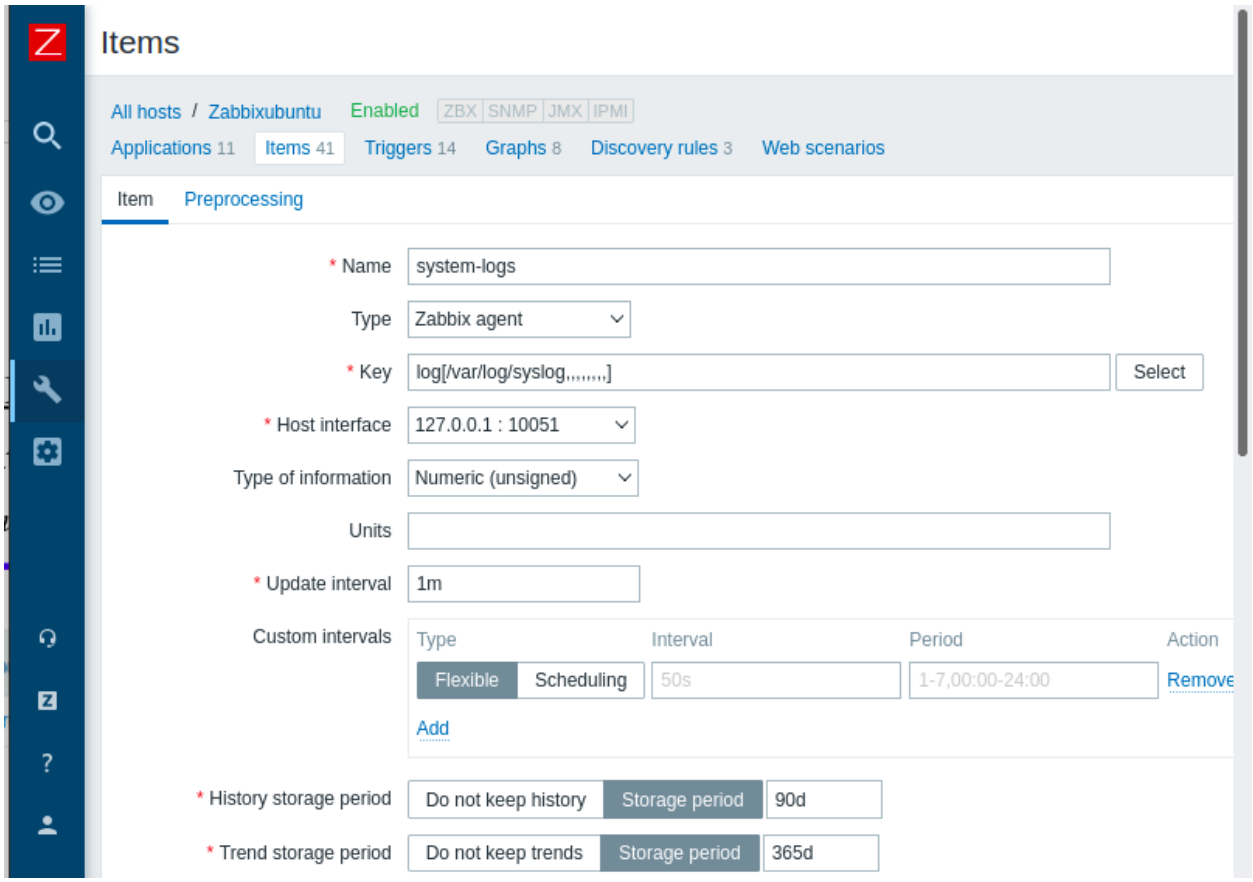


We set the template for that host as active zabbix agent

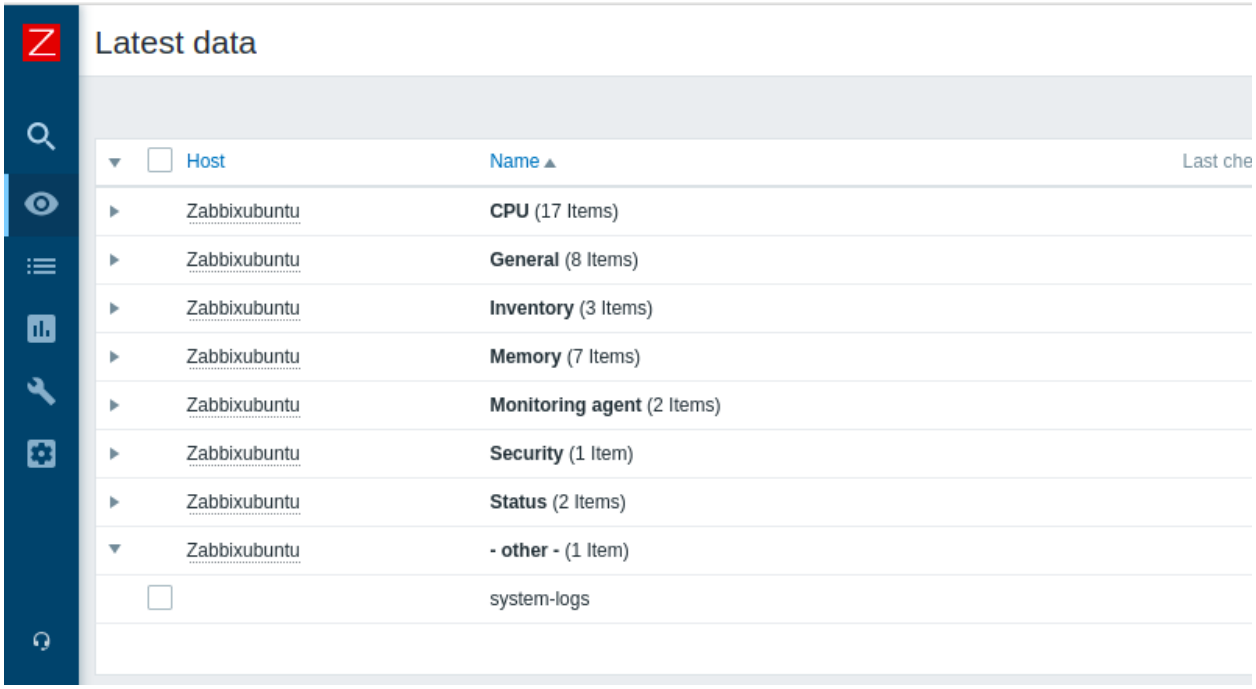




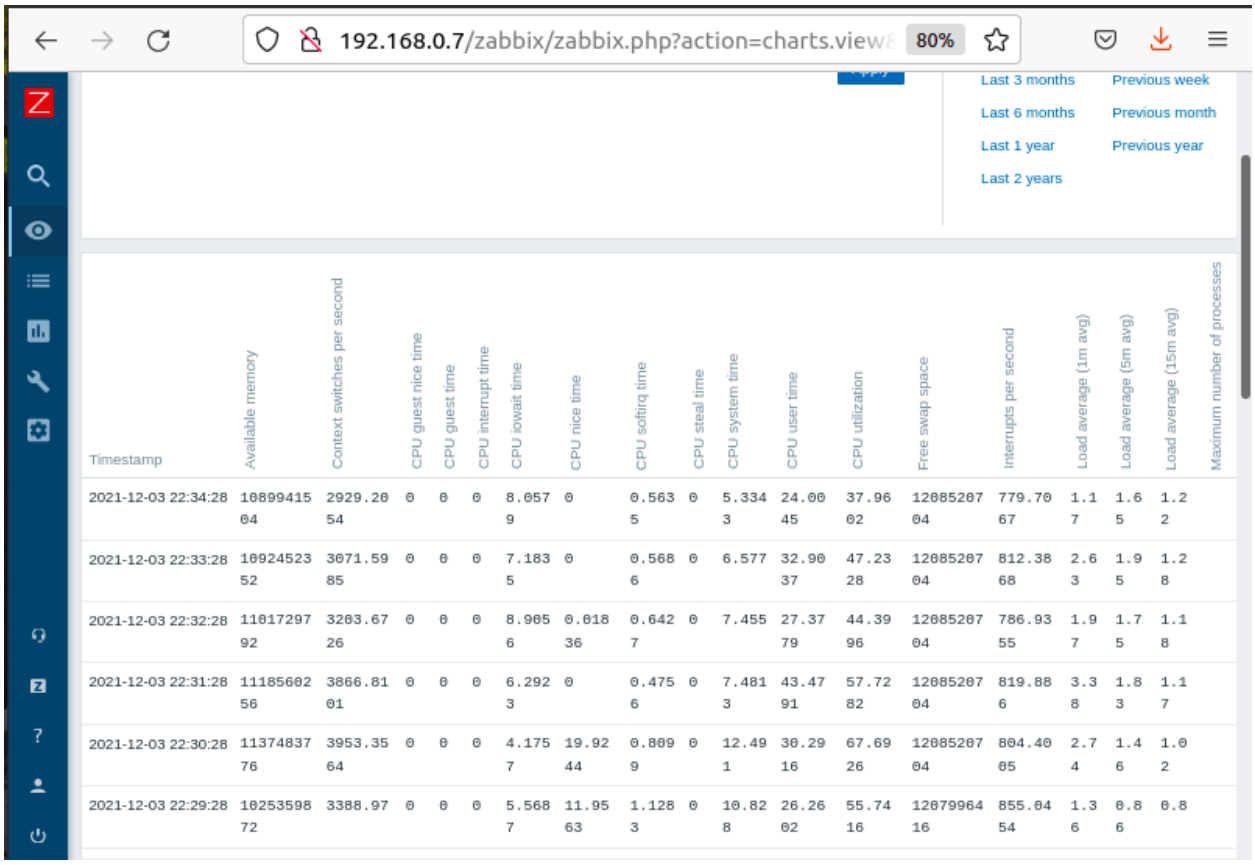
We create a item in the host that we created with the following details.



We can see system logs in the latest data

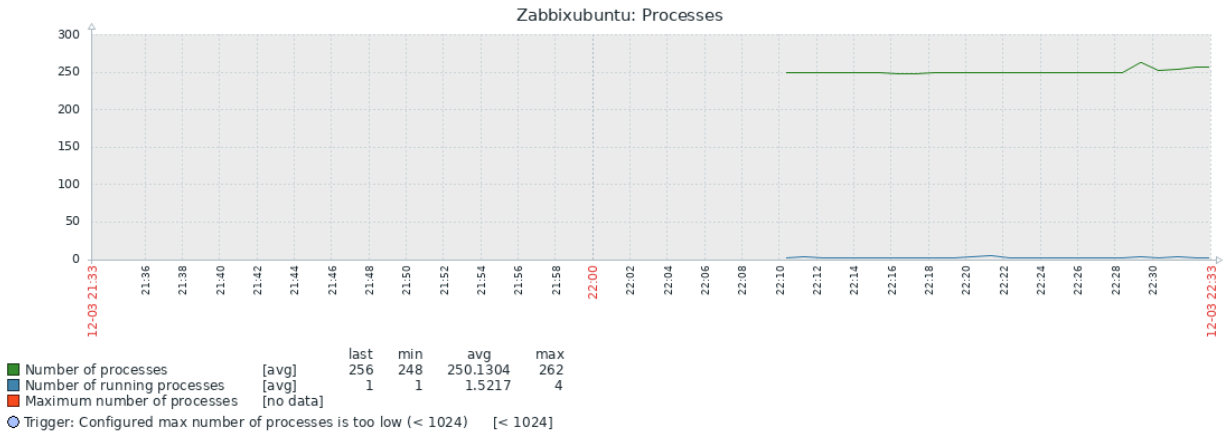


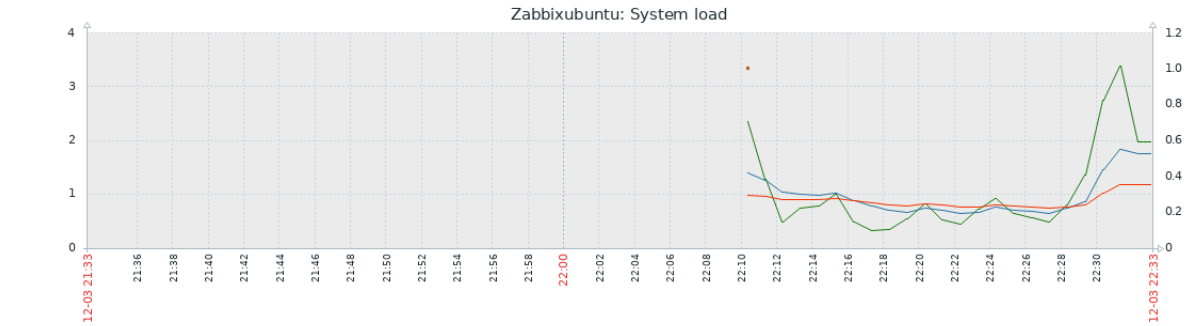
We can view the system logs as follows



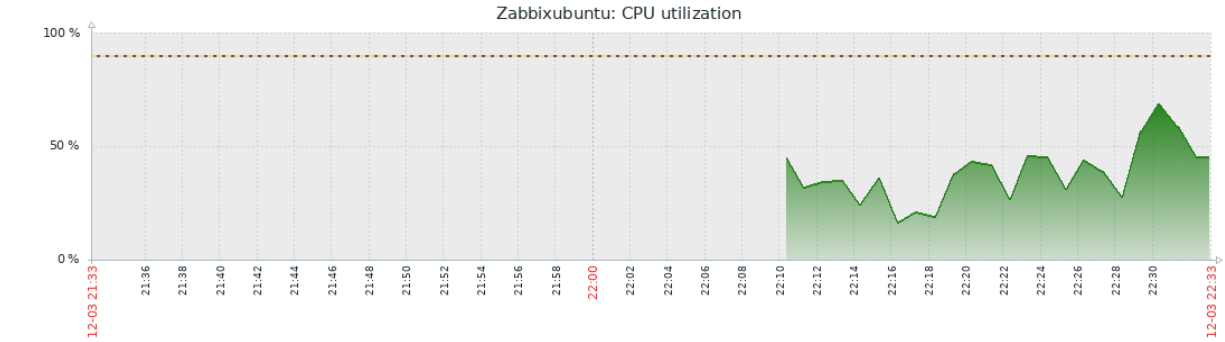
Timestamp	Available memory	Context switches per second	CPU guest nice time	CPU guest time	CPU interrupt time	CPU iowait time	CPU nice time	CPU softirq time	CPU steal time	CPU system time	CPU user time	CPU utilization	Free swap space	Interrupts per second	Load average (1m avg)	Load average (5m avg)	Load average (15m avg)	Maximum number of processes
2021-12-03 22:34:28	1089941504	2929.2054	0	0	0	8.0579	0	0.5635	0	5.3343	24.0045	37.9602	1208520704	779.7067	1.17	1.65	1.22	
2021-12-03 22:33:28	1092452352	3071.5985	0	0	0	7.1835	0	0.5686	0	6.577	32.9037	47.2328	1208520704	812.3868	2.63	1.95	1.28	
2021-12-03 22:32:28	1101729792	3203.6726	0	0	0	8.9056	0.01836	0.6427	0	7.455	27.3779	44.3996	1208520704	786.9355	1.97	1.75	1.18	
2021-12-03 22:31:28	1118560256	3866.8101	0	0	0	6.2923	0	0.4756	0	7.4813	43.4791	57.7282	1208520704	819.886	3.38	1.83	1.17	
2021-12-03 22:30:28	1137483776	3953.3564	0	0	0	4.1757	19.9244	0.8099	0	12.491	30.2916	67.6926	1208520704	804.4005	2.74	1.46	1.02	
2021-12-03 22:29:28	1025359872	3388.97	0	0	0	5.5687	11.9563	1.1283	0	10.828	26.2602	55.7416	1207996416	855.0454	1.36	0.86	0.8	

The following are the graph of logs from the system



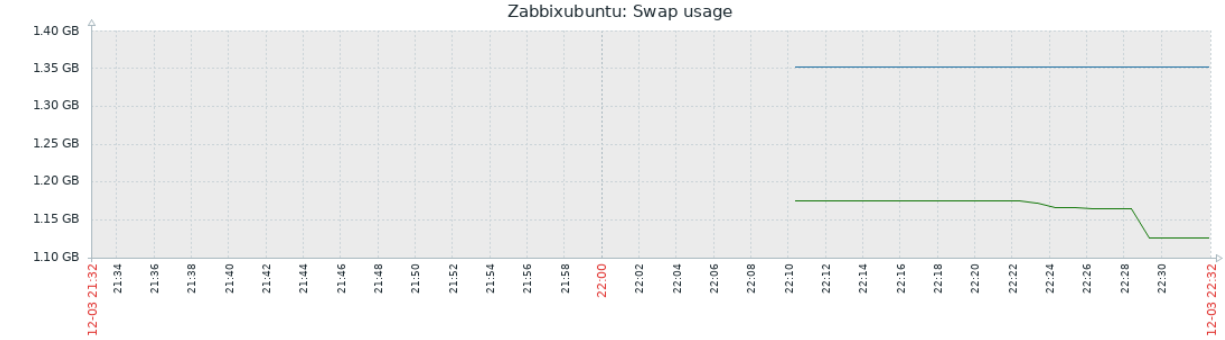


		last	min	avg	max
Load average (1m avg)	[avg]	1.97	0.31	1.0248	3.38
Load average (5m avg)	[avg]	1.75	0.63	0.947	1.83
Load average (15m avg)	[avg]	1.18	0.73	0.867	1.18
Number of CPUs	[avg]	1	1	1	1

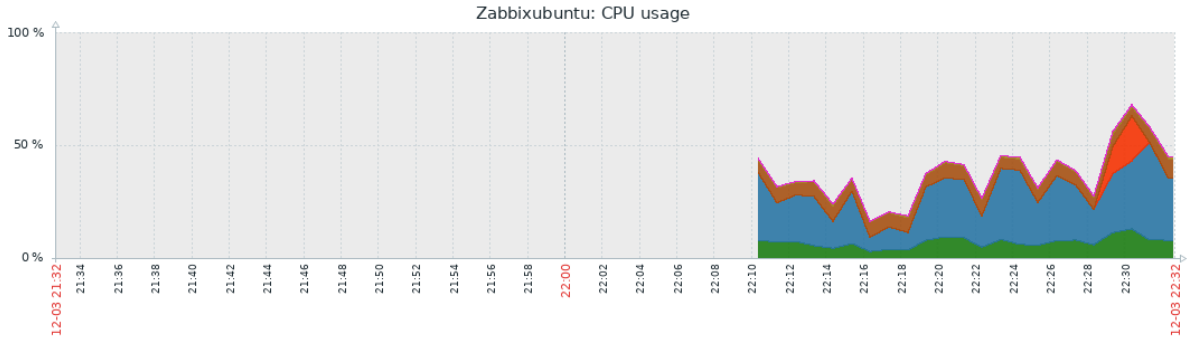


		last	min	avg	max
CPU utilization	[avg]	44.3996 %	15.8995 %	37.2279 %	67.6926 %

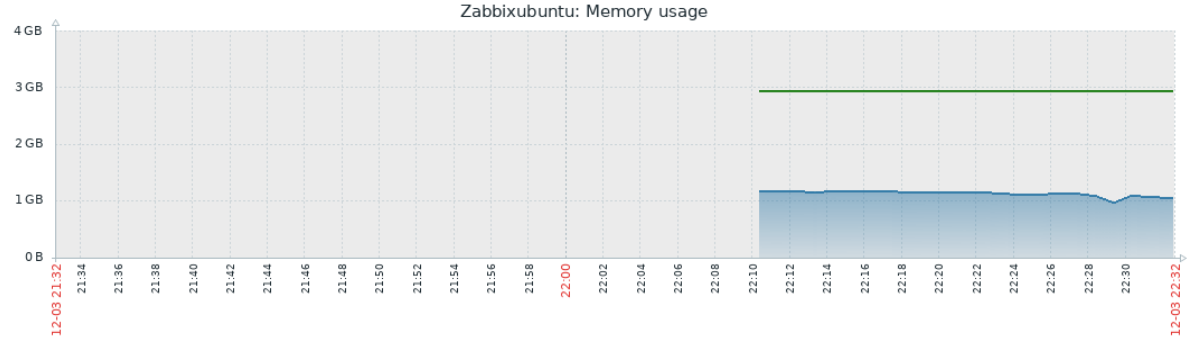
Trigger: High CPU utilization (over 90% for 5m) [> 90]



		last	min	avg	max
Free swap space	[avg]	1.13 GB	1.13 GB	1.16 GB	1.18 GB
Total swap space	[avg]	1.35 GB	1.35 GB	1.35 GB	1.35 GB



		last	min	avg	max
CPU guest nice time	[avg]	0 %	0 %	0 %	0 %
CPU guest time	[avg]	0 %	0 %	0 %	0 %
CPU softirq time	[avg]	0.6427 %	0.2839 %	0.5375 %	1.1283 %
CPU interrupt time	[avg]	0 %	0 %	0 %	0 %
CPU steal time	[avg]	0 %	0 %	0 %	0 %
CPU iowait time	[avg]	8.9056 %	4.1757 %	6.1462 %	8.9056 %
CPU nice time	[avg]	0.01836 %	0 %	1.3869 %	19.9244 %
CPU user time	[avg]	27.3779 %	6.3483 %	22.6117 %	43.4791 %
CPU system time	[avg]	7.455 %	2.4166 %	6.5455 %	12.491 %



		last	min	avg	max
Total memory	[avg]	2.92 GB	2.92 GB	2.92 GB	2.92 GB
Available memory	[avg]	1.03 GB	977.86 MB	1.1 GB	1.14 GB