Cacti Installation Manual

DOCUMENT VERSION HISTORY

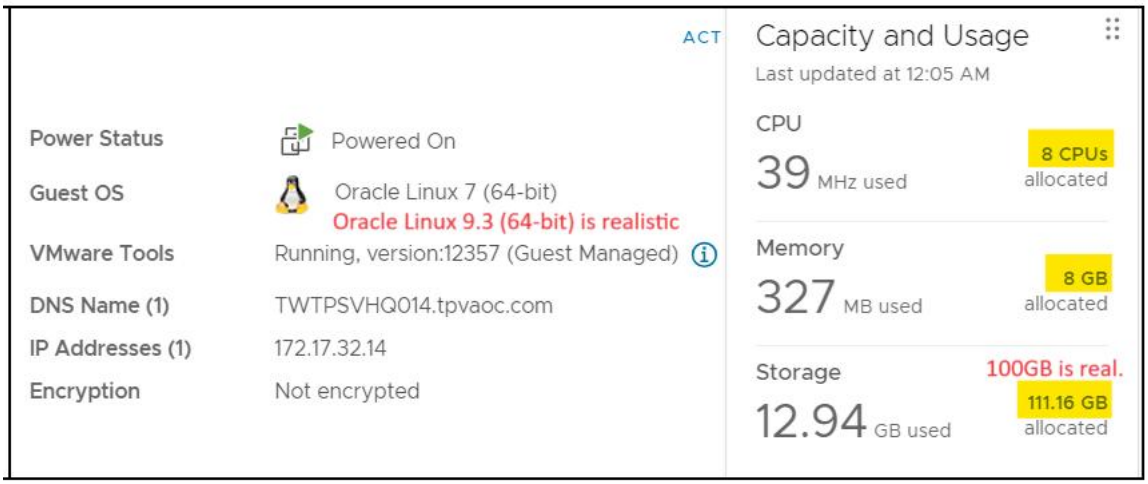
VERSION	DATE	DESCRIPTION	AUTHOR/EDITOR
0.90	1/17/2024	1st. version	Autumn.Shi, Harry.Chen HongQing, Lei.Liu Double.Lin
0.94	10/2/2024	Add Netflow configuration	Spencer

Contents

1 Platform Installation

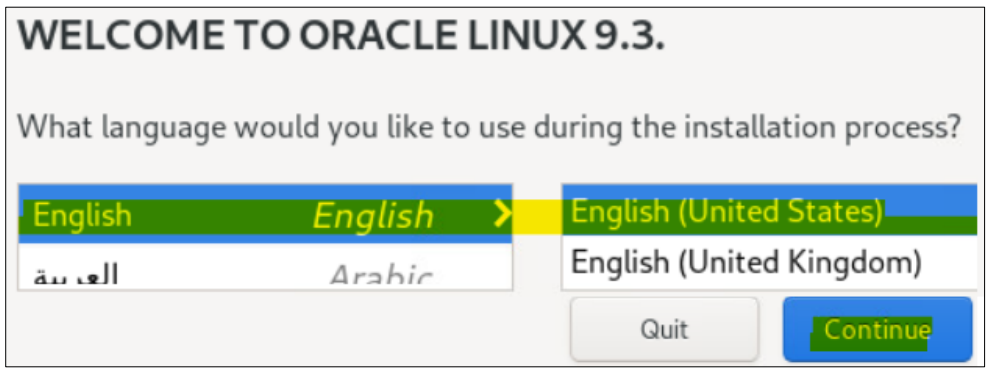
1.1 VM Spec

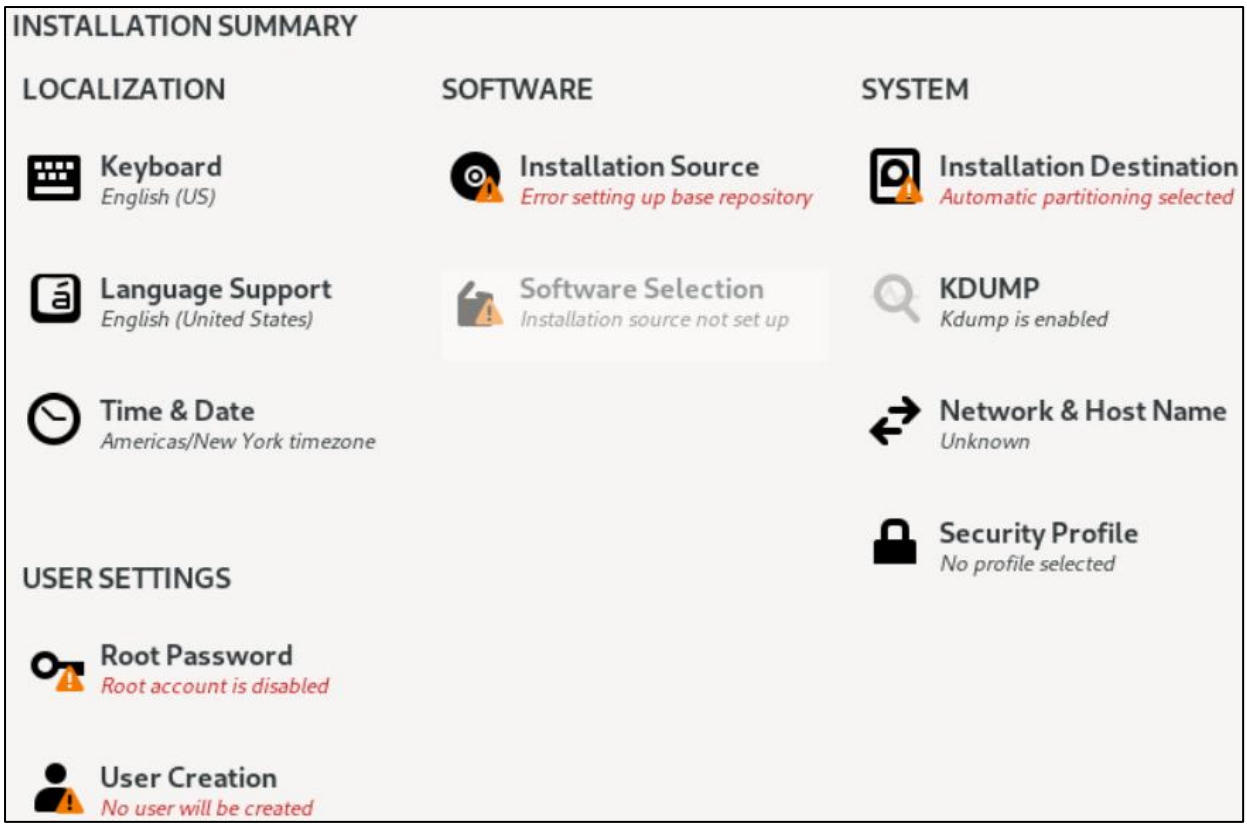
#CPU 8 core, RAM 8G, HD 100G.



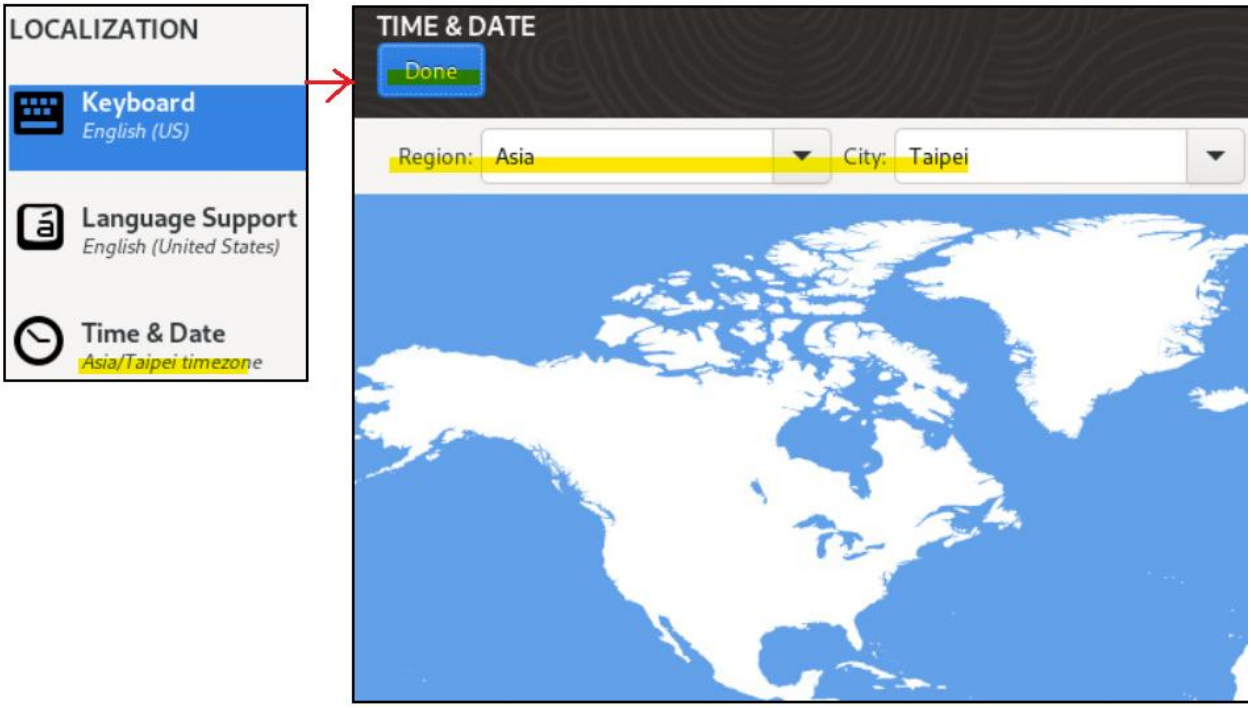
1.2 Install OS

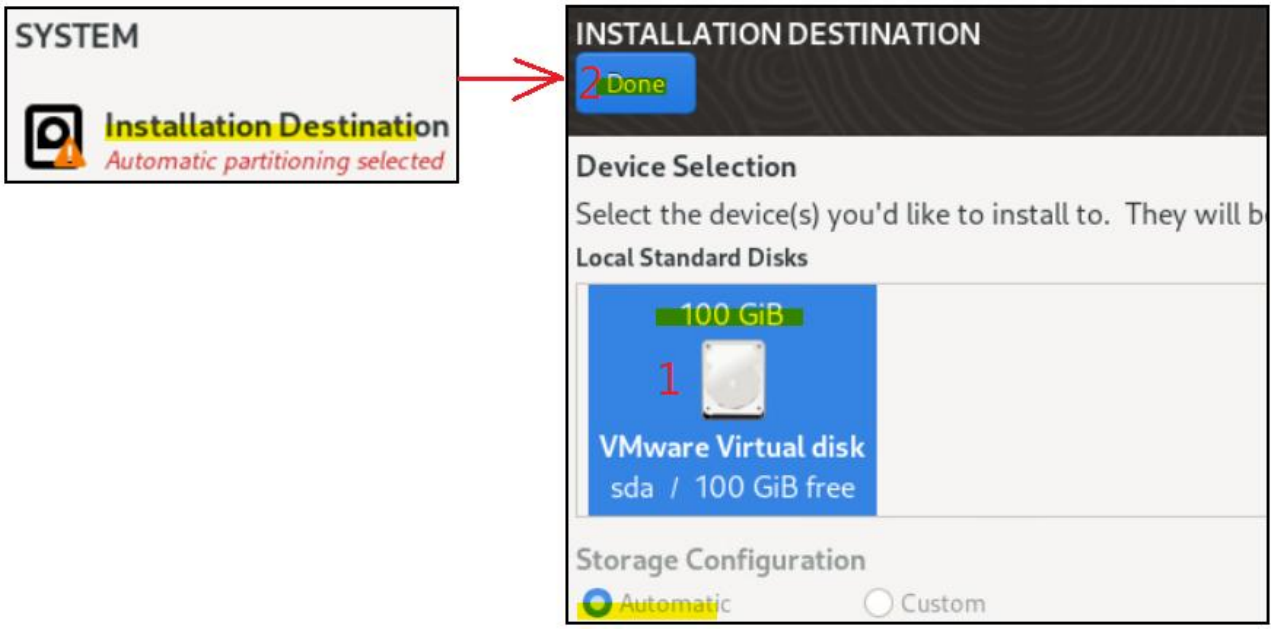
#Linux ISO: Oracle Linux 9.3 is fully supported by this manual.
OracleLinux-R9-U3-x86_64-boot.iso (minimal version, 930MB)

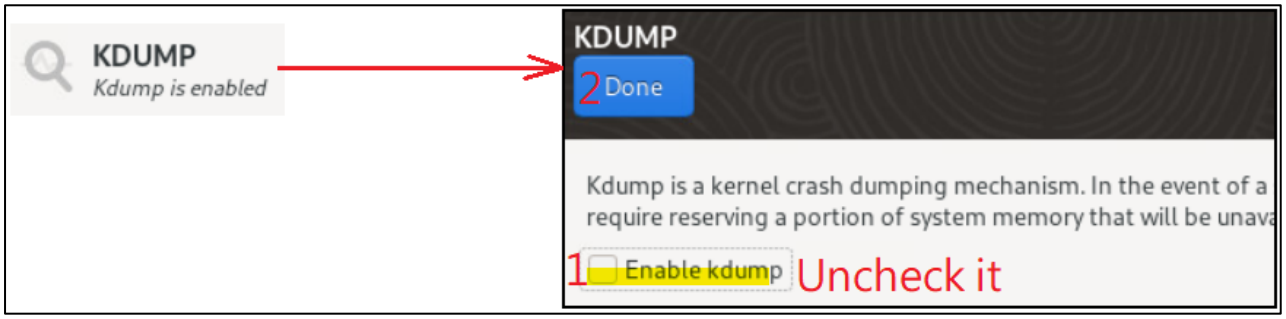




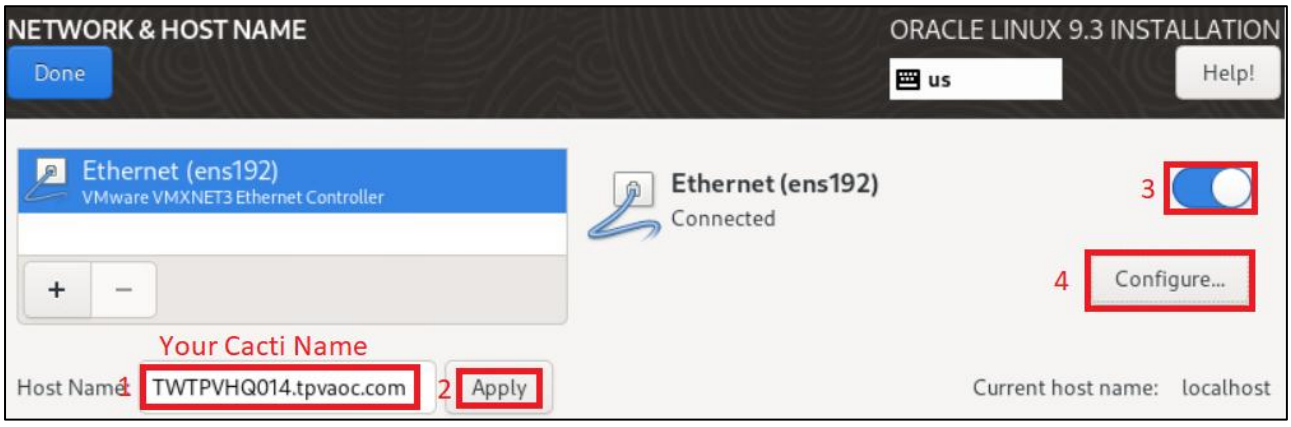
Select your time zone



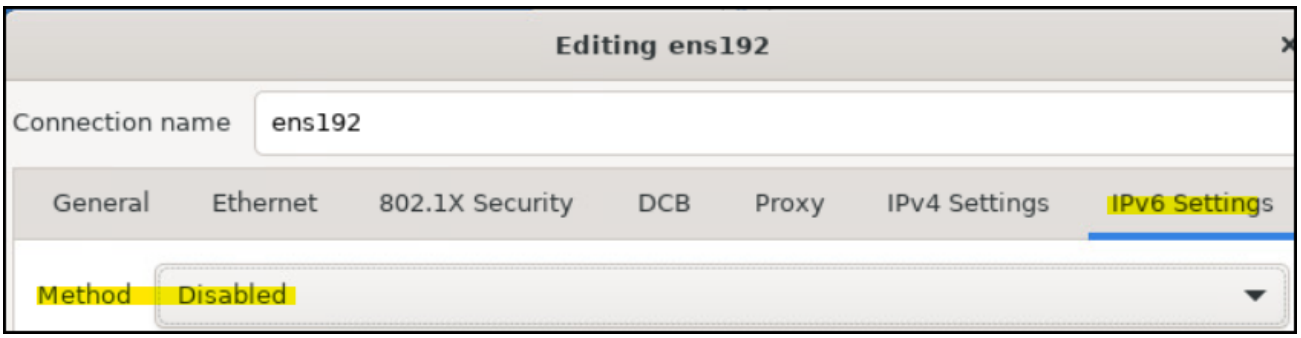




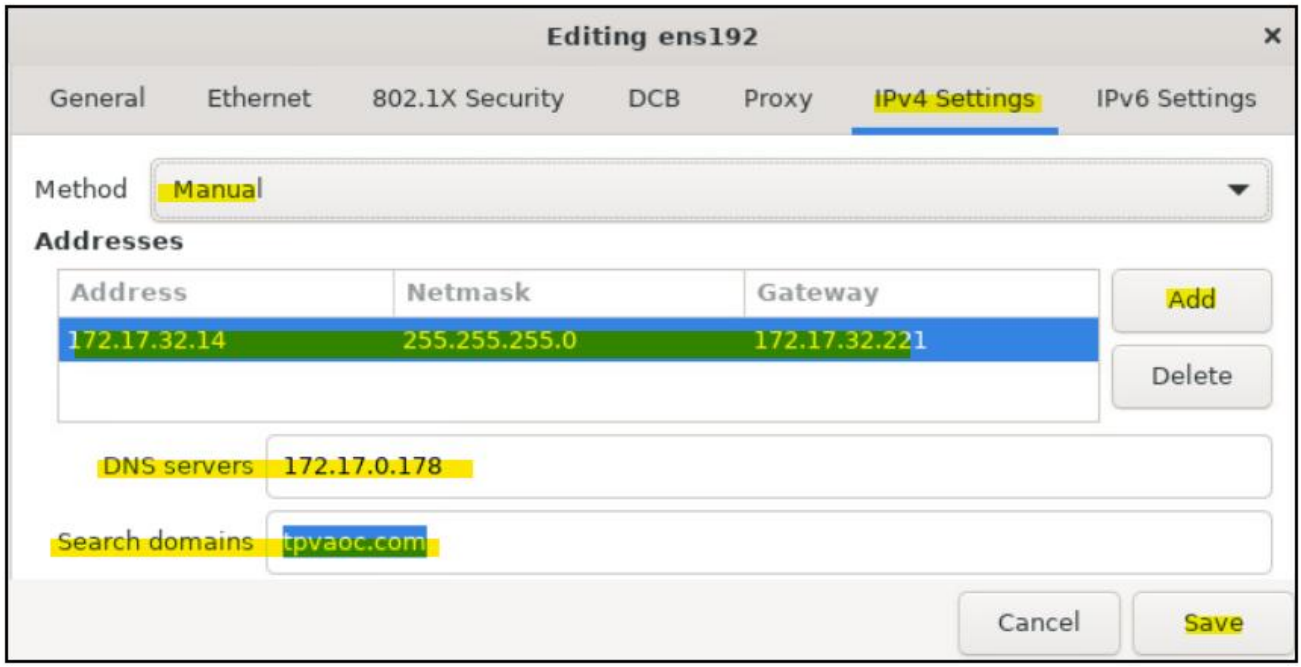
1.Type Host Name =>2.Apply =>3 Check =>4 Click Configure



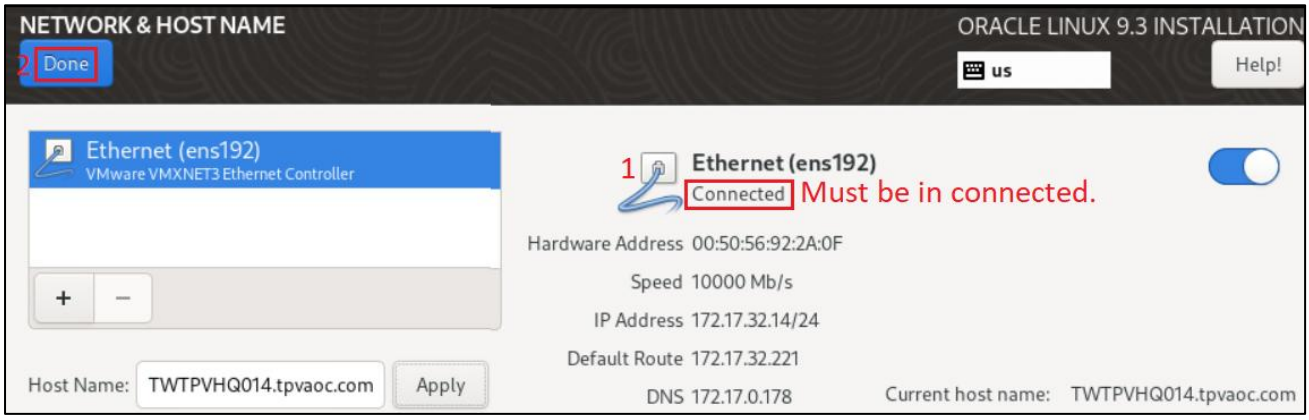
Click IPV6 setting => Select Method “Disabled”



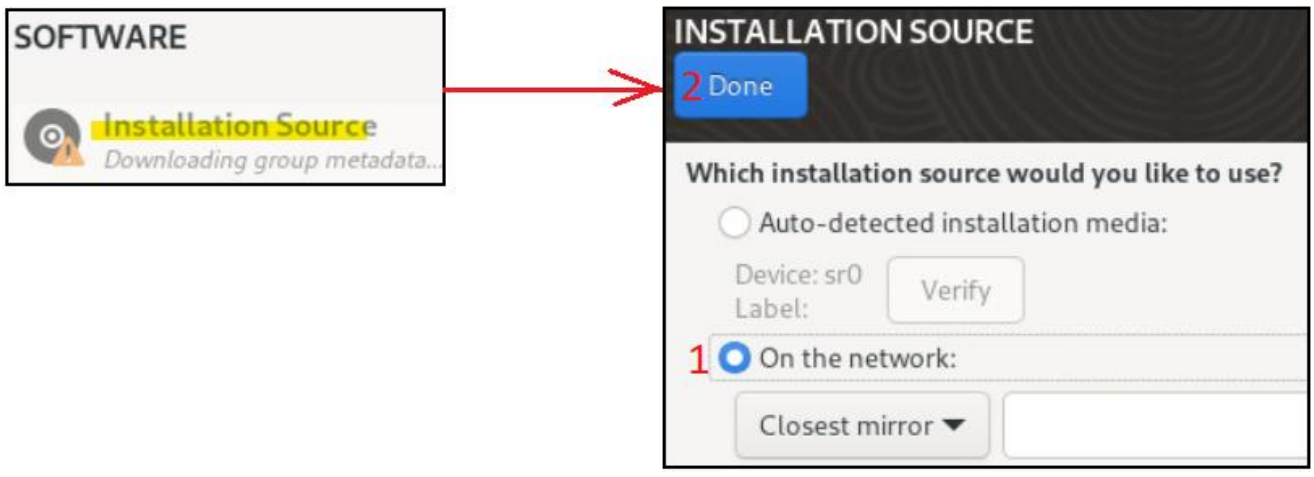
Click IPv4 Settings => Manual => Type Address IP, DNS IP, Search Domain tpvaoc.com => Click Save.



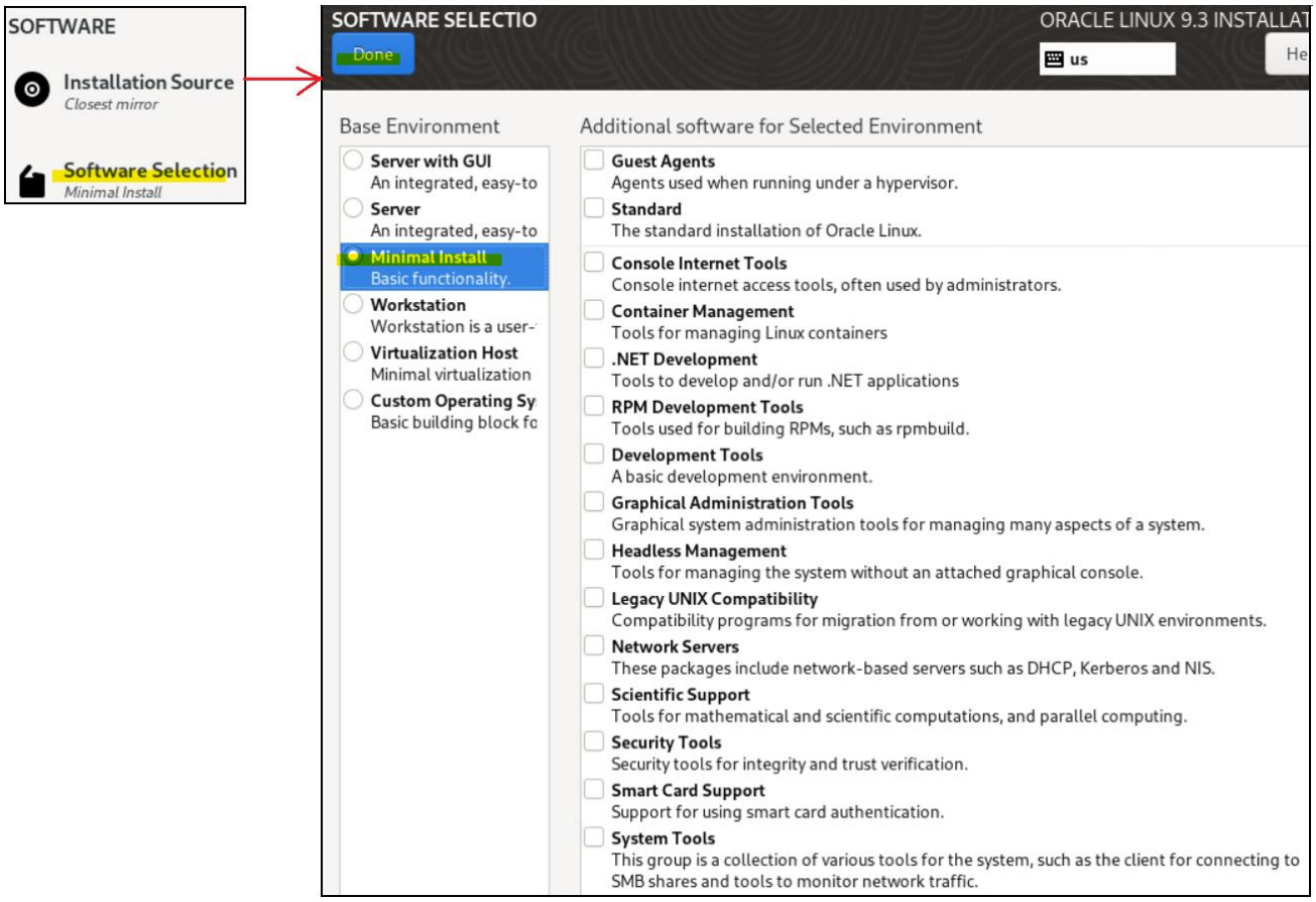
Verify network is “Connected” => Click Done.



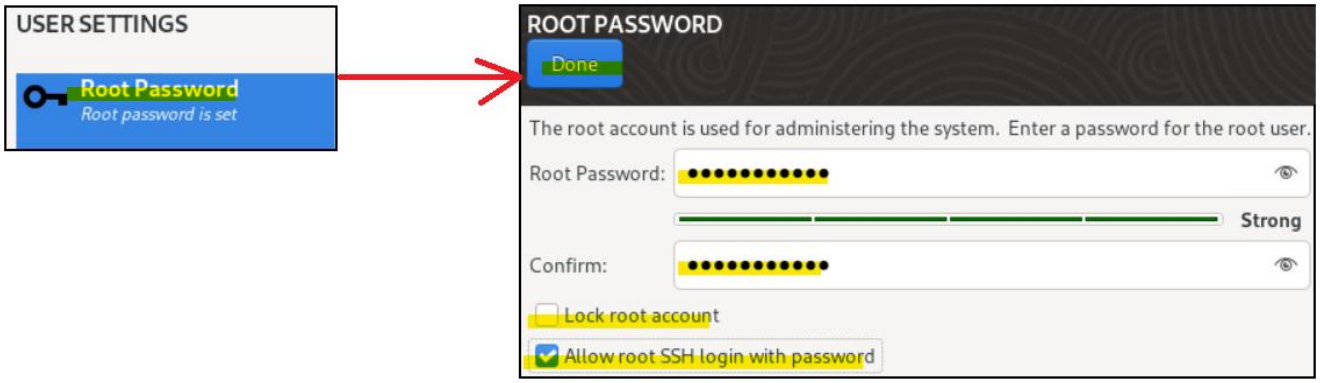
Click Software => Installation Source => Click “On the network” => Done



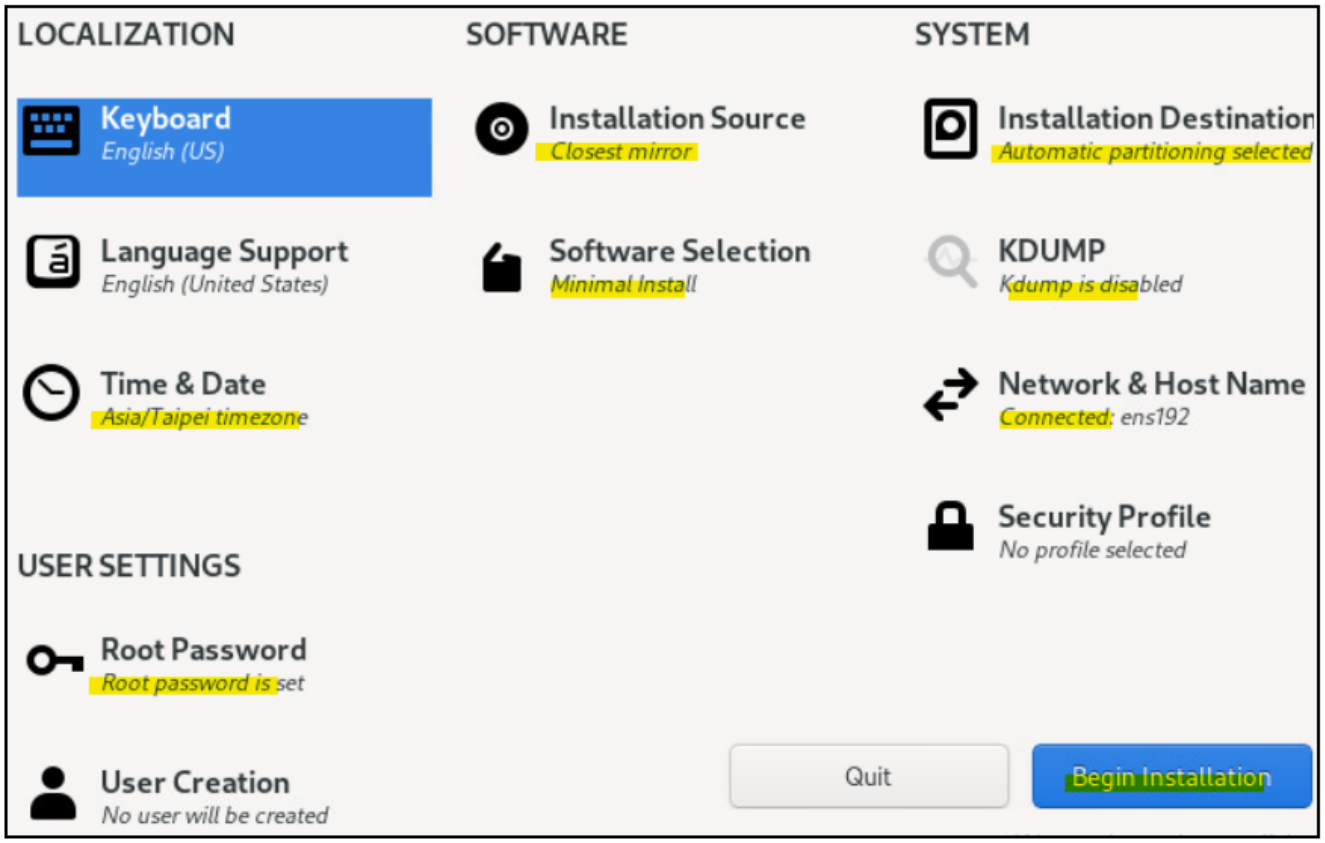
Click “SW selection” => Just select “Minimal Install”



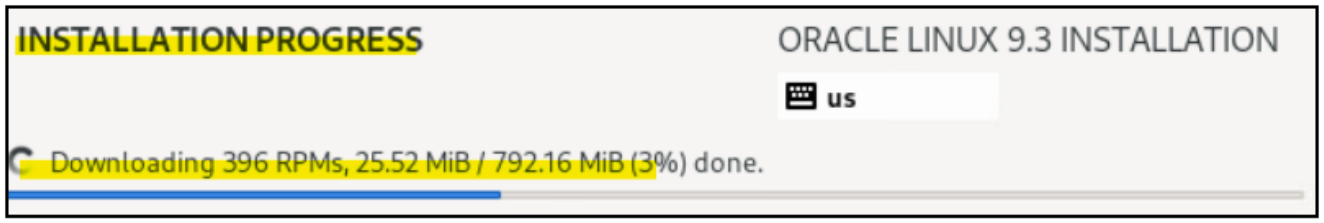
Set root Password => Unlock root account => Allow SSH



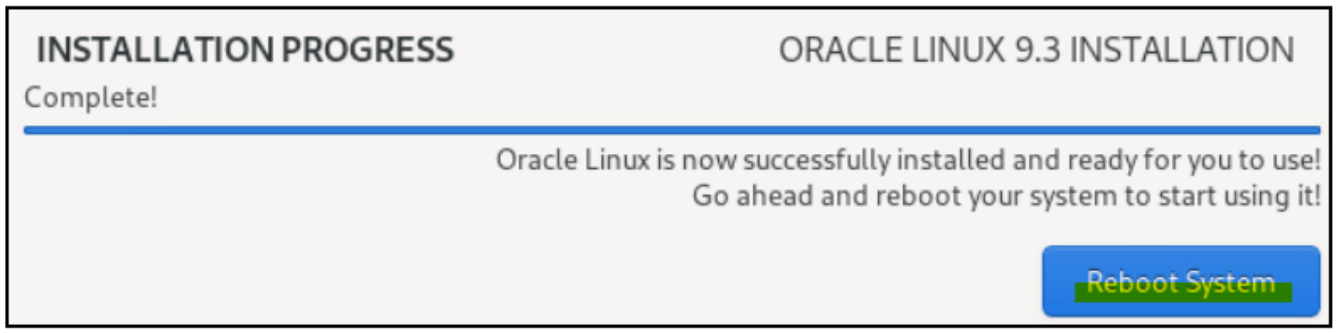
Confirmed 7 yellow marked is matched to your situation



Start installation



Reboot



#update patch to newest

yum -y update

```
[root@TWTPSVHQ014 ~]# yum -y update
Oracle Linux 9 BaseOS Latest (x86_64)           5.7 MB/s |  18 MB     00:03
Oracle Linux 9 Application Stream Packages (x86_64)
Oracle Linux 9 UEK Release 7 (x86_64)
Last metadata expiration check: 0:00:06 ago on Tue 09 Jan 2024 12:57:45 AM CST.
Dependencies resolved.
Nothing to do.
Complete!
```

2 Cacti Installation

2.1 Install Apache (Web Server)

#Enable Epel repo to enable PHP 7.2 package download
yum install -y http://rpms.remirepo.net/enterprise/remi-release-7.rpm
yum install -y yum-utils
yum-config-manager --enable remi-php72

```
[root@TWTPVHQ014 ~]# yum install -y http://rpms.remirepo.net/enterprise/remi-release-7.rpm
Last metadata expiration check: 0:37:08 ago on Mon 08 Jan 2024 09:20:24 PM CST.
remi-release-7.rpm                                                  37 kB/s |  28 kB     00:00
Dependencies resolved.
================================================================================================================================
 Package                        Architecture       Version                    Repository                    Size
================================================================================================================================
Installing:
 remi-release                   noarch             7.9-6.el7.remi             @commandline                  28 k
Installing dependencies:
 oracle-epel-release-el9        x86_64             1.0-1.el9                  ol9_baseos_latest             14 k
 yum-utils                      noarch             4.3.0-11.0.1.el9_3         ol9_baseos_latest             53 k

Transaction Summary
```

```
[root@TWTPVHQ014 ~]# yum install -y yum-utils
Oracle Linux 9 EPEL Packages for Development (x86_64)                6.0 MB/s |  48 MB     00:08
Safe Remi's RPM repository for Enterprise Linux 7 - x86_64           726 kB/s | 2.4 MB     00:03
Last metadata expiration check: 0:00:03 ago on Mon 08 Jan 2024 09:59:36 PM CST.
Package yum-utils-4.3.0-11.0.1.el9_3.noarch is already installed.
Dependencies resolved.
Nothing to do.
```

```
[root@TWTPVHQ014 ~]# yum-config-manager --enable remi-php72
[root@TWTPVHQ014 ~]#
```

#Linux OS patch update to newest
yum -y update

```
[root@TWTPVHQ014 ~]# yum -y update
Remi's PHP 7.2 RPM repository for Enterprise Linux 7 - x86_64                76 kB/s | 197 kB     00:02
Last metadata expiration check: 0:00:01 ago on Mon 08 Jan 2024 10:04:51 PM CST.
Dependencies resolved.
================================================================================================================================
 Package                        Architecture       Version                    Repository                    Size
================================================================================================================================
Upgrading:
 python3-hwdata                 noarch             2.3.7-13.el9               ol9_developer_EPEL            63 k
 python3-pyOpenSSL              noarch             21.0.0-1.el9               ol9_developer_EPEL           118 k
```

Install Apache
yum install -y httpd
systemctl enable httpd
systemctl start httpd

```
[root@TWTPVHQ014 ~]# yum install -y httpd
Last metadata expiration check: 0:03:59 ago on Mon 08 Jan 2024 10:04:51 PM CST.
Dependencies resolved.
================================================================================
 Package              Architecture        Version                 Repository      Size
================================================================================
Installing:
 httpd                x86_64              2.4.57-5.0.1.el9        ol9_appstream   65 k
Installing dependencies:
 apr                  x86_64              1.7.0-12.el9_3          ol9_appstream  131 k
 apr-util             x86_64              1.6.1-23.el9            ol9_appstream   99 k
 apr-util-bdb         x86_64              1.6.1-23.el9            ol9_appstream   12 k
 httpd-core           x86_64              2.4.57-5.0.1.el9        ol9_appstream  1.8 M
 httpd-filesystem     noarch              2.4.57-5.0.1.el9        ol9_appstream   12 k
 httpd-tools          x86_64              2.4.57-5.0.1.el9        ol9_appstream   94 k
 mailcap              noarch              2.1.49-5.el9            ol9_baseos_latest  38 k
 oracle-logos-httpd   noarch              90.2-1.0.4.el9          ol9_baseos_latest  37 k
Installing weak dependencies:
 apr-util-openssl     x86_64              1.6.1-23.el9            ol9_appstream   14 k
 mod_http2            x86_64              1.15.19-5.el9           ol9_appstream  157 k
 mod_lua              x86_64              2.4.57-5.0.1.el9        ol9_appstream   59 k
```

```
[root@TWTPSVHQ014 ~]# systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
[root@TWTPSVHQ014 ~]# systemctl start httpd
```

2.2 Install MariaDB (DB Server)

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

```
[root@TWTPVHQ014 ~]# dnf install -y mariadb-server
Last metadata expiration check: 1:40:15 ago on Mon 08 Jan 2024 10:04:51 PM CST.
Dependencies resolved.
================================================================================
 Package                 Architecture      Version                 Repository      Size
================================================================================
Installing:
 mariadb-server          x86_64            3:10.5.22-1.el9_2       ol9_appstream  9.7 M
Installing dependencies:
 checkpolicy             x86_64            3.5-1.el9               ol9_appstream  355 k
 mariadb-gssapi-server   x86_64            3:10.5.22-1.el9_2       ol9_appstream   15 k
 mariadb-server-utils    x86_64            3:10.5.22-1.el9_2       ol9_appstream  234 k

Transaction Summary
================================================================================
Install  18 Packages
```

```
[root@TWTPVHQ014 ~]# systemctl enable mariadb
Created symlink /etc/systemd/system/mysql.service → /usr/lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/mysqld.service → /usr/lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /usr/lib/systemd/system/mariadb.service.
[root@TWTPVHQ014 ~]# systemctl start mariadb
```

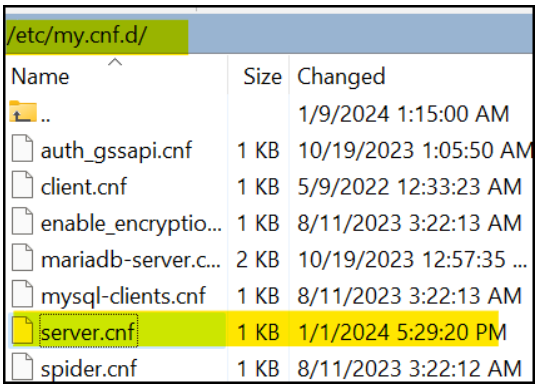
IMPORTANT: Secure your MySQL installation before doing any more changes
/usr/bin/mysql_secure_installation

```
[root@TWTPVHQ014 ~]# /usr/bin/mysql_secure_installation
Enter current password for root (enter for none): Type ENTER
OK, successfully used password, moving on...      because NO PW of
Switch to unix_socket authentication [Y/n] Y      fresh installation.
Enabled successfully!
Reloading privilege tables..
 ... Success!
You already have your root account protected, so you can safely answer 'n'.
Change the root password? [Y/n] y
New password:  Type new PW
Re-enter new password:
Password updated successfully!
```

```
Disallow root login remotely? [Y/n] Y
 ... Success!
Remove test database and access to it? [Y/n] Y
 - Dropping test database...
 ... Success!
Reload privilege tables now? [Y/n] Y
 ... Success!
All done!  If you've completed all of the above steps, your MariaDB
installation should now be secure.
```

he following MySQL/MariaDB recommendations may vary depending on your system setup. In any case, Cacti will prompt you with more accurate recommendations during the installation

Copy to /etc/my.cnf.d/



Content of nano /etc/my.cnf.d/server.cnf as below

```
[mysqld]
character-set-server=utf8mb4
collation-server=utf8mb4_unicode_ci
innodb_file_format = Barracuda
max_allowed_packet = 16777777
```

```
join_buffer_size = 32M
innodb_file_per_table = ON
innodb_large_prefix = 1
innodb_buffer_pool_size = 250M
#innodb_additional_mem_pool_size = 90M
innodb_flush_log_at_trx_commit = 2
#log-error                              = /var/log/mariadb/mysql-error.log
log-queries-not-using-indexes    = 1
slow-query-log                          = 0
#slow-query-log-file                    = /var/log/mariadb/mysql-slow.log
max_heap_table_size = 124M
tmp_table_size = 124M
innodb_buffer_pool_size = 2000M
innodb_doublewrite = ON
innodb_flush_log_at_timeout = 3
innodb_read_io_threads = 32
innodb_write_io_threads = 16
innodb_io_capacity = 5000
innodb_io_capacity_max = 10000
```

systemctl restart mariadb

```
[root@TWTPSVHQ014 ~]# systemctl restart mariadb
[root@TWTPSVHQ014 ~]#
```

2.3 Install Cacti

yum install -y cacti

```
[root@TWTPSVHQ014 ~]# yum install -y cacti
Last metadata expiration check: 3:00:31 ago on Wed 10 Jan 2024 06:32:36 PM CST.
Dependencies resolved.
================================================================================================================================
 Package                        Architecture      Version                              Repository                     Size
================================================================================================================================
Installing:
 cacti                          noarch            1.2.25-1.el9                         ol9_developer_EPEL             37 M
```

```
Installed:
  cacti-1.2.25-1.el9.noarch                          cairo-1.17.4-7.el9.x86_64
  dejavu-sans-mono-fonts-2.37-18.el9.noarch          fontconfig-2.14.0-2.el9_1.x86_64
  freetype-2.10.4-9.el9.x86_64                       fribidi-1.0.10-6.el9.2.x86_64
  gd-2.3.2-3.el9.x86_64                              graphite2-1.3.14-9.el9.x86_64
  harfbuzz-2.7.4-8.el9.x86_64                        jbigkit-libs-2.1-23.el9.x86_64
  libX11-1.7.0-8.el9.x86_64                          libX11-common-1.7.0-8.el9.noarch
  libXau-1.0.9-8.el9.x86_64                          libXext-1.3.4-8.el9.x86_64
  libXft-2.3.3-8.el9.x86_64                          libXpm-3.5.13-8.el9_1.x86_64
  libXrender-0.9.10-16.el9.x86_64                    libdatrie-0.2.13-4.el9.x86_64
  libicu-67.1-9.el9.x86_64                           libjpeg-turbo-2.0.90-6.el9_1.x86_64
  libpng-2:1.6.37-12.el9.x86_64                      libthai-0.1.28-8.el9.x86_64
  libtiff-4.4.0-10.el9.x86_64                        libwebp-1.2.0-8.el9_3.x86_64
  libxcb-1.13.1-9.el9.x86_64                         lm_sensors-libs-3.6.0-10.el9.x86_64
  net-snmp-1:5.9.1-11.0.3.el9_3.1.x86_64             net-snmp-agent-libs-1:5.9.1-11.0.3.el9_3.1.
  net-snmp-libs-1:5.9.1-11.0.3.el9_3.1.x86_64        net-snmp-utils-1:5.9.1-11.0.3.el9_3.1.x86_6
  nginx-filesystem-1:1.20.1-14.0.1.el9_2.1.noarch    oniguruma-6.9.6-1.el9.5.x86_64
  pango-1.48.7-3.el9.x86_64                          perl-Term-ReadLine-1.17-480.el9.noarch
  php-cli-8.0.30-1.el9_2.x86_64                      php-common-8.0.30-1.el9_2.x86_64
  php-fpm-8.0.30-1.el9_2.x86_64                      php-gd-8.0.30-1.el9_2.x86_64
  php-gmp-8.0.30-1.el9_2.x86_64                      php-intl-8.0.30-1.el9_2.x86_64
  php-ldap-8.0.30-1.el9_2.x86_64                     php-mbstring-8.0.30-1.el9_2.x86_64
  php-mysqlnd-8.0.30-1.el9_2.x86_64                  php-pdo-8.0.30-1.el9_2.x86_64
  php-process-8.0.30-1.el9_2.x86_64                  php-snmp-8.0.30-1.el9_2.x86_64
  php-xml-8.0.30-1.el9_2.x86_64                      pixman-0.40.0-6.el9_3.x86_64
  rrdtool-1.7.2-21.el9.x86_64                        xml-common-0.6.3-58.el9.noarch
```

2.4 Configure Cacti DB

mysql -u root -p c@Ct1Vser
create database if not exists cacti;
use cacti;
source /usr/share/doc/cacti/cacti.sql
quit

```
[root@TWTPSVHQ014 ~]# mysql -uroot -pc@Ct1Vser
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 5
Server version: 10.5.22-MariaDB-log MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> create database if not exists cacti;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> use cacti;
Database changed
MariaDB [cacti]> source /usr/share/doc/cacti/cacti.sql
Query OK, 0 rows affected (0.001 sec)
```

Grant Cacti username access to Cacti database.
mysql -uroot -pc@Ct1Vser
CREATE USER 'cactiuser'@'localhost' IDENTIFIED BY 'c@Ct1Vser';
GRANT ALL PRIVILEGES ON cacti.* TO 'cactiuser'@'localhost';

GRANT SELECT ON mysql.time_zone_name TO 'cactiuser'@'localhost';
FLUSH PRIVILEGES;
exit

```
[root@TWTPSVHQ014 ~]# mysql -uroot -pc@Ct1Vser
Welcome to the MariaDB monitor.  Commands end with ; or \g.
MariaDB [(none)]> GRANT ALL PRIVILEGES ON cacti.* TO 'cactiuser'@'localhost';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> GRANT SELECT ON mysql.time_zone_name TO 'cactiuser'@'localhost';
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.001 sec)
```

2.5 Configure Cacti

#Install some tools
dnf install -y net-tools nano wget git hping3

```
[root@TWTPSVHQ014 ~]# dnf install -y net-tools nano wget git
Last metadata expiration check: 3:40:34 ago on Wed 10 Jan 2024 06:32:36 PM CST.
Dependencies resolved.
==========================================================================================================
 Package                Architecture       Version                        Repository               Size
==========================================================================================================
Installing:
 git                    x86_64             2.39.3-1.el9_2                 ol9_appstream            78 k
 nano                   x86_64             5.6.1-5.el9                    ol9_baseos_latest       790 k
 net-tools              x86_64             2.0-0.62.20160912git.el9       ol9_baseos_latest       344 k
 wget                   x86_64             1.21.1-7.el9                   ol9_appstream           861 k
```

```
Installed:
  emacs-filesystem-1:27.2-9.el9.noarch    git-2.39.3-1.el9_2.x86_64             git-core-2.39.3-1.el9_2.x86_64
  git-core-doc-2.39.3-1.el9_2.noarch      nano-5.6.1-5.el9.x86_64               net-tools-2.0-0.62.20160912git.el9.x86_64
  perl-Error-1:0.17029-7.el9.noarch       perl-File-Find-1.37-480.el9.noarch    perl-Git-2.39.3-1.el9_2.noarch
  perl-TermReadKey-2.38-11.el9.x86_64     perl-lib-0.65-480.el9.x86_64          wget-1.21.1-7.el9.x86_64
```

#Edit /etc/php.ini to replace with your time zone
nano /etc/php.ini
date.timezone = Asis/Taipei   #replace with your time zone.

```
[Date]
; Defines the default timezone used by the date functions
; http://php.net/date.timezone
;date.timezone =
date.timezone = Asis/Taipei

                                [ line 910/1665 (54%), col 2/2 ]
```

Edit the config.php file, replace PW
nano /usr/share/cacti/include/config.php

```
$database_type     = 'mysql';
$database_default  = 'cacti';
$database_hostname = 'localhost';
$database_username = 'cactiuser';
$database_password = 'c@Ct1Vser';
$database_port     = '3306';
```

Create your cron task file
nano /etc/cron.d/cacti # remove #

```
 GNU nano 5.6.1                                                /etc/cron.d/cacti
*/5 * * * *     apache  /usr/bin/php /usr/share/cacti/poller.php > /dev/null 2>&1
```

2.6 Install & Configure Spine

Install the necessary packages to compile and install spine
dnf --enablerepo=ol9_codeready_builder install mariadb-devel
dnf --enablerepo=ol9_codeready_builder install help2man
yum install -y net-snmp-devel
yum install -y autoconf automake libtool dos2unix openssl-devel

```
[root@TWTPSVHQ014 ~]# dnf --enablerepo=ol9_codeready_builder install mariadb-devel
Oracle Linux 9 CodeReady Builder (x86_64) - (Unsupported)                3.3 MB/s | 6.8 MB     00:02
Last metadata expiration check: 0:00:04 ago on Wed 10 Jan 2024 10:48:36 PM CST.
```

```
Installed:
  libpkgconf-1.7.3-10.el9.x86_64                      mariadb-connector-c-devel-3.2.6-1.el9_0.x86_64
  mariadb-connector-c-doc-3.2.6-1.el9_0.noarch        mariadb-devel-3:10.5.22-1.el9_2.x86_64
  openssl-devel-1:3.0.7-24.0.1.el9.x86_64             pkgconf-1.7.3-10.el9.x86_64
  pkgconf-m4-1.7.3-10.el9.noarch                      pkgconf-pkg-config-1.7.3-10.el9.x86_64
  zlib-devel-1.2.11-40.el9.x86_64
```

```
[root@TWTPSVHQ014 ~]# dnf --enablerepo=ol9_codeready_builder install help2man
Last metadata expiration check: 0:03:41 ago on Wed 10 Jan 2024 10:48:36 PM CST.
```

```
Installed:
  help2man-1.48.2-3.el9.noarch
```

```
[root@TWTPSVHQ014 ~]# yum install -y net-snmp-devel
Last metadata expiration check: 0:30:07 ago on Wed 10 Jan 2024 10:25:12 PM CST.
Dependencies resolved.
================================================================================
 Package                 Architecture  Version                  Repository     Size
================================================================================
Installing:
 net-snmp-devel          x86_64        1:5.9.1-11.0.3.el9_3.1   ol9_appstream  553 k
```

```
Installed:
  annobin-12.12-1.el9.x86_64                 cpp-11.4.1-2.1.0.1.el9.x86_64
  dtrace-2.0.0-1.13.1.el9.x86_64             dwz-0.14-3.el9.x86_64
  efi-srpm-macros-6-2.0.1.el9_0.noarch       elfutils-devel-0.189-3.el9.x86_64
  elfutils-libelf-devel-0.189-3.el9.x86_64   fonts-srpm-macros-1:2.0.5-7.el9.1.noarch
  fuse3-3.10.2-6.el9.x86_64                  fuse3-libs-3.10.2-6.el9.x86_64
  gcc-11.4.1-2.1.0.1.el9.x86_64              gcc-plugin-annobin-11.4.1-2.1.0.1.el9.x86
  ghc-srpm-macros-1.5.0-6.el9.noarch         glibc-devel-2.34-83.0.1.el9_3.7.x86_64
  glibc-headers-2.34-83.0.1.el9_3.7.x86_64   go-srpm-macros-3.2.0-2.el9.noarch
  kernel-headers-5.14.0-362.13.1.el9_3.x86_6 kernel-srpm-macros-1.0-13.0.1.el9.noarch
  libmpc-1.2.1-4.el9.x86_64                  libpfm-4.13.0-4.el9.x86_64
  libxcrypt-devel-4.4.18-3.el9.x86_64        libzstd-devel-1.5.1-2.el9.x86_64
  llvm-libs-16.0.6-4.el9.x86_64              lm_sensors-devel-3.6.0-10.el9.x86_64
  lua-srpm-macros-1-6.el9.noarch             make-1:4.3-7.el9.x86_64
  net-snmp-devel-1:5.9.1-11.0.3.el9_3.1.x86_ ocaml-srpm-macros-6-6.el9.noarch
  openblas-srpm-macros-2-11.el9.noarch       perl-AutoSplit-5.74-480.el9.noarch
  perl-Benchmark-1.23-480.el9.noarch         perl-CPAN-Meta-2.150010-460.el9.noarch
  perl-CPAN-Meta-Requirements-2.140-461.el9. perl-CPAN-Meta-YAML-0.018-461.el9.noarch
  perl-Devel-PPPort-3.62-4.el9.x86_64        perl-Encode-Locale-1.05-21.el9.noarch
  perl-ExtUtils-Command-2:7.60-3.el9.noarch  perl-ExtUtils-Constant-0.25-480.el9.noarc
  perl-ExtUtils-Install-2.20-4.el9.noarch    perl-ExtUtils-MakeMaker-2:7.60-3.el9.noar
  perl-ExtUtils-Manifest-1:1.73-4.el9.noarch perl-ExtUtils-ParseXS-1:3.40-460.el9.noar
  perl-File-Compare-1.100.600-480.el9.noarch perl-I18N-Langinfo-0.19-480.el9.x86_64
  perl-JSON-PP-1:4.06-4.el9.noarch           perl-Test-Harness-1:3.42-461.el9.noarch
  perl-Time-HiRes-4:1.9764-462.el9.x86_64    perl-devel-4:5.32.1-480.el9.x86_64
  perl-doc-5.32.1-480.el9.noarch             perl-locale-1.09-480.el9.noarch
  perl-srpm-macros-1-41.el9.noarch           perl-version-7:0.99.28-4.el9.x86_64
  popt-devel-1.18-8.el9.x86_64               pyproject-srpm-macros-1.9.0-1.el9.noarch
  python-srpm-macros-3.9-52.el9.noarch       qt5-srpm-macros-5.15.9-1.el9.noarch
```

```
[root@TWTPSVHQ014 ~]# yum install -y autoconf automake libtool dos2unix openssl-devel
Last metadata expiration check: 0:36:30 ago on Wed 10 Jan 2024 10:25:12 PM CST.
Package openssl-devel-1:3.0.7-24.0.1.el9.x86_64 is already installed.
```

```
Installed:
  autoconf-2.69-38.el9.noarch           automake-1.16.2-8.el9.noarch          dos2unix-7.4.2-4.el9.x86_64
  libtool-2.4.6-45.el9.x86_64           m4-1.4.19-1.el9.x86_64                perl-Thread-Queue-3.14-460.el9.noarch
  perl-threads-1:2.25-460.el9.x86_64    perl-threads-shared-1.61-460.el9.x86_64
```

Download spine source code from Cacti Web Site
cd /tmp
wget https://www.cacti.net/downloads/spine/cacti-spine-1.2.25.tar.gz
tar -zxvf cacti-spine-1.2.25.tar.gz
cd cacti-spine-1.2.25

Run the configure script and compile spine.
sh
./bootstrap
./configure
  make
  make install
  chown root:root /usr/local/spine/bin/spine
  chmod +s /usr/local/spine/bin/spine

```
[root@TWTPSVHQ014 tmp]# cd cacti-spine-1.2.25
[root@TWTPSVHQ014 cacti-spine-1.2.25]# sh
sh-5.1# ./bootstrap
INFO: Starting Spine build process
INFO: Removing cache directories
INFO: Ensuring UNIX format for *.ac
```

```
sh-5.1# ./configure
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for gcc... gcc
```

```
sh-5.1# make
gcc -DHAVE_CONFIG_H -I. -I./config     -I/usr/include/net-snmp -I/usr/include/net-snmp
o -MD -MP -MF .deps/sql.Tpo -c -o sql.o sql.c
mv -f .deps/sql.Tpo .deps/sql.Po
```

```
sh-5.1# make install
make[1]: Entering directory '/tmp/cacti-spine-1.2.25'
 /usr/bin/mkdir -p '/usr/local/spine/bin'
  /bin/sh ./libtool   --mode=install /usr/bin/install -c spine '/usr/lo
libtool: install: /usr/bin/install -c spine /usr/local/spine/bin/spine
 /usr/bin/mkdir -p '/usr/local/spine/etc'
 /usr/bin/install -c -m 644 spine.conf.dist '/usr/local/spine/etc'
 /usr/bin/mkdir -p '/usr/local/spine/share/man/man1'
 /usr/bin/install -c -m 644 spine.1 '/usr/local/spine/share/man/man1'
make[1]: Leaving directory '/tmp/cacti-spine-1.2.25'
sh-5.1# chown root:root /usr/local/spine/bin/spine
sh-5.1# chmod +s /usr/local/spine/bin/spine
sh-5.1# chown root:root /usr/local/spine/bin/spine
```

Edit spine.conf
cp /usr/local/spine/etc/spine.conf.dist /usr/local/spine/etc/spine.conf
nano /usr/local/spine/etc/spine.conf

```
DB_Host         localhost
DB_Database     cacti
DB_User         cactiuser
DB_Pass         c@Ct1Vser
DB_Port         3306
```

Enable cacti as a service
cp /usr/share/cacti/service/cactid.service /usr/lib/systemd/system/
nano /usr/lib/systemd/system/cactid.service
touch /etc/sysconfig/cactid
nano /etc/cron.d/cacti
systemctl enable cactid
systemctl daemon-reload
systemctl start cactid
systemctl status cactid

2.7 Generate self-signed CA, 10 years, Disable tls1.x

mkdir /etc/ca
openssl req -x509 -nodes -days 3650 -newkey rsa:2048 -keyout /etc/ca/cacti.key -out /etc/ca/cacti.crt
ls -lh /etc/ca

```
[root@TWTPVHQ014 ~]# mkdir /etc/ca
[root@TWTPVHQ014 ~]# openssl req -x509 -nodes -days 3650 -newkey rsa:2048 -keyout /etc/ca/cacti.key -out /etc/ca/cacti.crt
....+....+...+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++*.+...+....+........+....+.........+..+.........
+.+...........+..+....+.....+.........+.....+....+...+...+..........+......+....+.....+.++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++*.+.......+........+.+......+..+......+....+..........+.+...+...+..............+..+.......+...
```

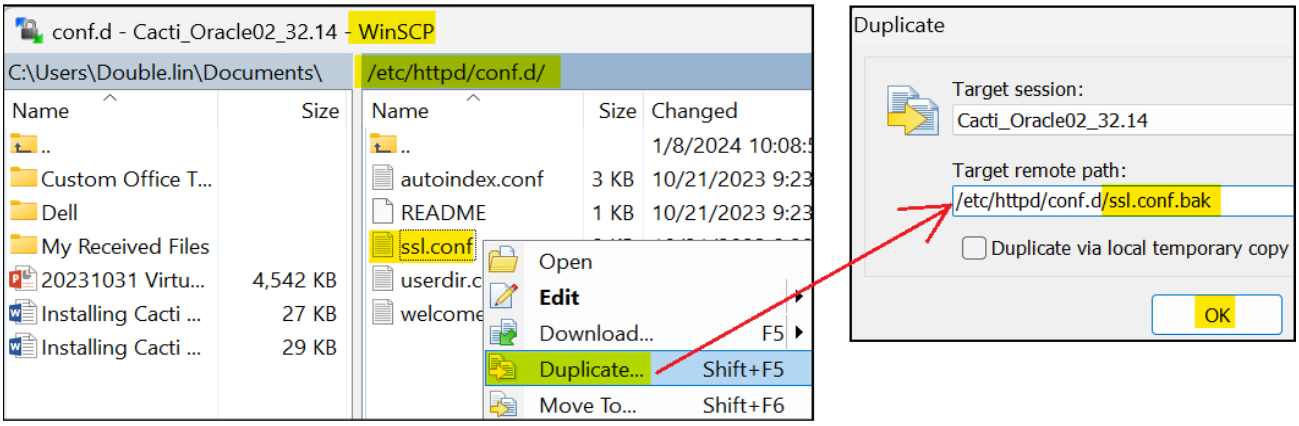
```
Country Name (2 letter code) [XX]:TW
State or Province Name (full name) []:Taipei Replace with your own information.
Locality Name (eg, city) [Default City]:New Taipei City
Organization Name (eg, company) [Default Company Ltd]:TPV Technology Ltd.
Organizational Unit Name (eg, section) []:IT          Your Cacti IP address.
Common Name (eg, your name or your server's hostname) []:172.17.32.14
Email Address []:Double.lin@tpv-tech.com
```

```
[root@TWTPVHQ014 ~]# ls -lh /etc/ca
total 8.0K
-rw-r--r--. 1 root root 1.5K Jan  8 22:21 cacti.crt
-rw-------. 1 root root 1.7K Jan  8 22:19 cacti.key
```

#Install mod_ssl, net-tools, nano, wget & git tools
yum install -y mod_ssl net-tools nano wget git

```
[root@TWTPVHQ014 ~]# yum install -y mod_ssl net-tools nano wget git
Last metadata expiration check: 0:32:03 ago on Mon 08 Jan 2024 10:04:51 PM CST.
Dependencies resolved.
================================================================================================================================
 Package                    Architecture      Version                          Repository                 Size
================================================================================================================================
Installing:
 git                        x86_64            2.39.3-1.el9_2                   ol9_appstream              78 k
 mod_ssl                    x86_64            1:2.4.57-5.0.1.el9               ol9_appstream             118 k
 nano                       x86_64            5.6.1-5.el9                      ol9_baseos_latest         790 k
 net-tools                  x86_64            2.0-0.62.20160912git.el9         ol9_baseos_latest         344 k
 wget                       x86_64            1.21.1-7.el9                     ol9_appstream             861 k
```

Configure ssl.conf after backup
cp /etc/httpd/conf.d/ssl.conf /etc/httpd/conf.d/ssl.conf.bak
(Option)Duplicate /etc/httpd/conf.d/ssl.conf via WinSCP



new add lines to disable TLS v1.x & CA path, add (#) on the 2 original .crt &.key path
SSLProtocol all -SSLv3 -TLSv1 -TLSv1.1
SSLCertificateFile /etc/ca/cacti.crt

SSLCertificateKeyFile /etc/ca/cacti.key
#SSLCertificateFile /etc/pki/tls/certs/localhost.crt
#SSLCertificateKeyFile /etc/pki/tls/private/localhost.key

/etc/httpd/conf.d/ssl.conf - Cacti_Oracle02_32.14 - Editor - WinSCP

```
Listen 443 https

#  Disable TLS v1.x & modify CA path
SSLProtocol all -SSLv3 -TLSv1 -TLSv1.1
SSLCertificateFile /etc/ca/cacti.crt
SSLCertificateKeyFile /etc/ca/cacti.key
#SSLCertificateFile /etc/pki/tls/certs/localhost.crt
#   ECC keys, when in use, can also be configured in parallel
#SSLCertificateKeyFile /etc/pki/tls/private/localhost.key
```

#Edit /etc/httpd/conf.d/cacti.conf after backup by cp or winscp
nano /etc/httpd/conf.d/cacti.conf

```
<Directory /usr/share/cacti/>
    <IfModule mod_authz_core.c>
        # httpd 2.4
        #Require host localhost
        Require all granted
    </IfModule>
    <IfModule !mod_authz_core.c>
        # httpd 2.2
        #Order deny,allow
        #Deny from all
        #Allow from localhost
        Order allow,deny
        Allow from all
    </IfModule>
```

systemctl restart httpd

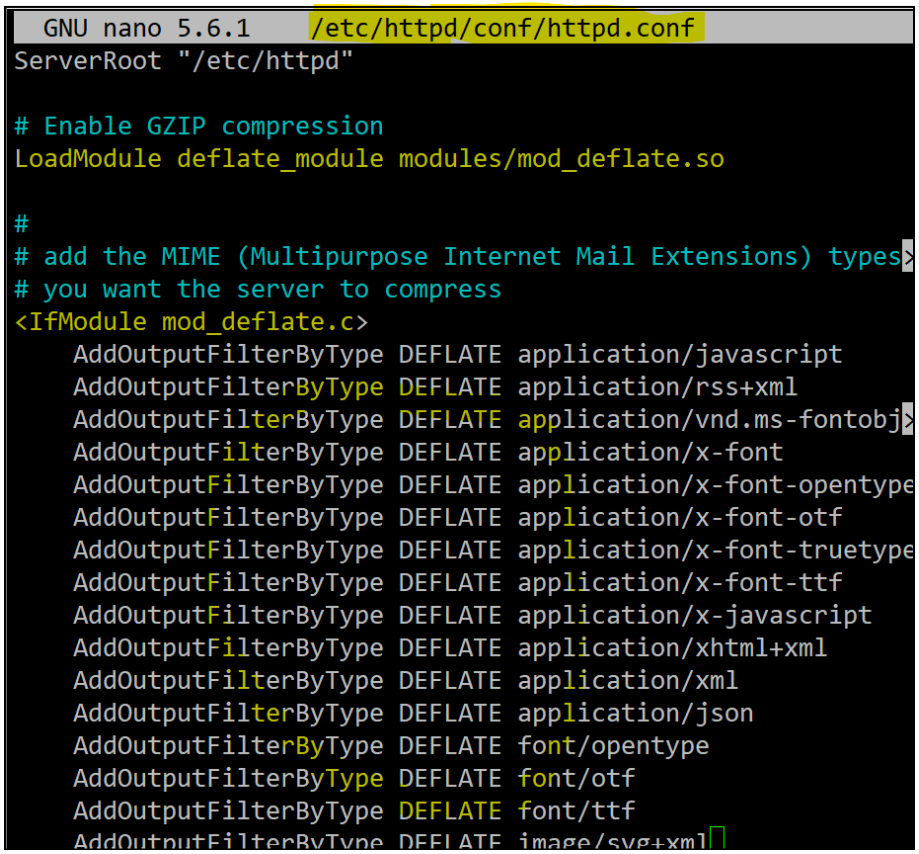
```
[root@TWTPSVHQ014 ~]# systemctl restart httpd
[root@TWTPSVHQ014 ~]#
```

2.8 Enable http compression

cp /etc/httpd/conf/httpd.conf /etc/httpd/conf/httpd.conf.bak
nano /etc/httpd/conf/httpd.conf

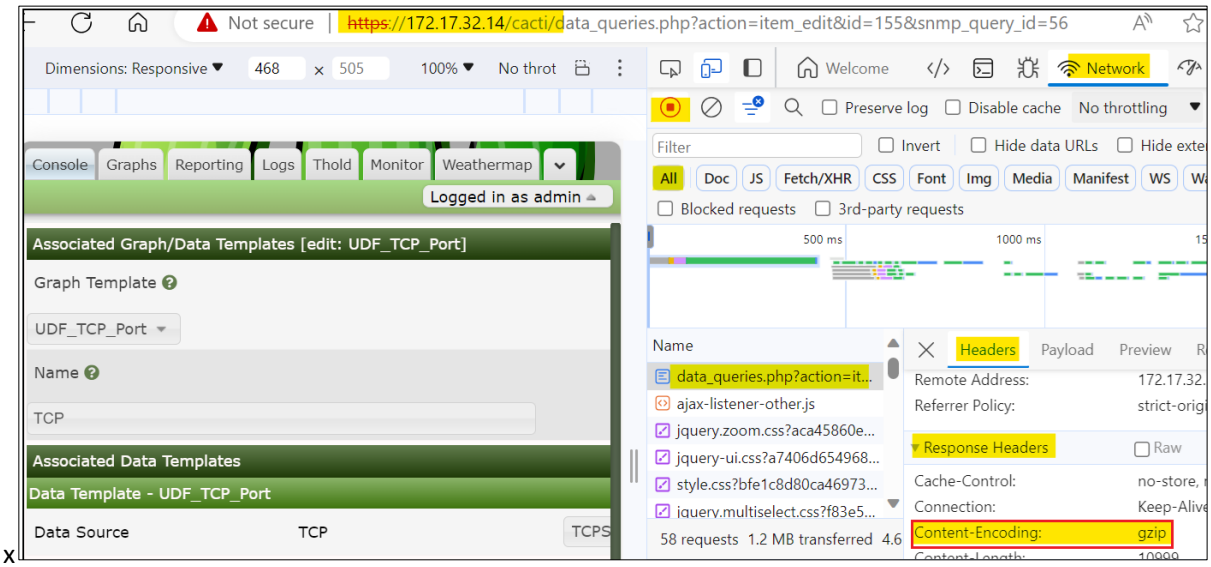
```
# Enable GZIP compression
LoadModule deflate_module modules/mod_deflate.so
#
# add the MIME (Multipurpose Internet Mail Extensions) types which
# you want the server to compress
<IfModule mod_deflate.c>
    AddOutputFilterByType DEFLATE application/javascript
    AddOutputFilterByType DEFLATE application/rss+xml
```

```
    AddOutputFilterByType DEFLATE application/vnd.ms-fontobject
    AddOutputFilterByType DEFLATE application/x-font
    AddOutputFilterByType DEFLATE application/x-font-opentype
    AddOutputFilterByType DEFLATE application/x-font-otf
    AddOutputFilterByType DEFLATE application/x-font-truetype
    AddOutputFilterByType DEFLATE application/x-font-ttf
    AddOutputFilterByType DEFLATE application/x-javascript
    AddOutputFilterByType DEFLATE application/xhtml+xml
    AddOutputFilterByType DEFLATE application/xml
    AddOutputFilterByType DEFLATE application/json
    AddOutputFilterByType DEFLATE font/opentype
    AddOutputFilterByType DEFLATE font/otf
    AddOutputFilterByType DEFLATE font/ttf
    AddOutputFilterByType DEFLATE image/svg+xml
    AddOutputFilterByType DEFLATE image/x-icon
    AddOutputFilterByType DEFLATE text/css
    AddOutputFilterByType DEFLATE text/html
    AddOutputFilterByType DEFLATE text/javascript
    AddOutputFilterByType DEFLATE text/plain
    AddOutputFilterByType DEFLATE text/xml
</IfModule>
```



systemctl restart httpd

PS. Gzip compression can be check later after Cacti is completed setup by Press F12 =>Network =>All => Select a php => Header => Response Headers =>content-encoding =>gzip



2.9 Disable firewall

systemctl stop firewalld
systemctl disable firewalld
systemctl status firewalld

```
[root@twtpsvhq014 ~]# systemctl stop firewalld
systemctl disable firewalld
systemctl status firewalld
o firewalld.service - firewalld - dynamic firewall daemon
     Loaded: loaded (/usr/lib/systemd/system/firewalld.service; disabled; preset: enabled)
     Active: inactive (dead)
       Docs: man:firewalld(1)
```

2.10 (Optional) Enable firewall port: http https snmp

firewall-cmd --zone=public --add-service=http --add-service=https --add-service=snmp
firewall-cmd --runtime-to-permanent

```
[root@TWTPSVHQ014 ~]# firewall-cmd --zone=public --add-service=http --add-servic
e=https --add-service=snmp
success
[root@TWTPSVHQ014 ~]# firewall-cmd --runtime-to-permanent
success
```

2.11 Install & Configure NTP

#Check NTP daemon is running & source IP
systemctl status chronyd

```
[root@TWTPSVHQ014 ~]# systemctl status chronyd
● chronyd.service - NTP client/server
     Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; preset: enable
     Active: active (running) since Wed 2024-01-10 23:40:26 CST; 4 days ago
       Docs: man:chronyd(8)
             man:chrony.conf(5)
   Main PID: 904 (chronyd)
      Tasks: 1 (limit: 50492)
     Memory: 4.4M
        CPU: 1.310s
     CGroup: /system.slice/chronyd.service
             └─904 /usr/sbin/chronyd -F 2

Jan 10 23:40:25 TWTPSVHQ014.tpvaoc.com systemd[1]: Starting NTP client/server...
Jan 10 23:40:25 TWTPSVHQ014.tpvaoc.com chronyd[904]: chronyd version 4.3 starting (+C
Jan 10 23:40:26 TWTPSVHQ014.tpvaoc.com chronyd[904]: Frequency -15.308 +/- 0.173 ppm
Jan 10 23:40:26 TWTPSVHQ014.tpvaoc.com chronyd[904]: Using right/UTC timezone to obta
Jan 10 23:40:26 TWTPSVHQ014.tpvaoc.com chronyd[904]: Loaded seccomp filter (level 2)
Jan 10 23:40:26 TWTPSVHQ014.tpvaoc.com systemd[1]: Started NTP client/server.
Jan 10 23:40:34 TWTPSVHQ014.tpvaoc.com chronyd[904]: Selected source 210.243.152.152
Jan 10 23:40:34 TWTPSVHQ014.tpvaoc.com chronyd[904]: System clock TAI offset set to 3
```

cp /etc/chrony.conf /etc/chrony.conf.bak

nano /etc/chrony.conf

#pool 2.pool.ntp.org iburst

pool 172.16.0.179 iburst

pool 172.16.0.178 iburst

```
  GNU nano 5.6.1                                  /etc/chrony.conf
# Use public servers from the pool.ntp.org project.
# Please consider joining the pool (https://www.pool.ntp.org/join.html).
#pool 2.pool.ntp.org iburst
pool 172.16.0.179 iburst
pool 172.16.0.178 iburst
```

Replace with your local DC IPs

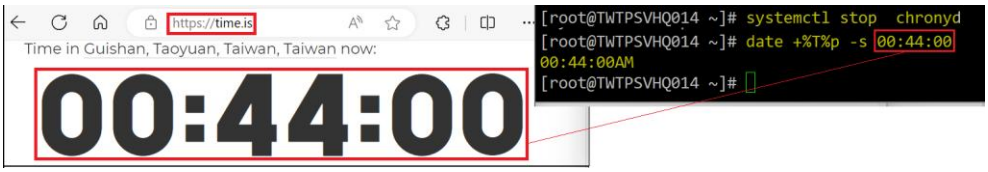
systemctl restart chronyd

```
[root@TWTPSVHQ014 ~]# systemctl restart chronyd
[root@TWTPSVHQ014 ~]#
```

systemctl status chronyd (verify selected source IP is switch to local DC now)

```
[root@TWTPSVHQ018 ~]# systemctl status chronyd
● chronyd.service - NTP client/server
     Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2024-02-15 11:19:59 CST; 10s ago
Feb 15 11:19:59 TWTPSVHQ018.tpvaoc.com systemd[1]: Starting NTP client/server...
Feb 15 11:19:59 TWTPSVHQ018.tpvaoc.com chronyd[3640]: chronyd version 4.3 starting (+CMDMON +NT
Feb 15 11:19:59 TWTPSVHQ018.tpvaoc.com chronyd[3640]: Frequency -8.853 +/- 1.482 ppm read from
Feb 15 11:19:59 TWTPSVHQ018.tpvaoc.com chronyd[3640]: Using right/UTC timezone to obtain leap s
Feb 15 11:19:59 TWTPSVHQ018.tpvaoc.com chronyd[3640]: Loaded seccomp filter (level 2)
Feb 15 11:19:59 TWTPSVHQ018.tpvaoc.com systemd[1]: Started NTP client/server.
Feb 15 11:20:03 TWTPSVHQ018.tpvaoc.com chronyd[3640]: Selected source 172.16.0.178 <-Your DC IP
Feb 15 11:20:03 TWTPSVHQ018.tpvaoc.com chronyd[3640]: System clock TAI offset set to 37 seconds
```

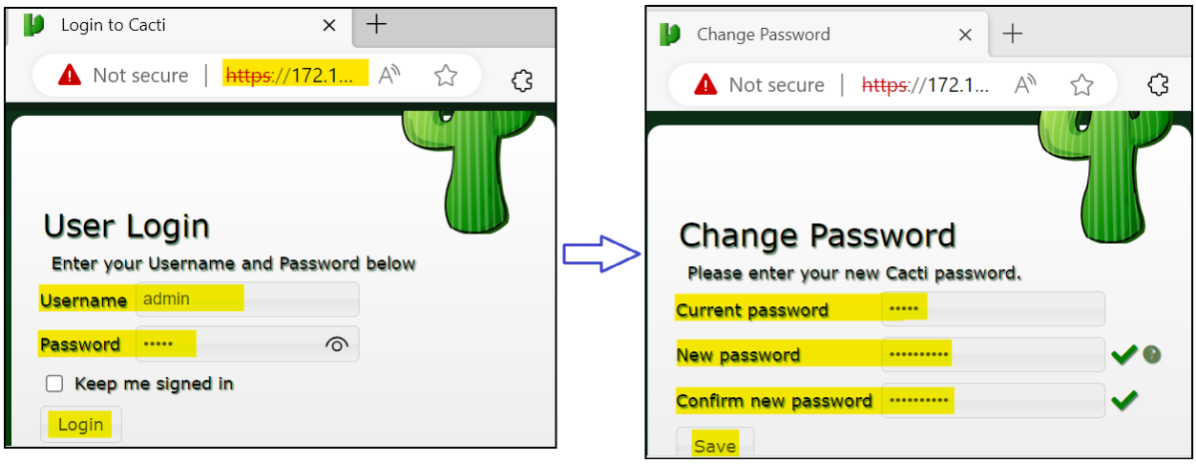
(Optional-Troubleshooting) Reboot now if Selected source IP still not change to your local DC

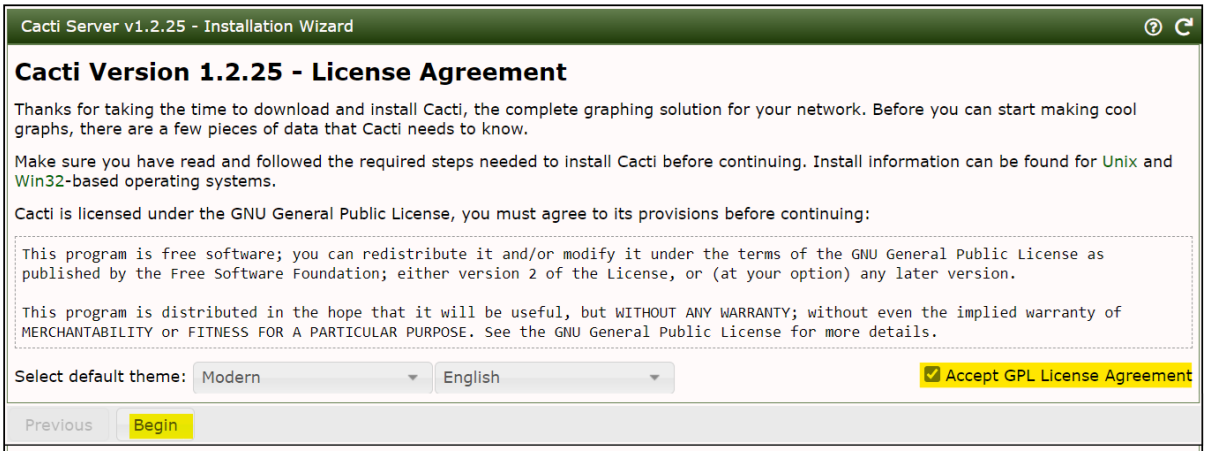


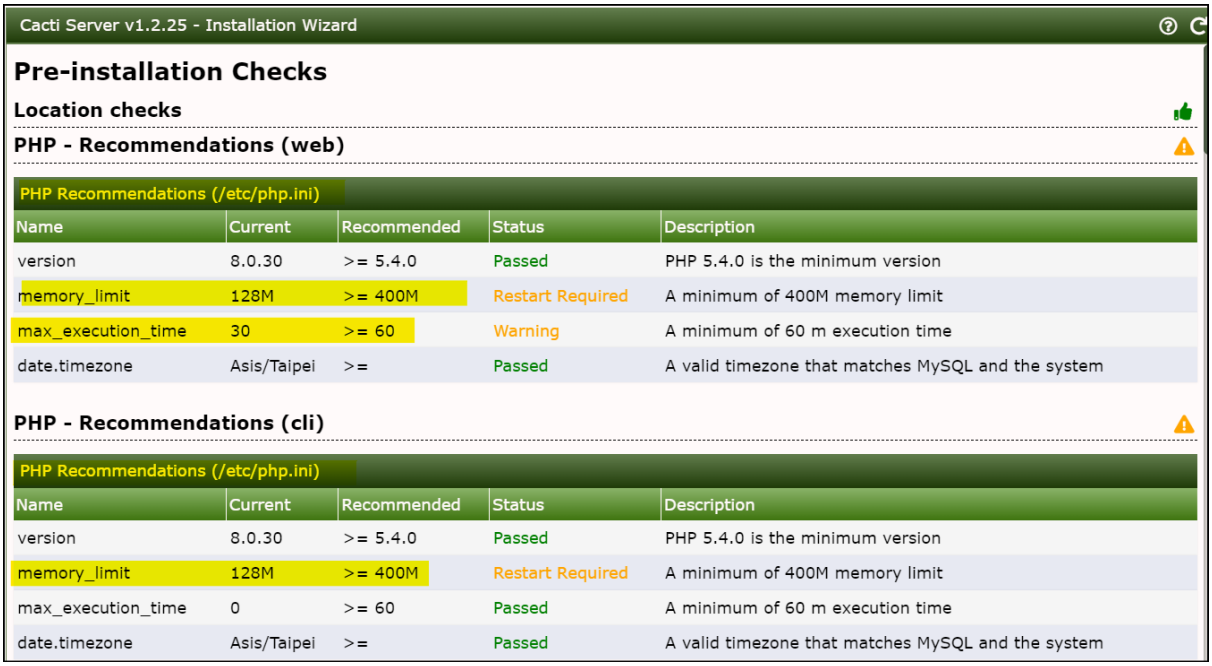
3 Cacti Configuration

3.1 Pre-Installation Check

Default credential is **admin/admin**, change PW to **Tpv@TP2024**
https://172.17.32.14/cacti





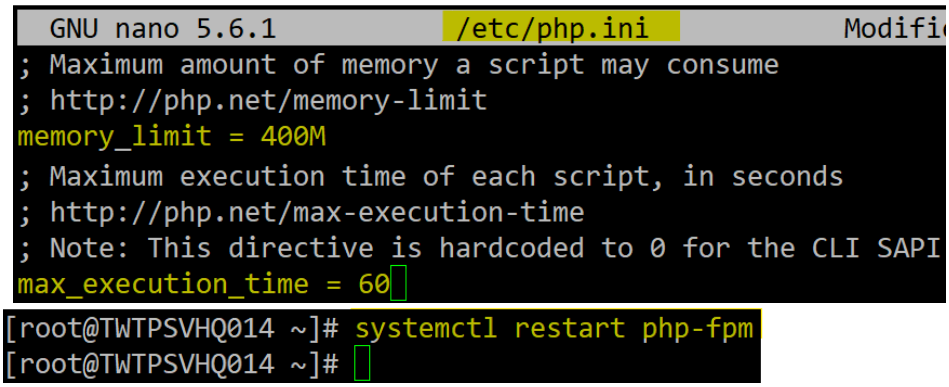


↑Follow up yellow marker to modify /etc/php.ini

cp /etc/php.ini /etc/php.ini.bak

nano /etc/php.ini

systemctl restart php-fpm

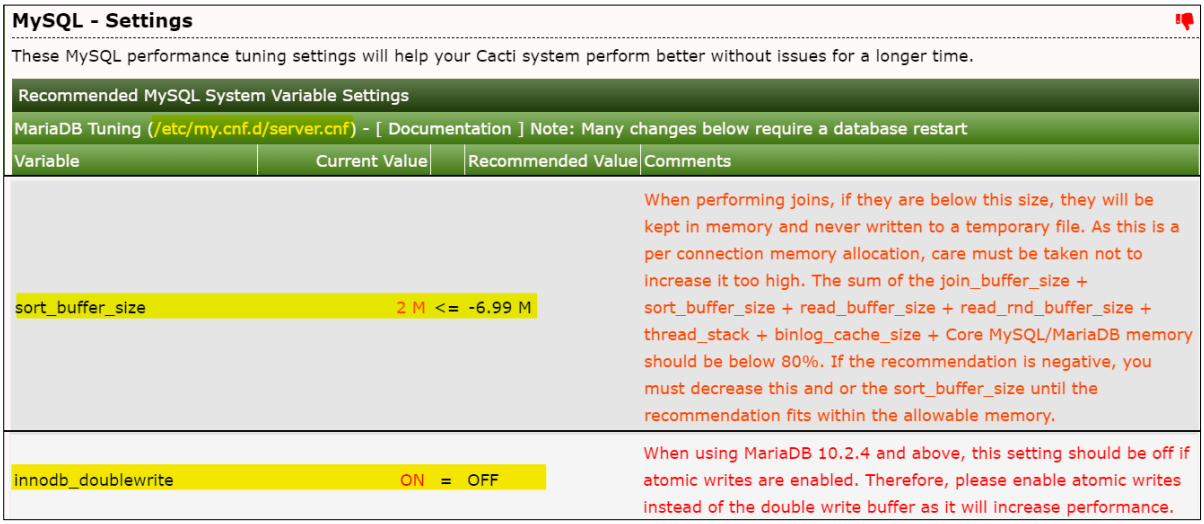



```
[root@TWTPSVHQ014 ~]# systemctl restart php-fpm
[root@TWTPSVHQ014 ~]#
```

↑ fix MySql Time zone DB issue

mysql_tzinfo_to_sql /usr/share/zoneinfo | mysql -uroot -pc@Ct1Vser mysql

```
[root@TWTPSVHQ014 ~]# mysql_tzinfo_to_sql /usr/share/zoneinfo | mysql -uroot -pc@Ct1Vser mysql
[root@TWTPSVHQ014 ~]#
```



↑ fix MySql settings issue

cp /etc/my.cnf.d/server.cnf /etc/my.cnf.d/server.cnf.bak

nano /

sort_buffer_size = 10M

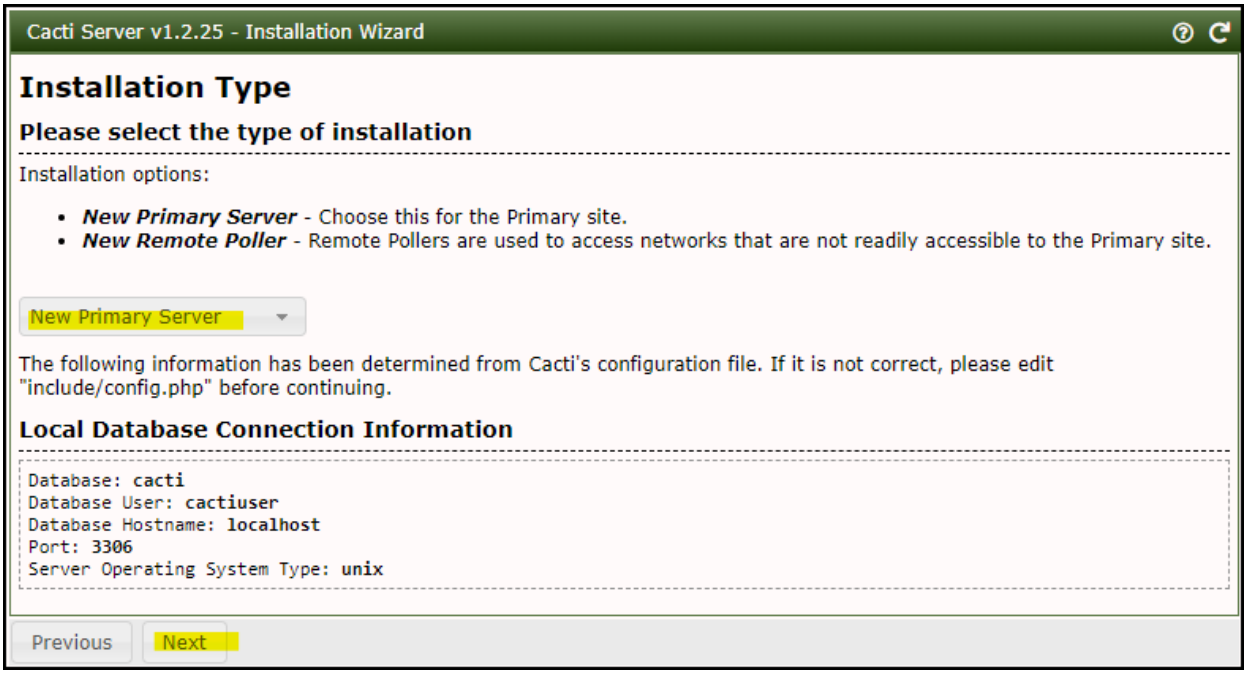
join_buffer_size = 15M

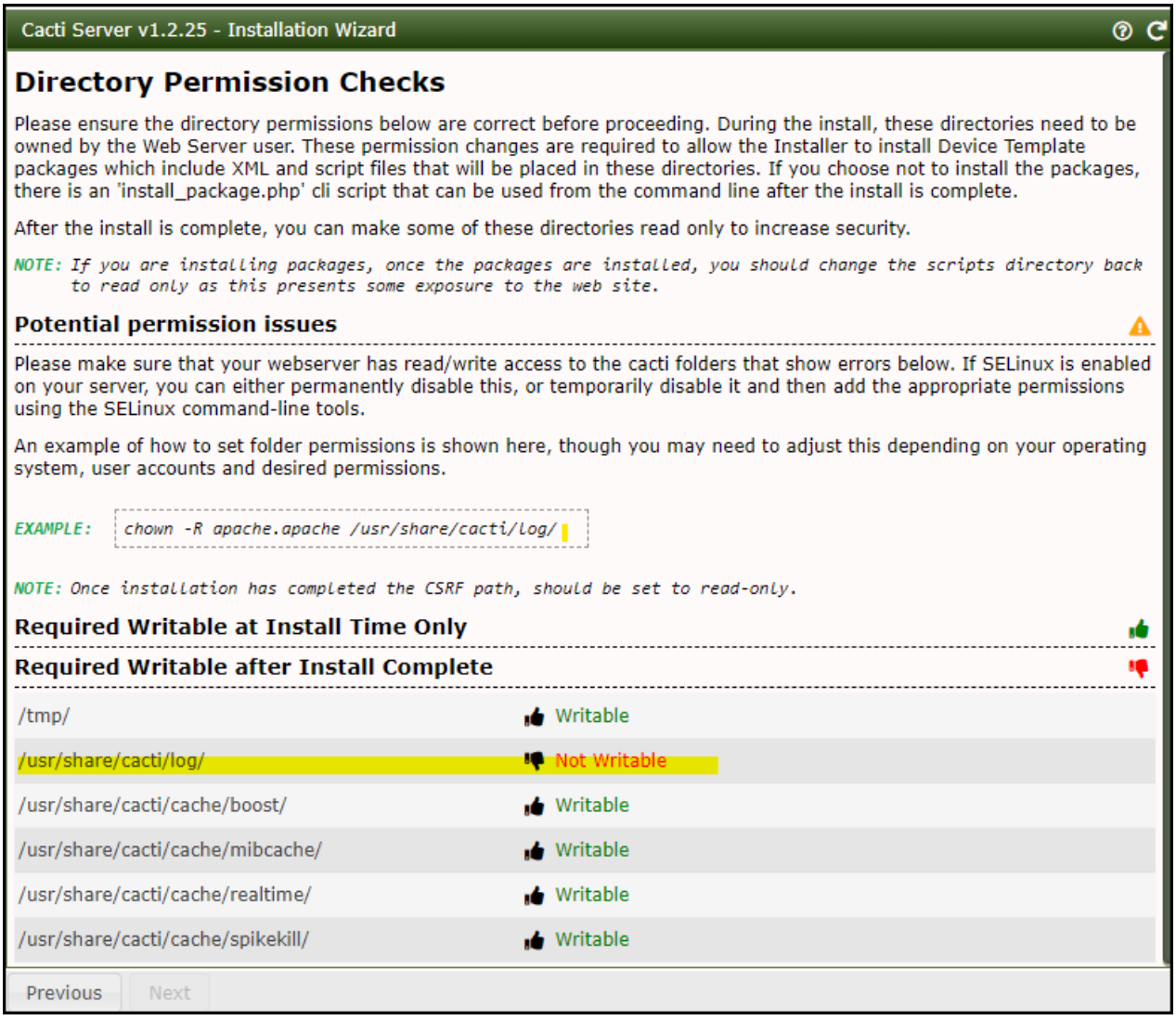
innodb_doublewrite = OFF

max_connections = 600

systemctl restart mariadb

Refresh cacti web page to check status are all GREEN thumb UP => Click Next





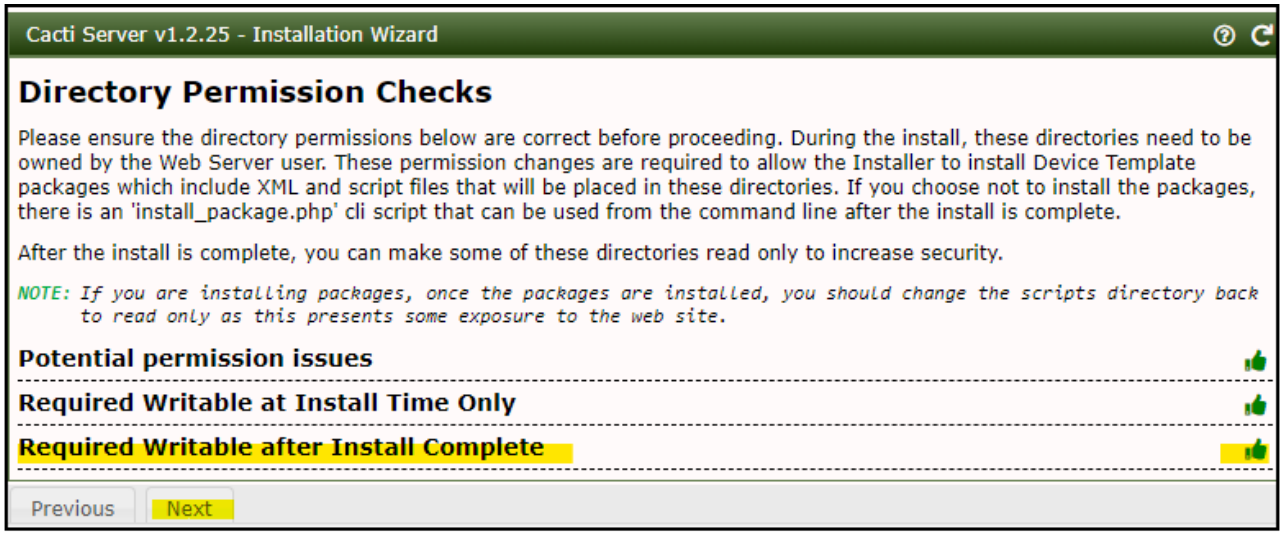
↑ fix writable permission issue of /usr/share/cacti/log/ by Disable SELinux temporarily setenforce 0

```
[root@TWTPSVHQ014 ~]# setenforce 0
[root@TWTPSVHQ014 ~]#
```

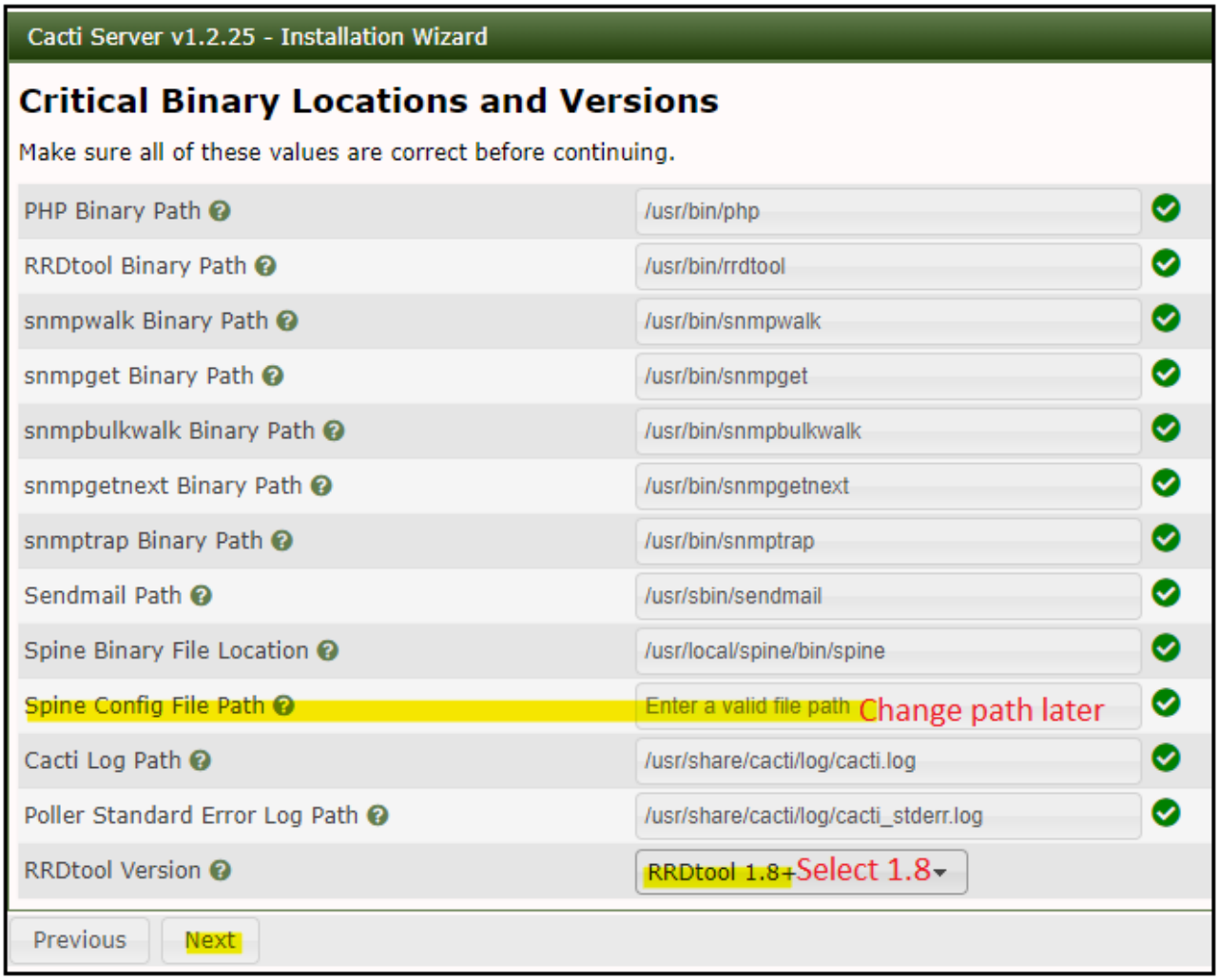
#disable selinux permanently from enforcing to disabled
cp /etc/sysconfig/selinux /etc/sysconfig/selinux.bak
nano /etc/sysconfig/selinux
SELINUX=disabled

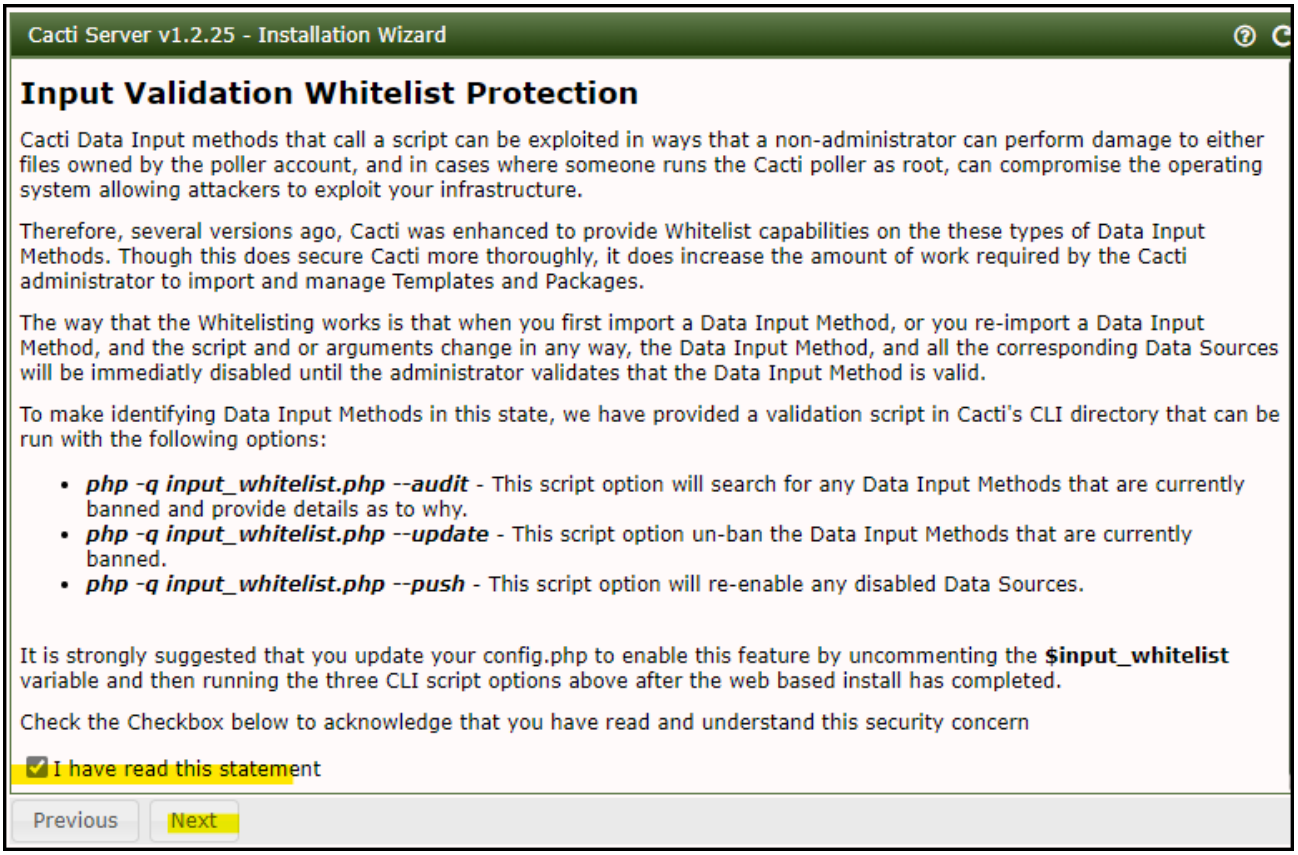
```
 GNU nano 5.6.1                                  /etc/sysconfig/selinux
#     grubby --update-kernel ALL --args selinux=0
#
# To revert back to SELinux enabled:
#
#     grubby --update-kernel ALL --remove-args selinux
#
SELINUX=disabled
```

Refresh Cacti web page =>Click Next

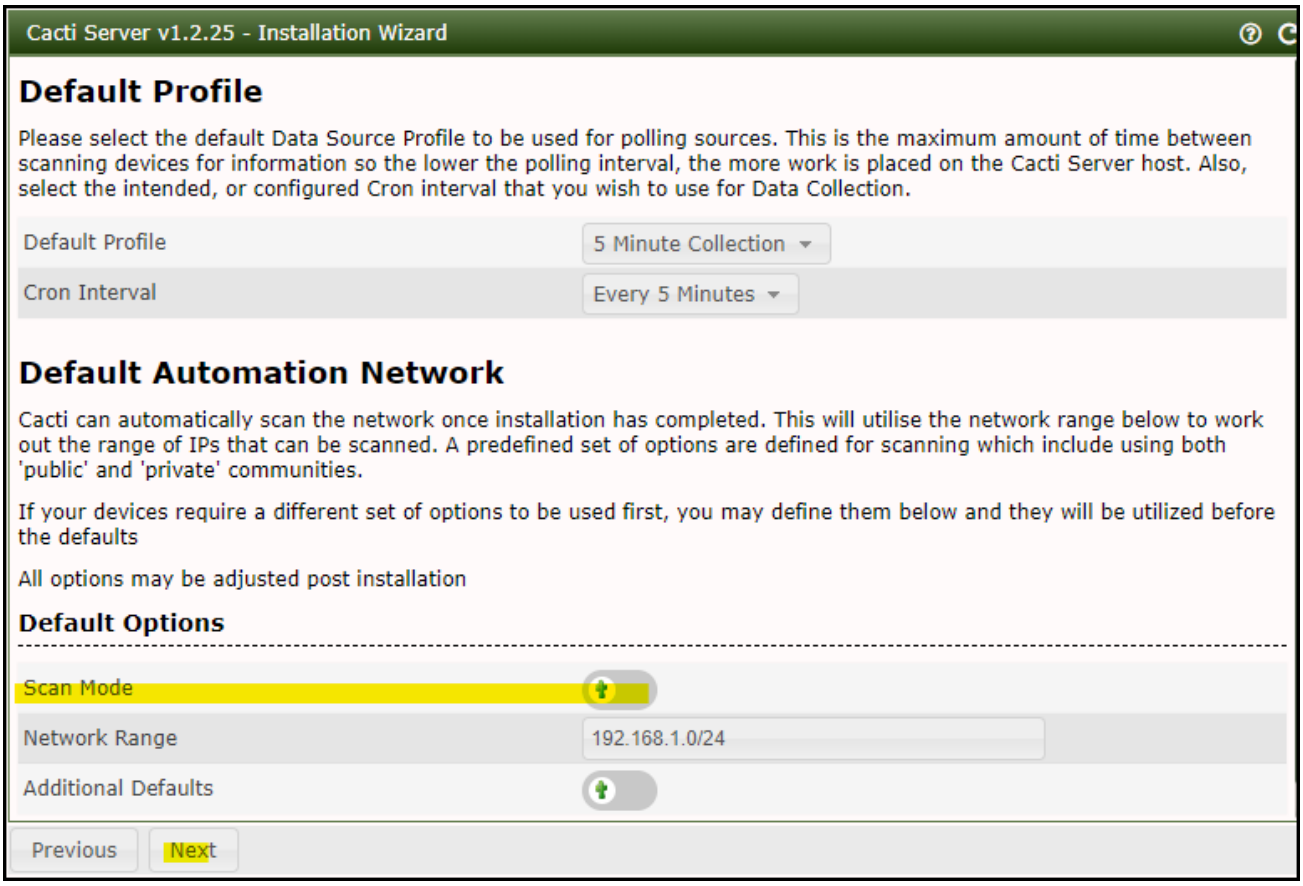


🡻Change spine path later => Select RRDTool 1.8 (default is 1.7.2)


Cacti Server v1.2.25 - Installation Wizard
Critical Binary Locations and Versions
Make sure all of these values are correct before continuing.
PHP Binary Path
/usr/bin/php
RRDtool Binary Path
/usr/bin/rrdtool
snmpwalk Binary Path
/usr/bin/snmpwalk
snmpget Binary Path
/usr/bin/snmpget
snmpbulkwalk Binary Path
/usr/bin/snmpbulkwalk
snmpgetnext Binary Path
/usr/bin/snmpgetnext
snmptrap Binary Path
/usr/bin/snmptrap
Sendmail Path
/usr/sbin/sendmail
Spine Binary File Location
/usr/local/spine/bin/spine
Spine Config File Path
Enter a valid file path
Change path later
Cacti Log Path
/usr/share/cacti/log/cacti.log
Poller Standard Error Log Path
/usr/share/cacti/log/cacti_stderr.log
RRDtool Version
RRDtool 1.8+
Select 1.8
Previous
Next

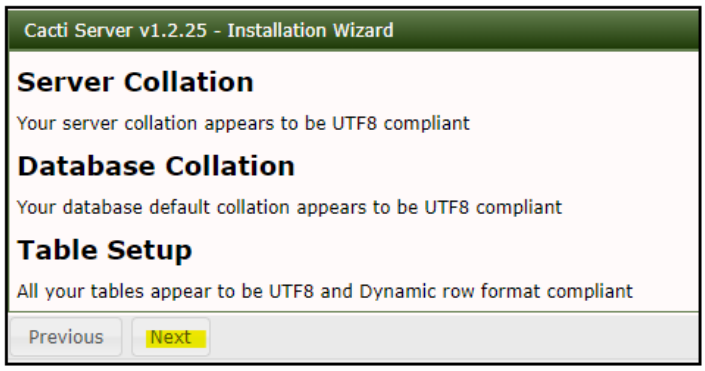

Cacti Server v1.2.25 - Installation Wizard
Input Validation Whitelist Protection
Cacti Data Input methods that call a script can be exploited in ways that a non-administrator can perform damage to either files owned by the poller account, and in cases where someone runs the Cacti poller as root, can compromise the operating system allowing attackers to exploit your infrastructure.
Therefore, several versions ago, Cacti was enhanced to provide Whitelist capabilities on the these types of Data Input Methods. Though this does secure Cacti more thoroughly, it does increase the amount of work required by the Cacti administrator to import and manage Templates and Packages.
The way that the Whitelisting works is that when you first import a Data Input Method, or you re-import a Data Input Method, and the script and or arguments change in any way, the Data Input Method, and all the corresponding Data Sources will be immediatly disabled until the administrator validates that the Data Input Method is valid.
To make identifying Data Input Methods in this state, we have provided a validation script in Cacti's CLI directory that can be run with the following options:
php -q input_whitelist.php --audit - This script option will search for any Data Input Methods that are currently banned and provide details as to why.
php -q input_whitelist.php --update - This script option un-ban the Data Input Methods that are currently banned.
php -q input_whitelist.php --push - This script option will re-enable any disabled Data Sources.
It is strongly suggested that you update your config.php to enable this feature by uncommenting the $input_whitelist variable and then running the three CLI script options above after the web based install has completed.
Check the Checkbox below to acknowledge that you have read and understand this security concern
I have read this statement
Previous
Next

Disable “Scan mode”

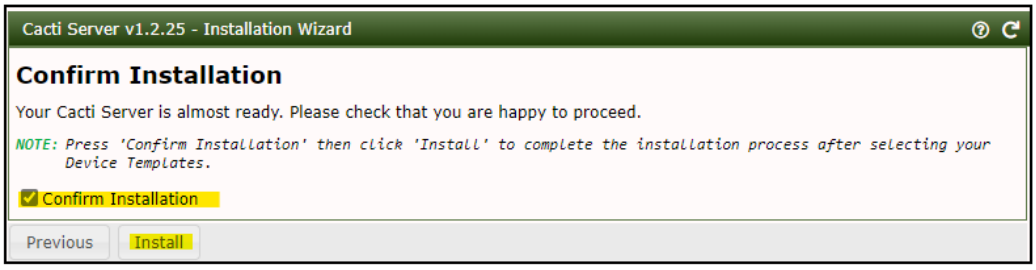


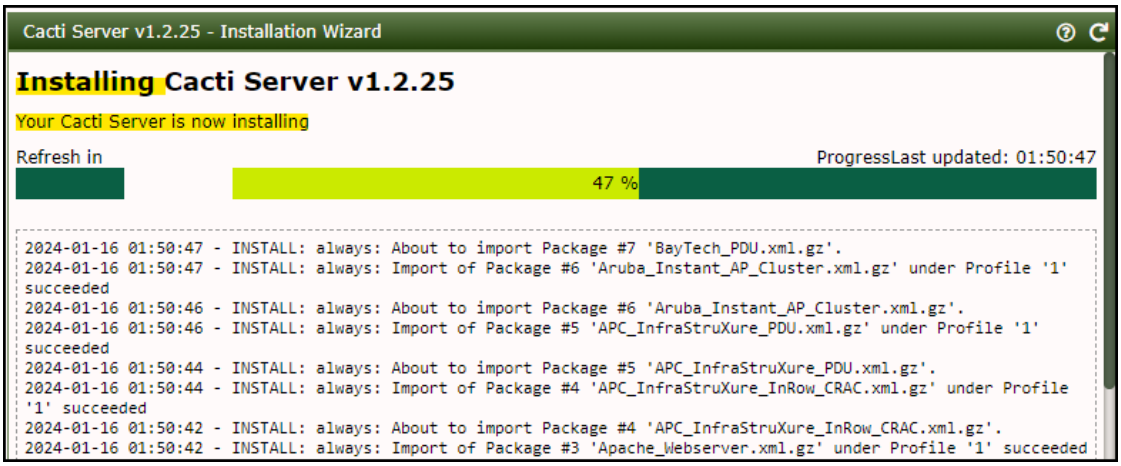
Default all Template are selected. => Next

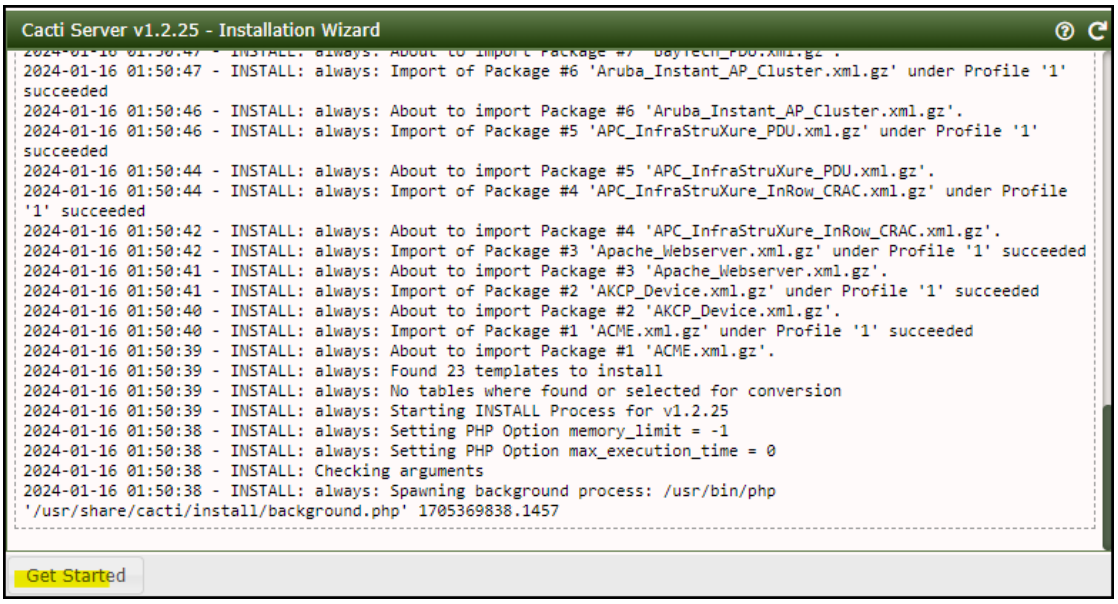

Cacti Server v1.2.25 - Installation Wizard
Template Setup
Please select the Device Templates that you wish to use after the Install. If you Operating System is Windows, you need to ensure that you select the 'Windows Device' Template. If your Operating System is Linux/UNIX, make sure you select the 'Local Linux Machine' Device Template.
Templates
Name
Description
Author
Homepage
ACME.xml.gz
ACME Device Package
The Cacti Group
cacti.net
AKCP_Device.xml.gz
AKCP Device Device Package
The Cacti Group
cacti.net
APC_InfraStruXure_InRow_CRAC.xml.gz
APC InfraStruXure InRow CRAC Device Package
The Cacti Group
cacti.net
APC_InfraStruXure_PDU.xml.gz
APC InfraStruXure PDU Device Package
The Cacti Group
cacti.net
Apache_Webserver.xml.gz
Apache Webserver Device Package
The Cacti Group
cacti.net
Aruba_Instant_AP_Cluster.xml.gz
Aruba Instant AP Cluster Device Package
The Cacti Group
cacti.net
BayTech_PDU.xml.gz
BayTech PDU Device Package
The Cacti Group
cacti.net
Cacti_Stats.xml.gz
Cacti Stats Device Package
The Cacti Group
cacti.net
Cisco_Router.xml.gz
Cisco Router Device Package
The Cacti Group
cacti.net
Citrix_NetScaler_VPX.xml.gz
Citrix NetScaler VPX Package
The Cacti Group
cacti.net
ESXi_Device.xml.gz
ESXi Device Device Package
The Cacti Group
cacti.net
Fortigate.xml.gz
Fortigate Device Package
The Cacti Group
cacti.net
Generic_SNMP_Device.xml.gz
Generic SNMP Device Package
The Cacti Group
cacti.net
Local_Linux_Machine.xml.gz
Local Linux Machine Device Package
The Cacti Group
cacti.net
MikroTik_Device.xml.gz
MikroTik Device Device Package
The Cacti Group
cacti.net
MikroTik_Switch_SWOS.xml.gz
MikroTik Switch (SWOS) Device Package
The Cacti Group
cacti.net
Motorola_SB6141.xml.gz
Motorola SB6141 Device Package
The Cacti Group
cacti.net
NetSNMP_Device.xml.gz
Net-SNMP Device Package
The Cacti Group
cacti.net
PING_Advanced_Ping.xml.gz
PING - Advanced Ping Graph Template Package
The Cacti Group
cacti.net
SNMP_Printer.xml.gz
SNMP Printer Device Package
The Cacti Group
cacti.net
SNMP_UPS.xml.gz
SNMP UPS Device Package
The Cacti Group
cacti.net
Synology_NAS.xml.gz
Synology NAS Device Package
The Cacti Group
cacti.net
Windows_Device.xml.gz
Windows Device Package
The Cacti Group
cacti.net
Device Templates allow you to monitor and graph a vast assortment of data within Cacti. After you select the desired Device Templates, press 'Next' and the installation will complete. Please be patient on this step, as the importation of the Device Templates can take a few minutes.
Previous
Next

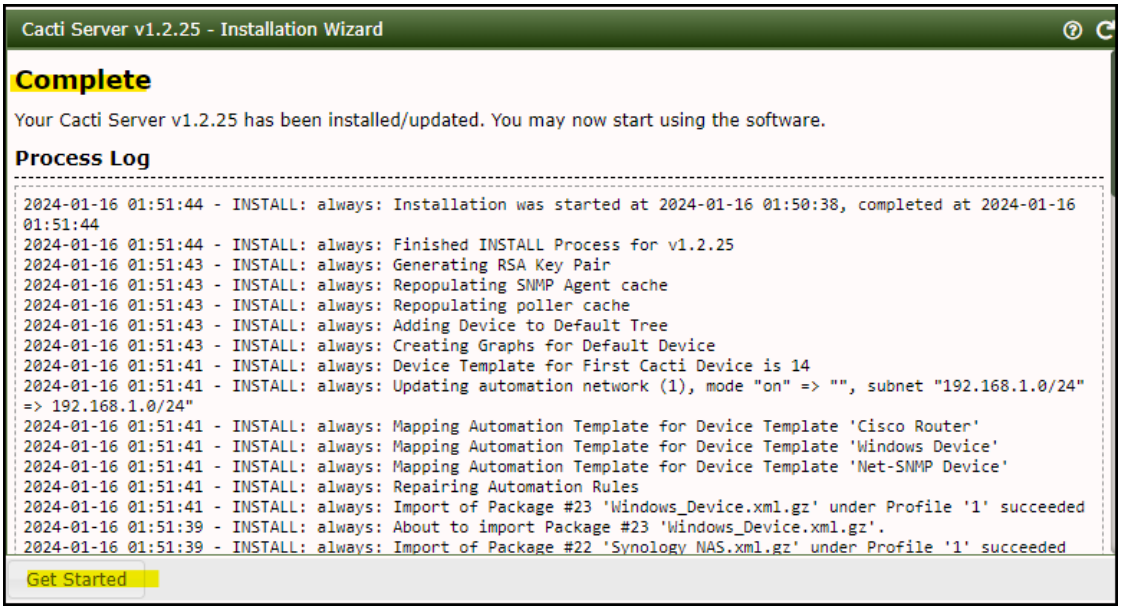


Check “Confirmed Installation” => Install

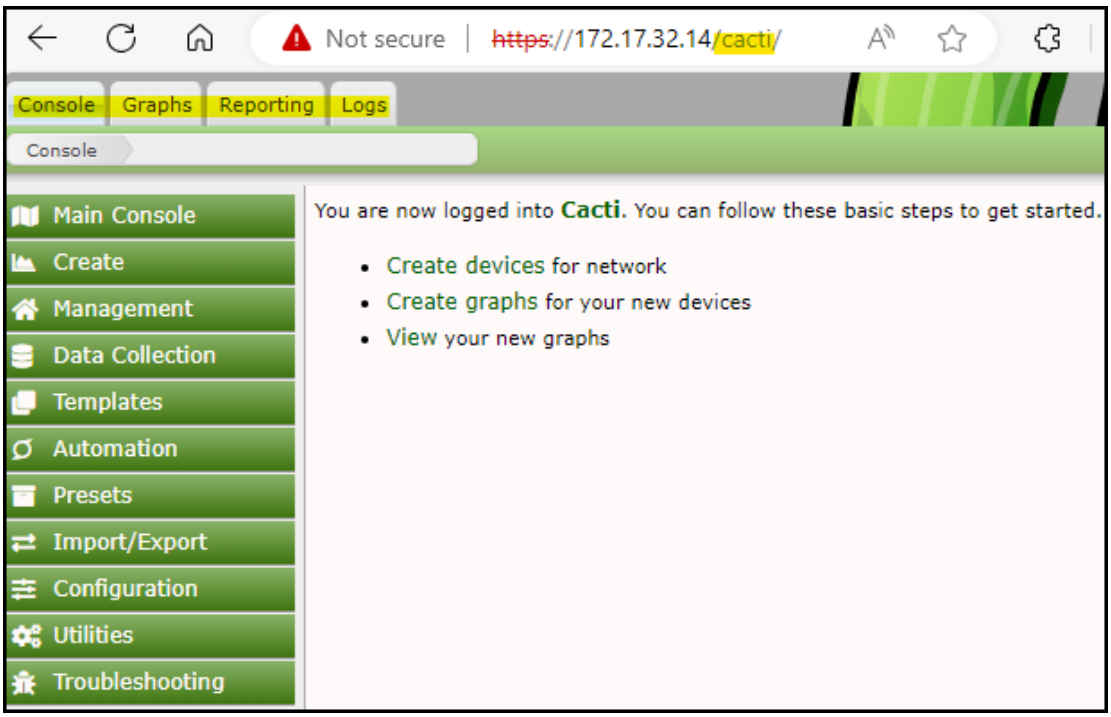






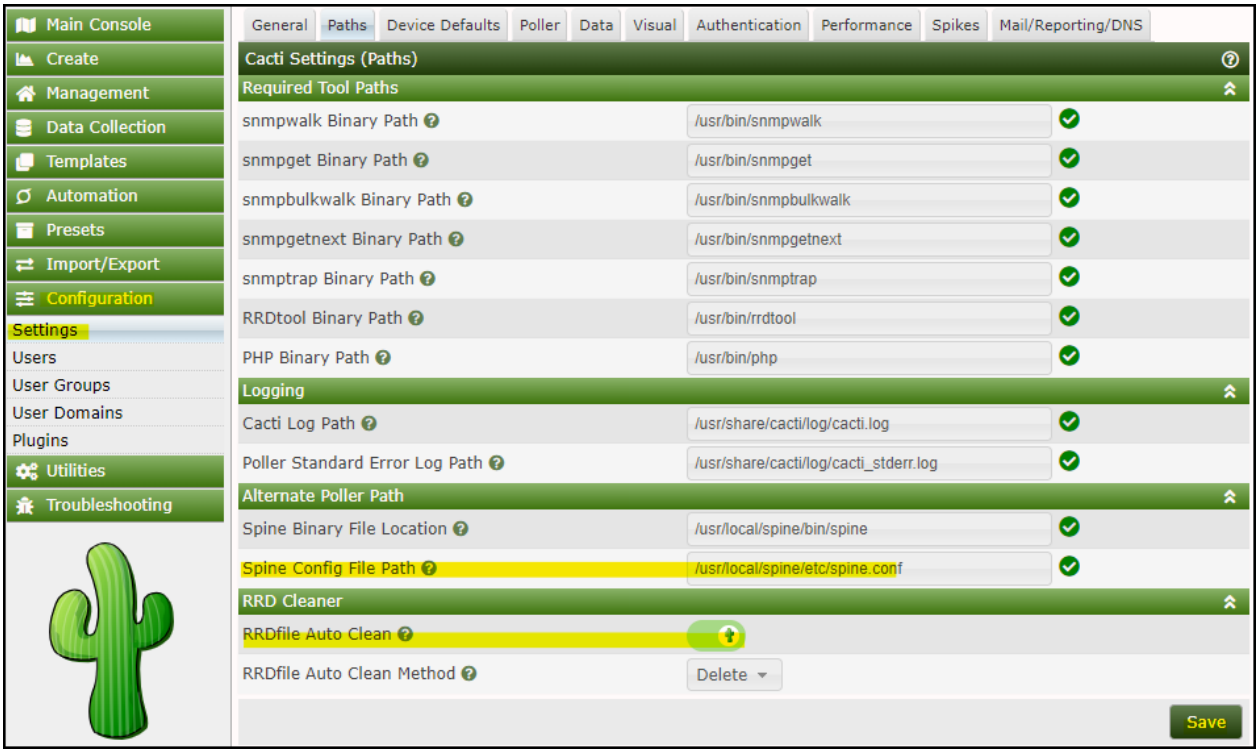


Done.



3.2 Configure Cacti

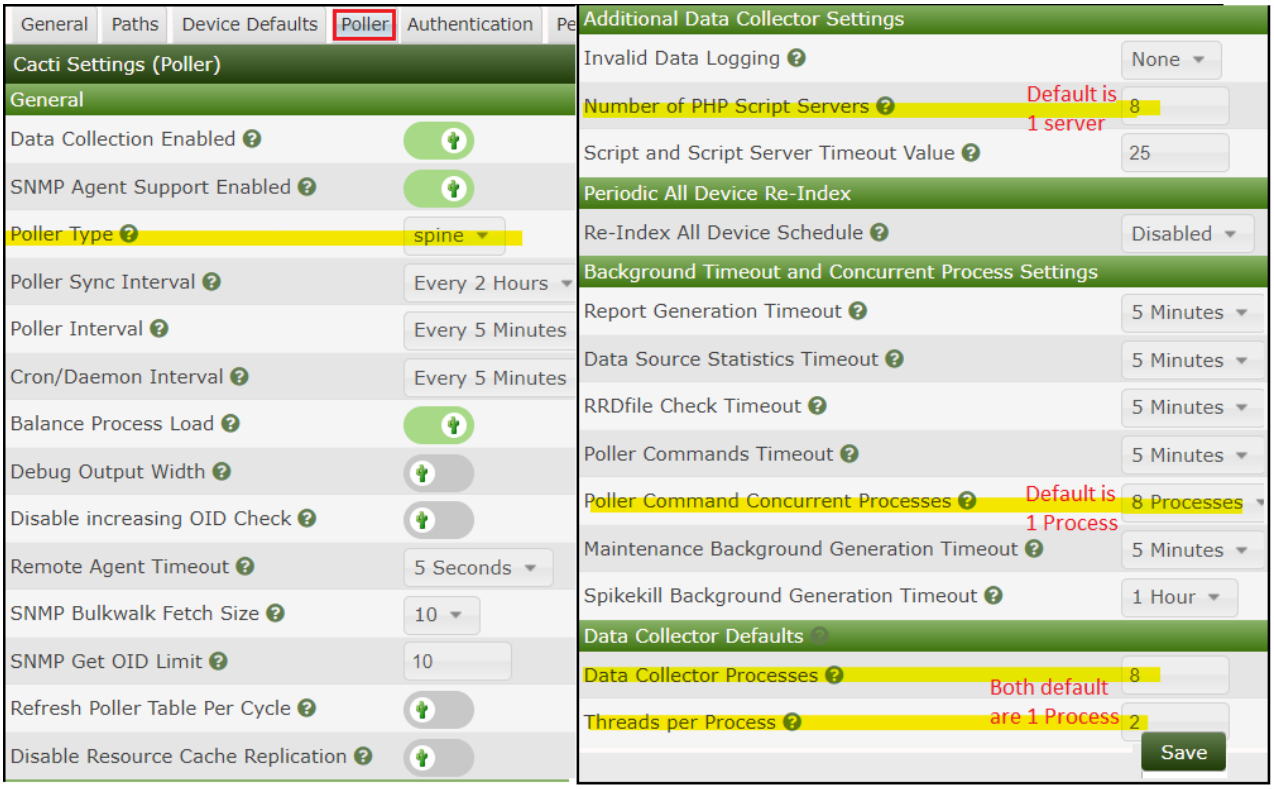
#Define spine execute path to **/usr/local/spine/etc/spine.conf & Enable RRD File Auto Clean**



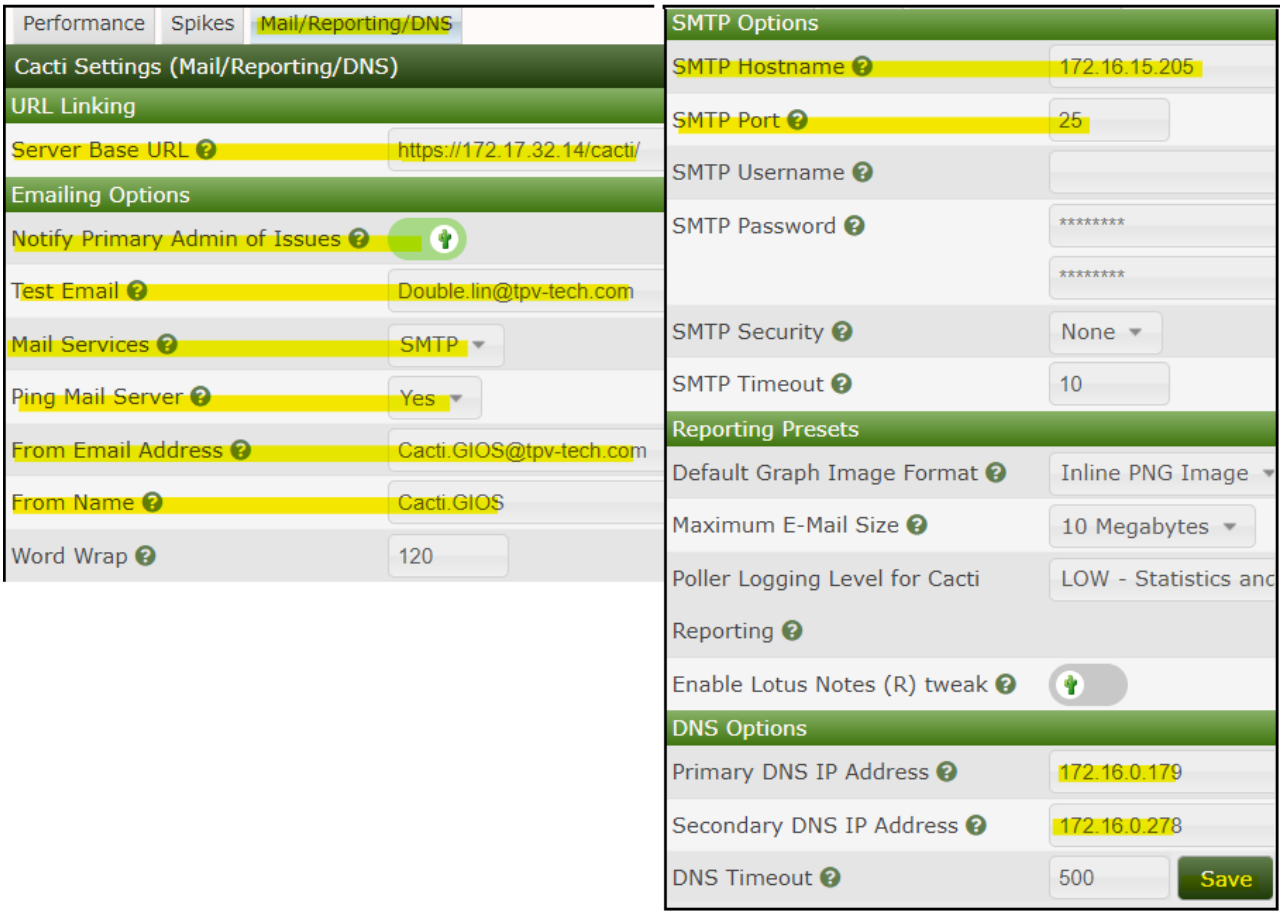
On Device Default.


General
Paths
Device Defaults
Poller
Data
Visual
Authentication
Performance
Spikes
Cacti Settings (Device Defaults)
General Defaults
Template
None
Default is ACME
Site
Core
Poller
Main Poller
Device Threads
8 Threads
Default is 1 Thread
Re-index Method for Data Queries
Uptime
Default Interface Speed
1 Gbps Ethernet
SNMP Defaults
Version
Version 2
Community
TpvTech1
Port Number
161
Timeout
600
Default is 500ms
Retries
3
Availability/Reachability
Downed Device Detection
Ping
Default is SNMP Uptime
Ping Type
ICMP Ping
Ping Port
23
Ping Timeout Value
600
Default is 400ms
Ping Retry Count
3
Default is 1 Retry
Up/Down Settings
Failure Count
1
Default is 2
Recovery Count
2
Default is 3
Save

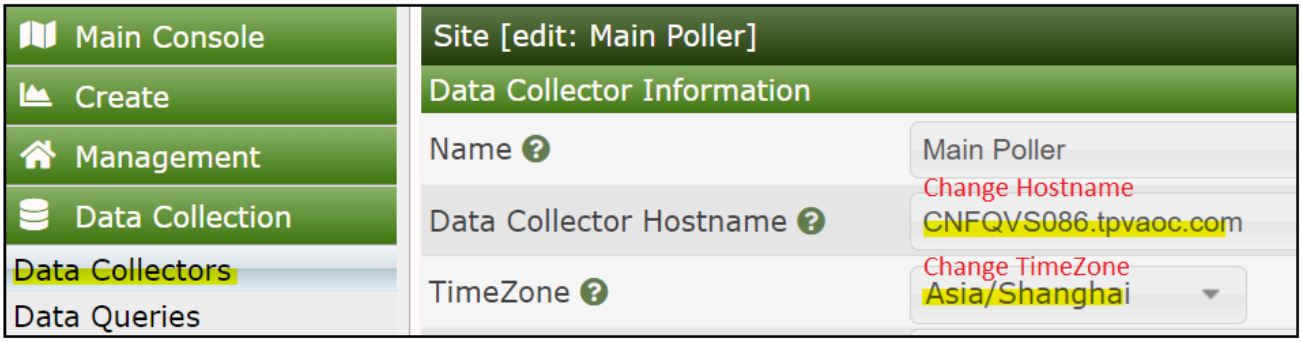
Polling



Mail/Reporting/DNS



Change Data collectors to your hostname & Time zone

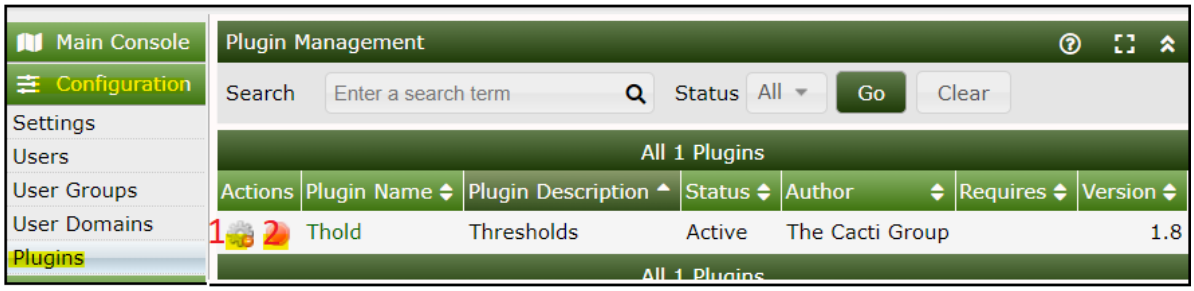


3.3 Install Plug-in

#Install Plug-in, configuration will be in next step.
cd /usr/share/cacti/site/plugins
sudo git clone https://github.com/Cacti/plugin_thold.git
sudo mv plugin_thold thold

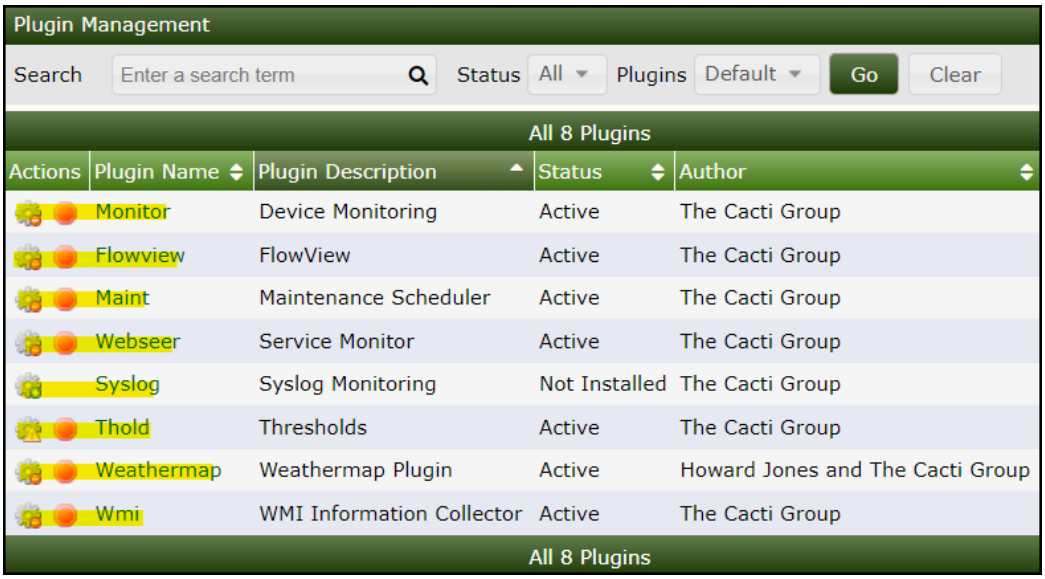
```
[root@TWTPSVHQ014 ~]# cd /usr/share/cacti/plugins
[root@TWTPSVHQ014 plugins]# git clone https://github.com/Cacti/plugin_thold.git
Cloning into 'plugin_thold'...
remote: Enumerating objects: 7557, done.
remote: Counting objects: 100% (2106/2106), done.
remote: Compressing objects: 100% (425/425), done.
remote: Total 7557 (delta 1715), reused 2066 (delta 1677), pack-reused 5451
Receiving objects: 100% (7557/7557), 7.87 MiB | 9.14 MiB/s, done.
Resolving deltas: 100% (5844/5844), done.
[root@TWTPSVHQ014 plugins]# mv plugin_thold thold
```

goto configuration=>Plugins=>Install “Thold” =>Enable “Thold”

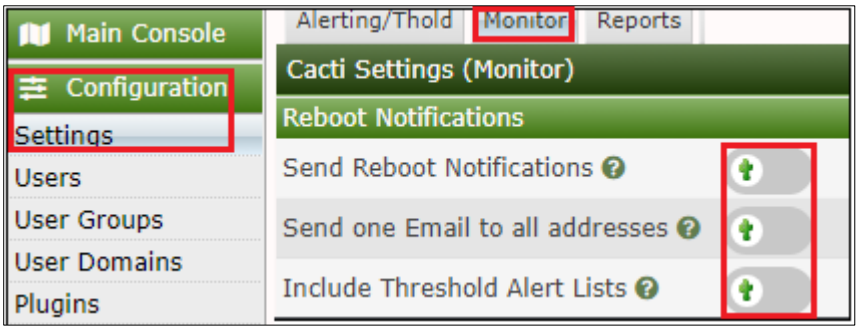


#Repeat above to install other plug-ins
git clone https://github.com/Cacti/plugin_maint
mv plugin_maint maint
git clone https://github.com/Cacti/plugin_monitor
mv plugin_monitor monitor
git clone https://github.com/Cacti/plugin_weathermap
mv plugin_weathermap weathermap
git clone https://github.com/Cacti/plugin_syslog
mv plugin_syslog syslog
git clone https://github.com/Cacti/plugin_wmi
mv plugin_wmi wmi
git clone https://github.com/Cacti/plugin_webseer
mv plugin_webseer websee
git clone https://github.com/Cacti/plugin_flowview

mv plugin_flowview flowview
goto configuration=>Plugins=>Install “Thold” =>Enable plug-ins



Disable Cacti alert mail when add a New Device into monitor



3.4 Enable thold as a service

cp /usr/share/cacti/plugins/thold/service/systemd/thold_daemon.service /etc/systemd/system
nano /etc/systemd/system/ thold_daemon.service

/etc/systemd/system/thold_daemon.service - Cacti_Oracle02_32.14 - Editor - WinSCP

Encoding Color

```
[Unit]
Description=Cacti Threshold Daemon Service
Required=mariadb.service
After=network.target auditd.service mariadb.service

[Service]
User=apache
Group=apache
Type=forking
ExecStart=/usr/bin/php /usr/share/cacti/plugins/thold/thold_daemon.php
KillMode=process
Restart=on-failure

[Install]
WantedBy=multi-user.target
```

chmod +x /usr/share/cacti/plugins/thold/thold_daemon.php

systemctl daemon-reload

```
# chmod +x /usr/share/cacti/plugins/thold/thold_daemon.php
# systemctl daemon-reload
```

systemctl start thold_daemon

systemctl status thold_daemon

```
● thold_daemon.service - Cacti Threshold Daemon Service
     Loaded: loaded (/etc/systemd/system/thold_daemon.service; enabled; preset: disabled)
     Active: active (running) since Tue 2024-10-01 10:58:23 CST; 3min 8s ago
    Process: 1550 ExecStart=/usr/bin/php /usr/share/cacti/plugins/thold/thold_daemon.php (code=exited, status=0/SUCCESS)
   Main PID: 1600 (php)
      Tasks: 2 (limit: 153761)
     Memory: 47.4M
        CPU: 1.238s
     CGroup: /system.slice/thold_daemon.service
             ├─1600 /usr/bin/php /usr/share/cacti/plugins/thold/thold_daemon.php
             └─1605 /usr/bin/php /usr/share/cacti/plugins/thold/thold_process.php --thread=1

Oct 01 10:58:22 twtpsvhq014.tpvaoc.com systemd[1]: Starting Cacti Threshold Daemon Service...
Oct 01 10:58:22 twtpsvhq014.tpvaoc.com php[1550]: Starting Thold Daemon ... [OK]
Oct 01 10:58:23 twtpsvhq014.tpvaoc.com systemd[1]: Started Cacti Threshold Daemon Service.
```

3.5 Enable 1 minute data collection and keep 1 month & 1Year

Presets

Data Profiles

SNMP

CDEFs

VDEFs

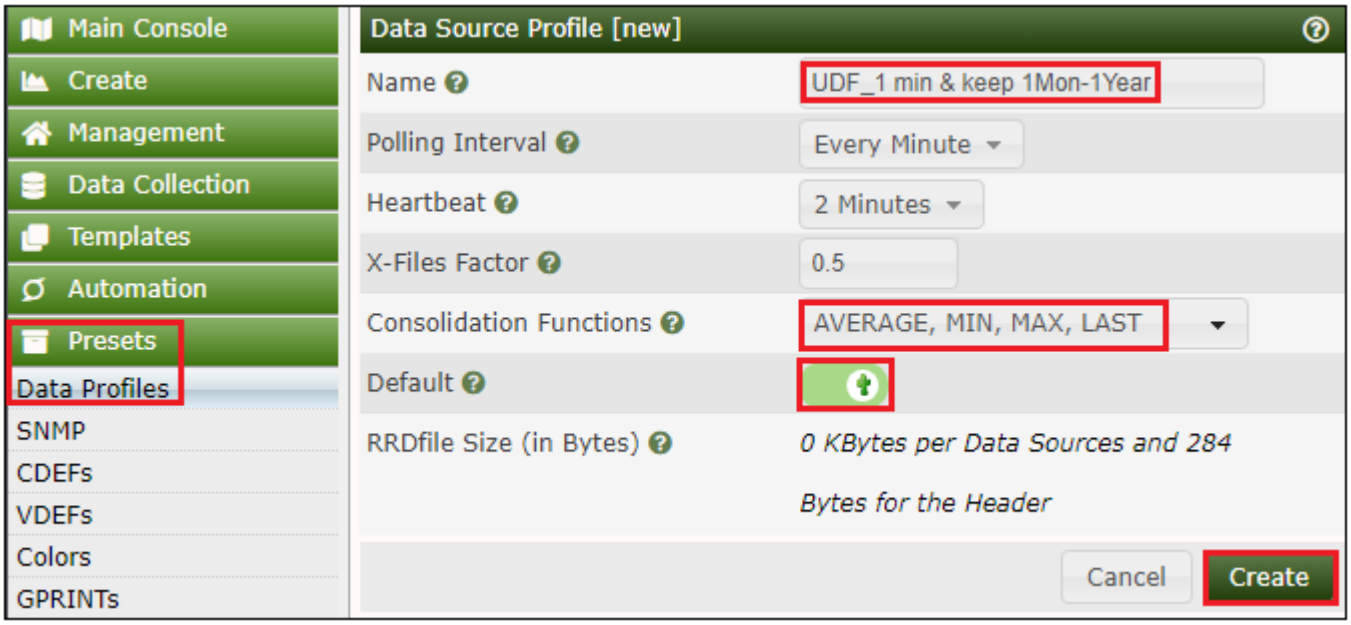
Data Source Profile RRAs (Read Only)

Name	Data Retention	Graph Timespan	Steps	Rows
Daily (1 Minute Average)	1 Month, 24 Hours	1 Day	1	44640
Yearly (5 Minute Average)	12 Months, 5 Days	1 Year	5	105120

a. 日圖: 用於故障排排& 效能優化. 1min 採樣, 保留 1 個月.
b. 年圖: 用於歷史數據回顧. 5mins 採樣, 保留 1 年. 使用場景如：D:碟過去一年使用率的增長趨勢, 過去一年這條 Internet 線路的頻寬使用狀況. 以做為設備增購參考.
c. 提高準確度: 會較現況年圖增加 288 倍 (1440min/5min), 因為現況年圖是 24 小時(1440 mins)

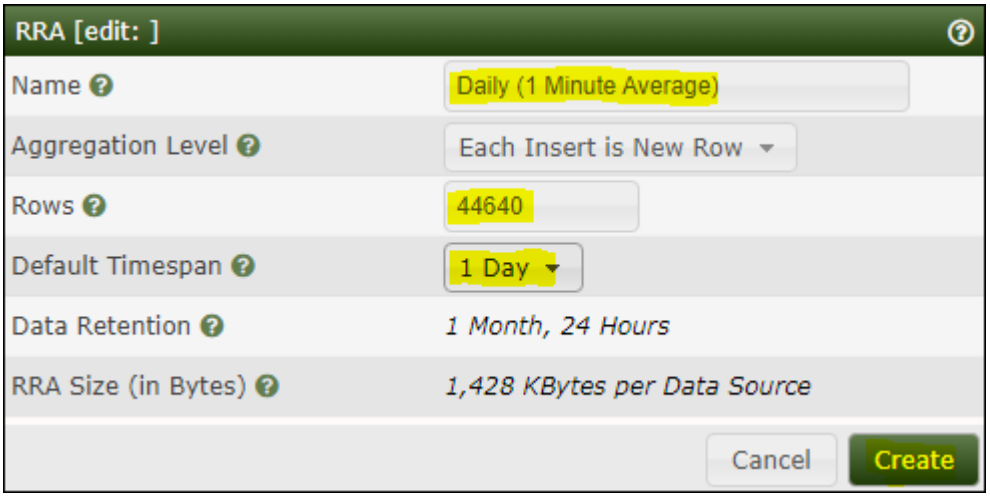
取樣,新版 5 分鐘.

Preset=>Data Profile =>Click ‘+” =>



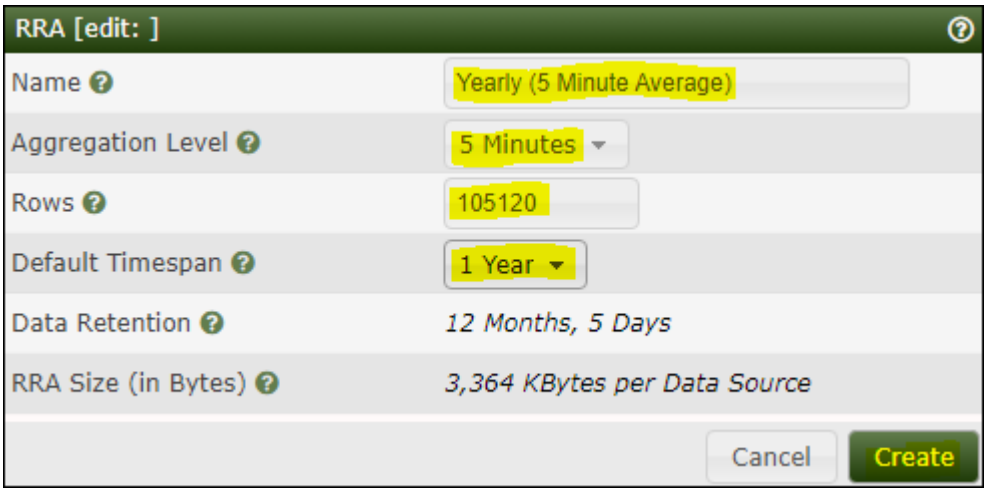
Click ‘+’

Create “Daily (1 Minute Average) =>44640 => 1 Day => Create

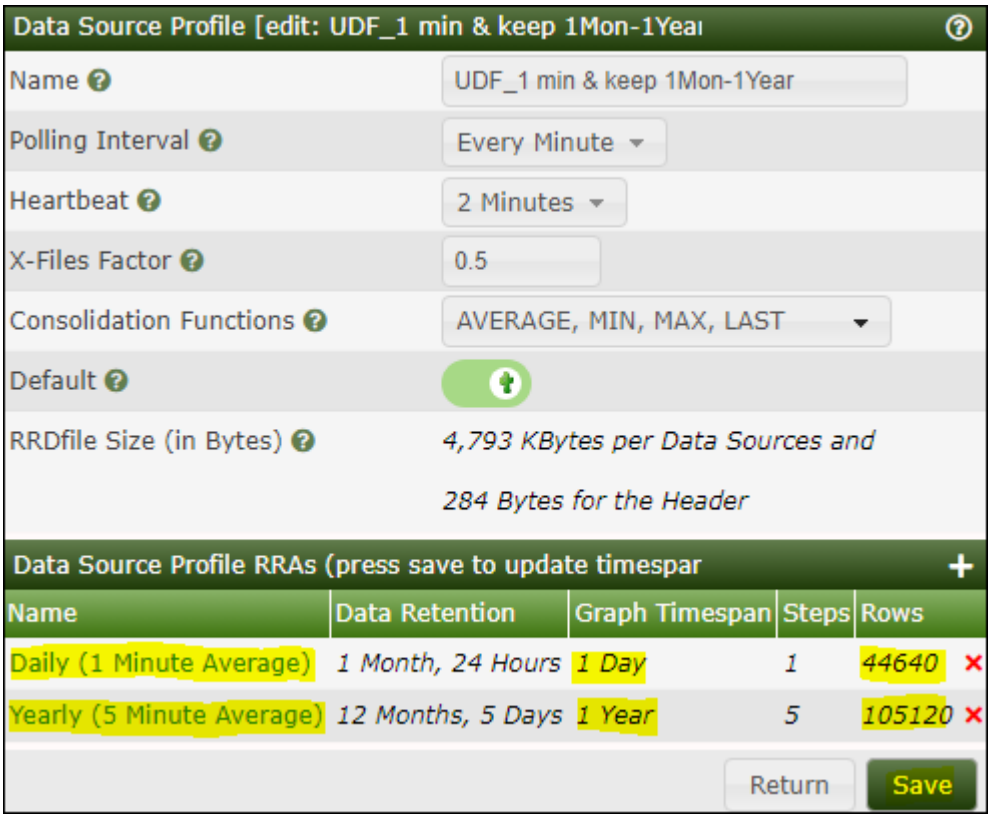


Click ‘+’

Create “Yearly (5 Minute Average)” =>5 minutes =>105120 rows=>1 year =>Create

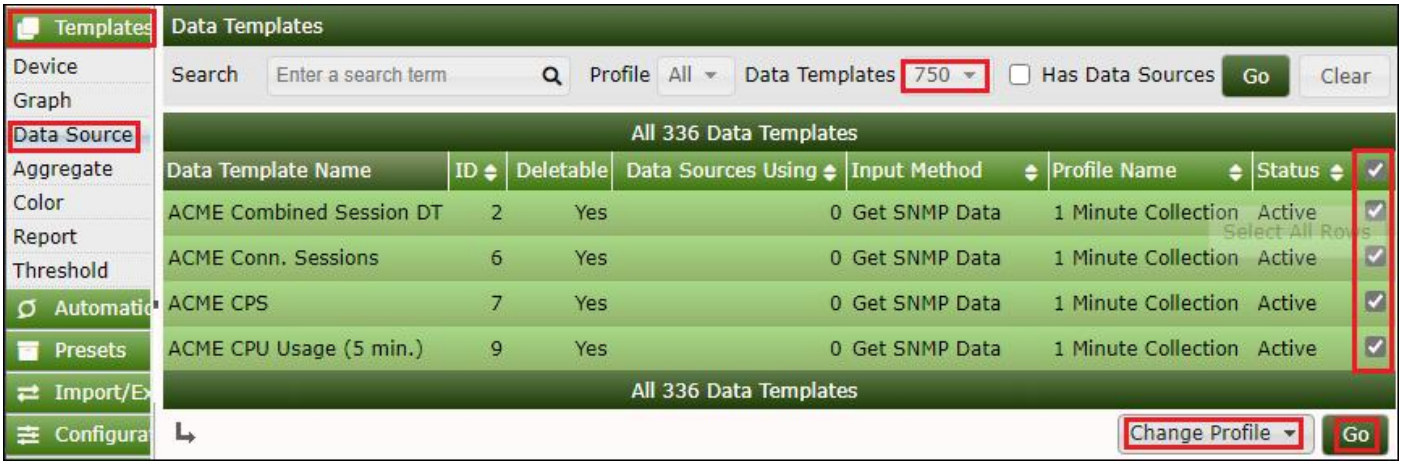


Click Save =>Done

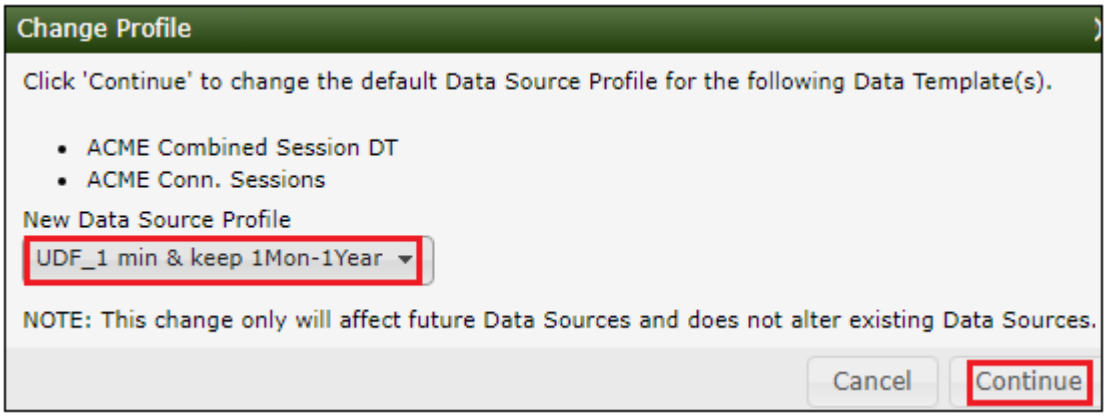


Replace all Template ‘data sources’ with new profile

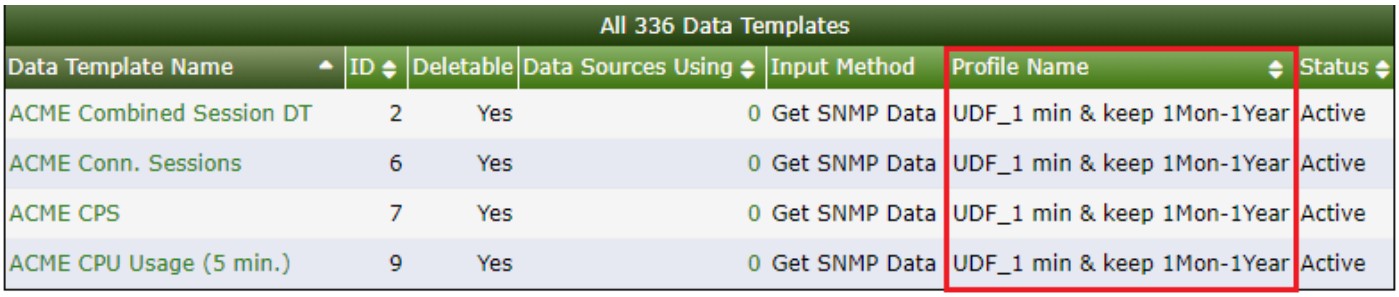
Template => Data Source => Data Template “750” => select ALL data sources => “Change Profile” =>Go



Select “UDF_1 min & Keep 1mon-1Year”=>Continue



Done.

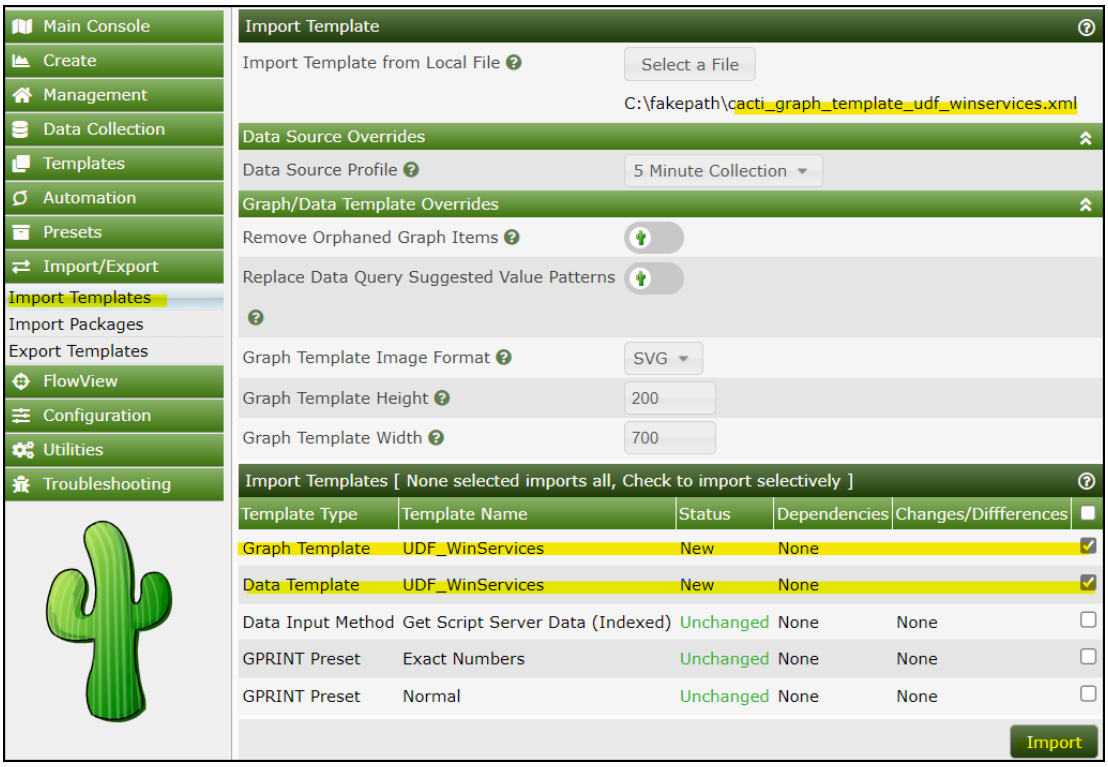


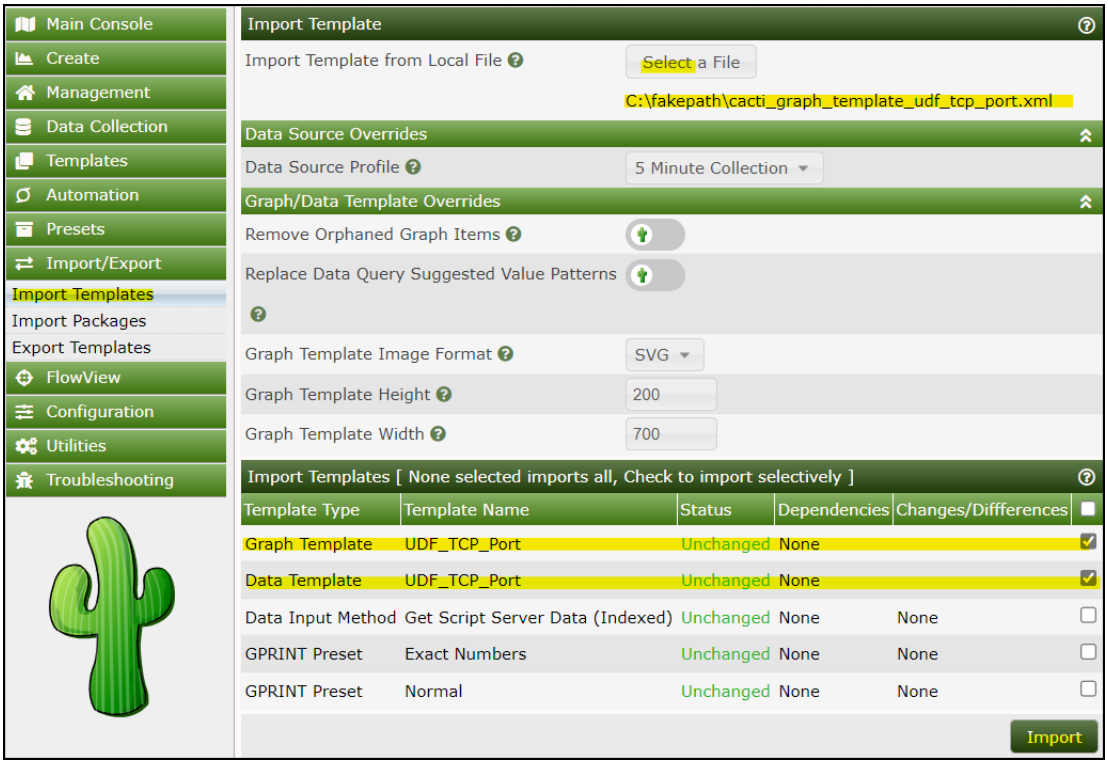
All 336 Data Templates

Data Template Name	ID	Deletable	Data Sources Using	Input Method	Profile Name	Status
ACME Combined Session DT	2	Yes	0	Get SNMP Data	UDF_1 min & keep 1Mon-1Year	Active
ACME Conn. Sessions	6	Yes	0	Get SNMP Data	UDF_1 min & keep 1Mon-1Year	Active
ACME CPS	7	Yes	0	Get SNMP Data	UDF_1 min & keep 1Mon-1Year	Active
ACME CPU Usage (5 min.)	9	Yes	0	Get SNMP Data	UDF_1 min & keep 1Mon-1Year	Active

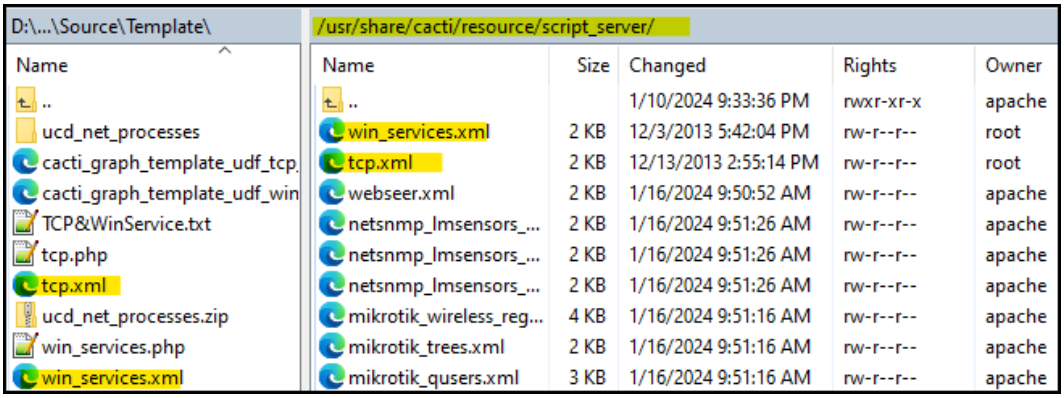
3.6 Import Monitor Template – Win Service & TCP Port & Linux process

cacti_graph_template_udf_tcp_port.xml
cacti_graph_template_udf_winservices.xml

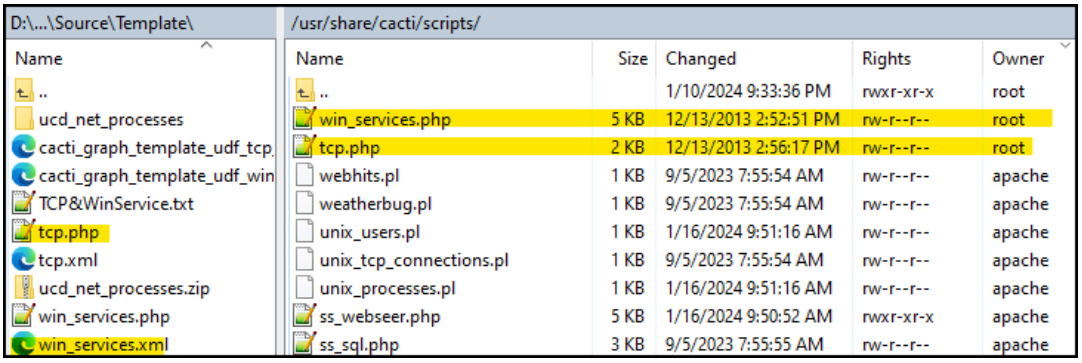


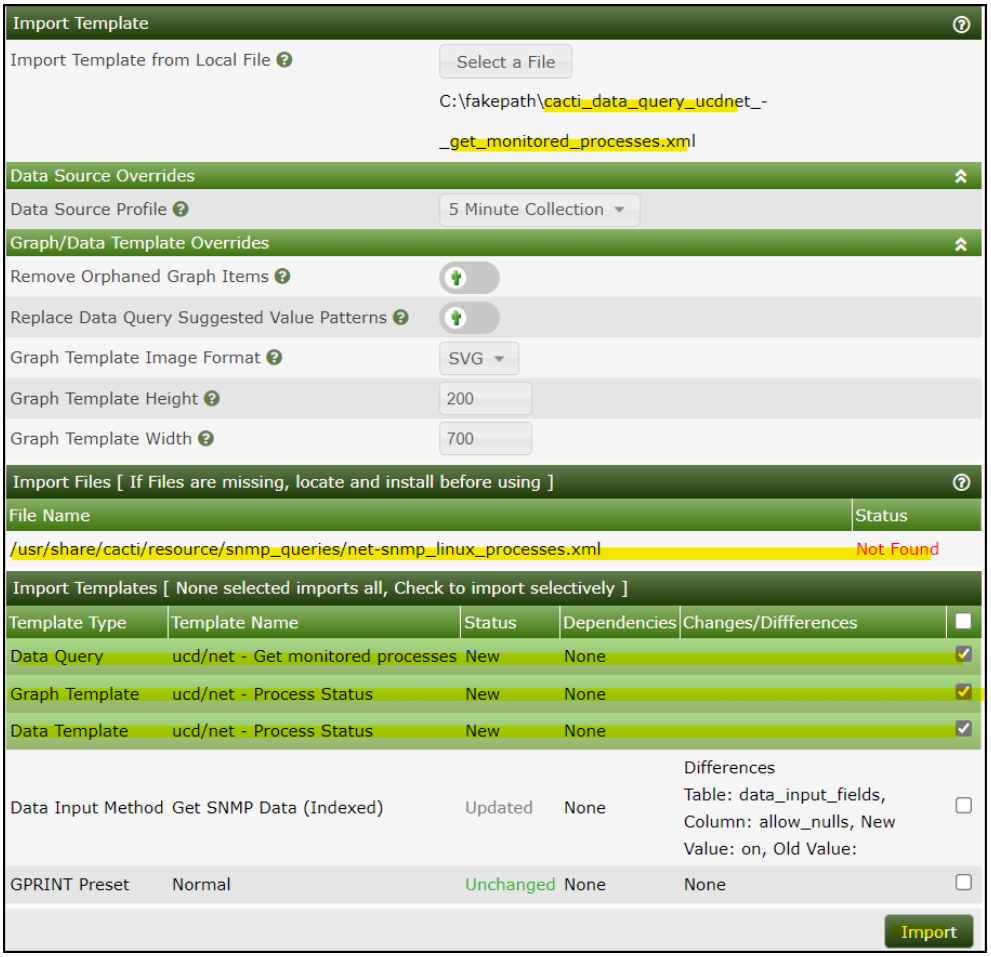


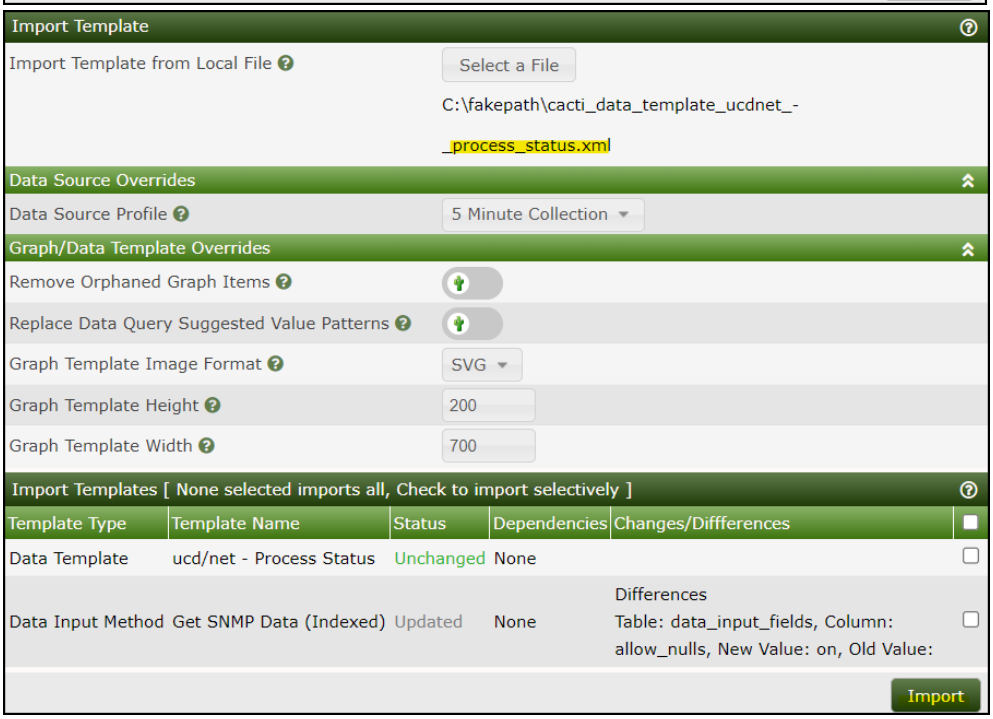
/usr/share/cacti/resource/script_server/tcp.xml
/usr/share/cacti/resource/script_server/win_services.xml

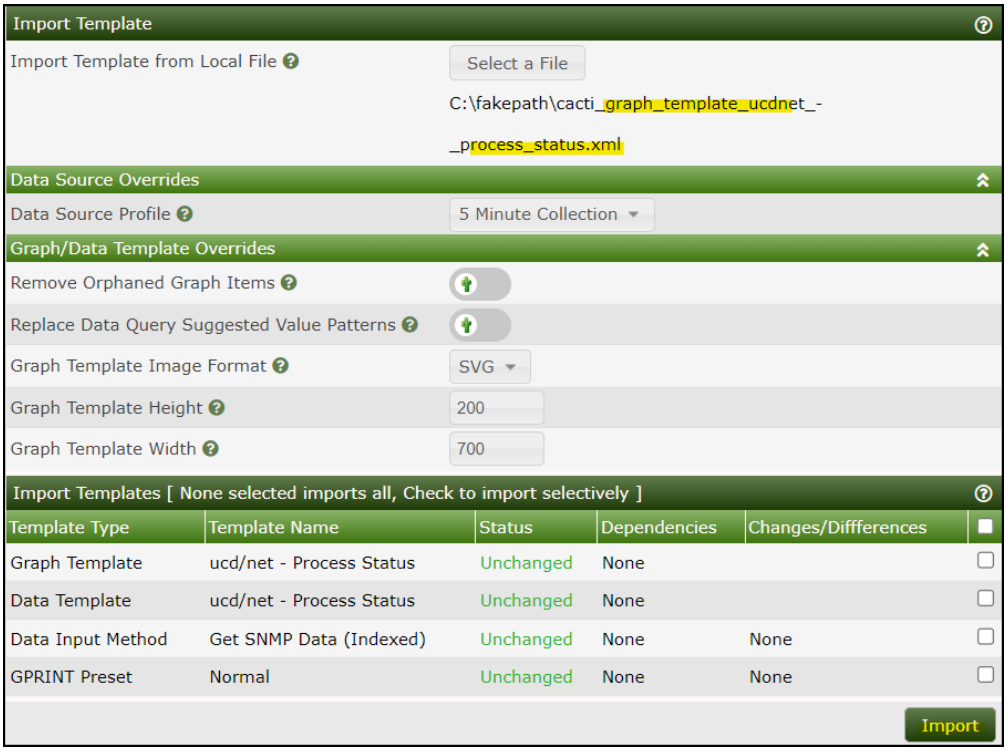


/usr/share/cacti/scripts/tcp.php
/usr/share/cacti/scripts/win_services.php

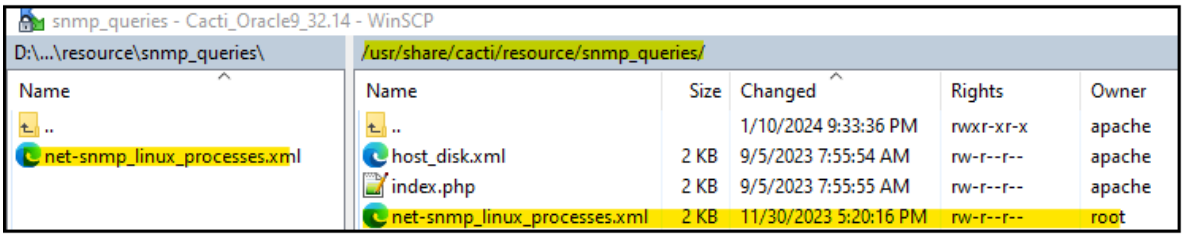



Import Template
Import Template from Local File
Select a File
C:\fakepath\cacti_data_query_ucdnet_-_get_monitored_processes.xml
Data Source Overrides
Data Source Profile
5 Minute Collection
Graph/Data Template Overrides
Remove Orphaned Graph Items
Replace Data Query Suggested Value Patterns
Graph Template Image Format
SVG
Graph Template Height
200
Graph Template Width
700
Import Files [If Files are missing, locate and install before using]
File Name
Status
/usr/share/cacti/resource/snmp_queries/net-snmp_linux_processes.xml
Not Found
Import Templates [None selected imports all, Check to import selectively]
Template Type
Template Name
Status
Dependencies
Changes/Diffferences
Data Query
ucd/net - Get monitored processes
New
None
Graph Template
ucd/net - Process Status
New
None
Data Template
ucd/net - Process Status
New
None
Data Input Method
Get SNMP Data (Indexed)
Updated
None
Differences
Table: data_input_fields, Column: allow_nulls, New Value: on, Old Value:
GPRINT Preset
Normal
Unchanged
None
None
Import


Import Template
Import Template from Local File
Select a File
C:\fakepath\cacti_data_template_ucdnet_-_process_status.xml
Data Source Overrides
Data Source Profile
5 Minute Collection
Graph/Data Template Overrides
Remove Orphaned Graph Items
Replace Data Query Suggested Value Patterns
Graph Template Image Format
SVG
Graph Template Height
200
Graph Template Width
700
Import Templates [None selected imports all, Check to import selectively]
Template Type
Template Name
Status
Dependencies
Changes/Diffferences
Data Template
ucd/net - Process Status
Unchanged
None
Data Input Method
Get SNMP Data (Indexed)
Updated
None
Differences
Table: data_input_fields, Column: allow_nulls, New Value: on, Old Value:
Import



Copy **net-snmp_linux_processes.xml** to /usr/share/cacti/resource/snmp_queries directory




```
# Change owner from root to apache:apache
chown apache:apache /usr/share/cacti/resource/script_server/tcp.xml
chown apache:apache /usr/share/cacti/resource/script_server/win_services.xml
chown apache:apache /usr/share/cacti/scripts/tcp.php
chown apache:apache /usr/share/cacti/scripts/win_services.php
chown apache:apache /usr/share/cacti/resource/snmp_queries/net-snmp_linux_processes.xml
```

```
# chown apache:apache /usr/share/cacti/resource/script_server/tcp.xml
# chown apache:apache /usr/share/cacti/resource/script_server/win_services.xml
# chown apache:apache /usr/share/cacti/scripts/tcp.php
# chown apache:apache /usr/share/cacti/scripts/win_services.php
# chown apache:apache /usr/share/cacti/resource/snmp_queries/net-snmp_linux_processes.xml
```

```
##Append linux process that required to be monitor
nano /etc/snmp/snmpd.conf
    #### Process monitor
    proc apache2 10 1
    proc httpd 10 1
    proc mariabd 10 1
    proc nano 10 1
    proc snmpd 10 1
    proc sshd 10 1
    proc vmtoolsd 10 1
```

```
  GNU nano 5.6.1                          /etc/snmp/snmpd.conf
## <<<<<<<<<<< End of config >>>>>>>>>>>

#### Process monitor
proc apache2 10 1
proc httpd 10 1
proc mariabd 10 1
proc nano 10 1
proc snmpd 10 1
proc sshd 10 1
proc vmtoolsd 10 1
```

3.7 Improve data collection performance

Configuration => Setting =>Poller =>Data Collector Default => increase 2 values to 16 & 20 as below.

Benchmark:

1. Data collected duration improved from 22seconds to 13 seconds based on GIOS 530 monitored items. Result is graphs are stable without any broken.
2. Methodology is increase poller threshold from default 80 to 320 (4 times).

3.8 (Optional) Install Chinese language pack

sudo yum install langpacks-zh_CN

```
[root@twtpsvhq014 ~]# yum install langpacks-zh_CN
Last metadata expiration check: 3:59:45 ago on Sun 28 Jul 2024 06:27:33 PM CST.
Dependencies resolved.
================================================================================
 Package                                Architecture       Version
================================================================================
Installing:
 langpacks-zh_CN                        noarch             3.0-16.el9
Installing dependencies:
 google-noto-cjk-fonts-common           noarch             20230817-2.el9
 google-noto-sans-cjk-ttc-fonts         noarch             20230817-2.el9
 langpacks-core-font-zh_CN              noarch             3.0-16.el9
 langpacks-core-zh_CN                   noarch             3.0-16.el9
Installing weak dependencies:
 glibc-langpack-zh                      x86_64             2.34-83.0.1.el9_3.7
 google-noto-serif-cjk-ttc-fonts        noarch             20230817-2.el9

Transaction Summary
================================================================================
Install  7 Packages

Total download size: 199 M
Installed size: 313 M
```

4 Add Cacti into Monitor

4.1 Configure SNMP

cp /etc/snmp/snmpd.conf /etc/snmp/snmpd.conf.bak

nano /etc/snmp/snmpd.conf
```
###############################################
# SNMP configuration #
###############################################
# Agent address
agentaddress udp:161
agentaddress udp6:161

## Access control
# sec.name source community
com2sec AllowAll 127.0.0.1 TpvTech1

#group <group_name> <security_mode> <security_name>
group AllGroup v2c AllowAll

# Define 'AllView', which includes everything under .1
# view.name incl/excl subtree.mask(Optional)
view AllView included .1

# group.name context model level prefix read write notify
access AllGroup "" any noauth exact AllView none none

## System contact information
#syslocation <location set>
#syscontact <contact_info>
syslocation Cacti.GIOS@Taipei
syscontact Double.lin@tpv-tech.com
## <<<<<<<<<<< End of config >>>>>>>>>>>
```

```
  GNU nano 5.6.1                          /etc/snmp/snmpd.conf
###############################################
# SNMP configuration #
###############################################
# Agent address
agentaddress udp:161
agentaddress udp6:161

## Access control
# sec.name source community
com2sec AllowAll 127.0.0.1 TpvTech1

#group <group_name> <security_mode> <security_name>
group AllGroup v2c AllowAll

# Define 'AllView', which includes everything under .1
# view.name incl/excl subtree.mask(Optional)
view AllView included .1

# group.name context model level prefix read write notify
access AllGroup "" any noauth exact AllView none none

## System contact information
#syslocation <location set>
#syscontact <contact_info>
syslocation Cacti.GIOS@Taipei
syscontact Double.lin@tpv-tech.com
## <<<<<<<<<<< End of config >>>>>>>>>>>
```

systemctl enable snmpd
systemctl restart snmpd
systemctl status snmpd

```
[root@TWTPSVHQ014 plugins]# systemctl enable snmpd
[root@TWTPSVHQ014 plugins]# systemctl restart snmpd
[root@TWTPSVHQ014 plugins]# systemctl status snmpd
● snmpd.service - Simple Network Management Protocol (SNMP) Daemon.
     Loaded: loaded (/usr/lib/systemd/system/snmpd.service; enabled; preset: disabled)
     Active: active (running) since Tue 2024-01-16 15:56:47 CST; 9s ago
   Main PID: 13189 (snmpd)
      Tasks: 1 (limit: 50492)
     Memory: 4.6M
        CPU: 136ms
     CGroup: /system.slice/snmpd.service
             └─13189 /usr/sbin/snmpd -LS0-6d -f

Jan 16 15:56:47 TWTPSVHQ014.tpvaoc.com systemd[1]: Starting Simple Network Management Protoc>
Jan 16 15:56:47 TWTPSVHQ014.tpvaoc.com snmpd[13189]: NET-SNMP version 5.9.1
Jan 16 15:56:47 TWTPSVHQ014.tpvaoc.com systemd[1]: Started Simple Network Management Protoco>
```

4.2 Configure Cacti Service to monitor

##Append Linux process that required to be monitor

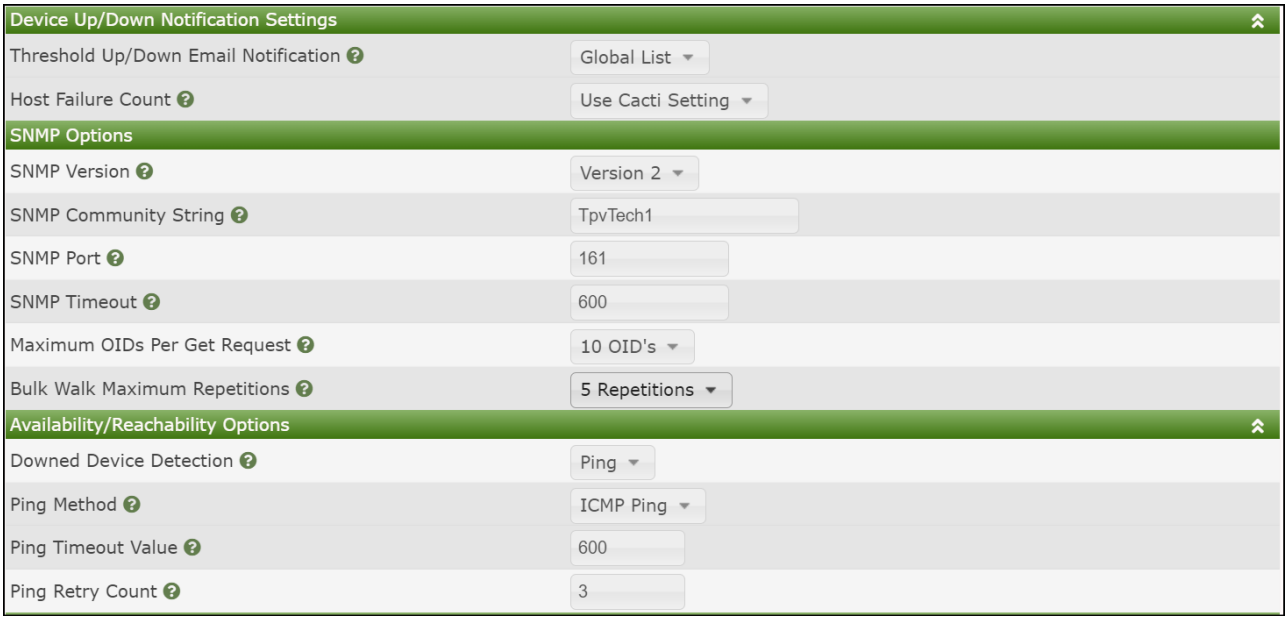
nano /etc/snmp/snmpd.conf

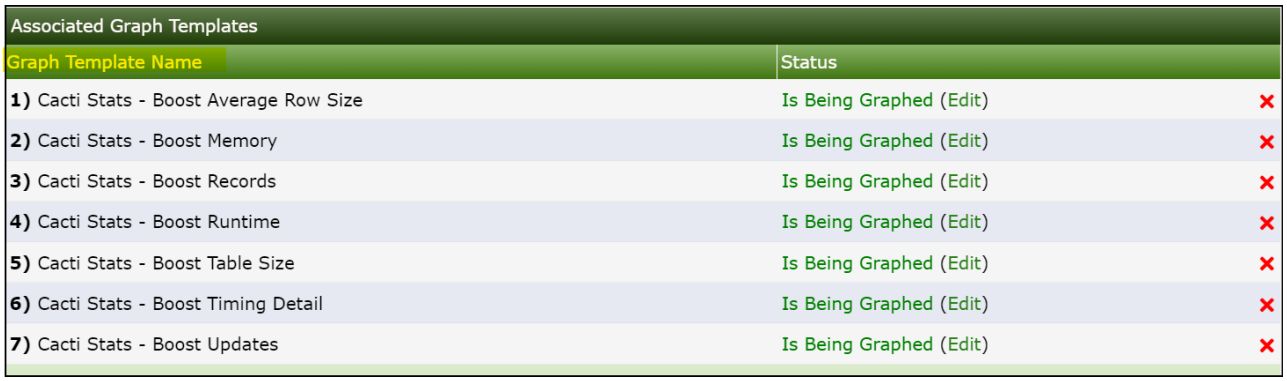
Process monitor
proc apache2 10 1
proc httpd 10 1
proc mariabd 10 1
proc nano 10 1

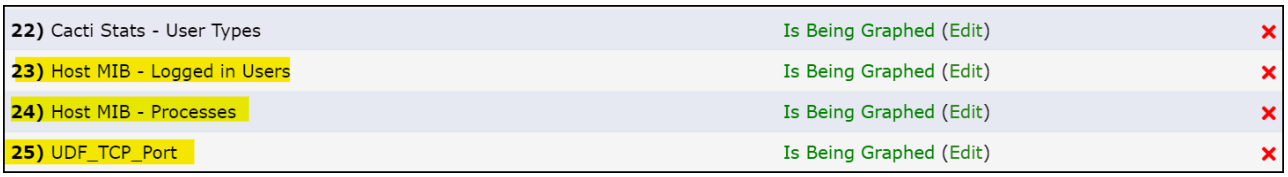
proc snmpd 10 1
proc sshd 10 1
proc vmtoolsd 10 1

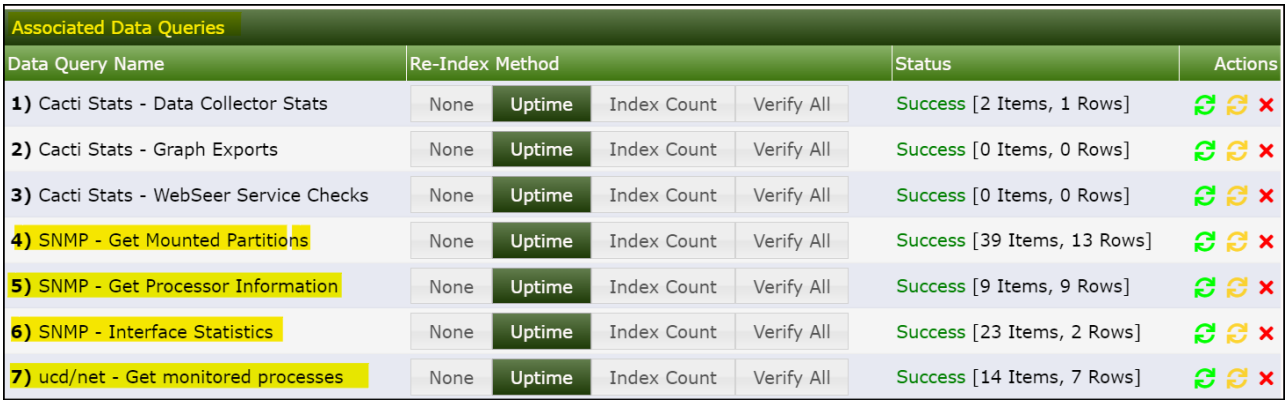
```
  GNU nano 5.6.1                          /etc/snmp/snmpd.conf
## <<<<<<<<<<< End of config >>>>>>>>>>>

#### Process monitor
proc apache2 10 1
proc httpd 10 1
proc mariabd 10 1
proc nano 10 1
proc snmpd 10 1
proc sshd 10 1
proc vmtoolsd 10 1
```

4.3 Add Cacti device









5 Enable syslogs plugin

Goal: Function will receive Cacti mail notification in 1~2 minutes, since Server generate error logs

#create a dedicated DB for syslog

nano /etc/my.cnf.d/server.cnf

sql_mode=NO_ENGINE_SUBSTITUTION,NO_AUTO_CREATE_USER

```
 GNU nano 5.6.1                          /etc/my.cnf.d/server.cnf
[mysqld]
sort_buffer_size = 10M
max_connections = 900
sql_mode=NO_ENGINE_SUBSTITUTION,NO_AUTO_CREATE_USER
```

mysql -u root -p

show global variables like 'sql_mode';

```
[root@TWTPSVHQ018 ~]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 5577614
Server version: 10.5.22-MariaDB MariaDB Server
Type 'help;' or '\h' for help. Type '\c' to clear the current inpu
MariaDB [(none)]> show global variables like 'sql_mode';
| Variable_name | Value
| sql_mode      | STRICT_TRANS_TABLES,ERROR_FOR_DIVISION_BY_ZERO,N
1 row in set (0.001 sec)
```

create database syslog;

GRANT ALL ON syslog.* TO 'cactiuser'@'localhost';

flush privileges;

exit;

```
MariaDB [(none)]> create database syslog;
Query OK, 1 row affected (0.000 sec)
MariaDB [(none)]> GRANT ALL ON syslog.* TO 'cactiuser'@'localhost';
Query OK, 0 rows affected (0.021 sec)
MariaDB [(none)]> flush privileges;
Query OK, 0 rows affected (0.001 sec)
MariaDB [(none)]> exit
Bye
```

#Configure rsyslog by

nano /etc/rsyslog.d/cacti.conf

##cacti.conf is a new file, copy and paste below lines

$ModLoad imudp

$UDPServerRun 514
$ModLoad ommysql

$template cacti_syslog,"INSERT INTO syslog_incoming(facility_id, priority_id, program, logtime>
values (%syslogfacility%, %syslogpriority%, '%programname%', '%timegenerated:::date-mysql%',>

. >localhost,my_database,my_user,my_password;cacti_syslog

```
  GNU nano 5.6.1                          /etc/rsyslog.d/cacti.conf
$ModLoad imudp
$UDPServerRun 514
$ModLoad ommysql

$template cacti_syslog,"INSERT INTO syslog_incoming(facility_id,
  values (%syslogfacility%, %syslogpriority%, '%programname%',

*.* >localhost,my_database,my_user,my_password;cacti_syslog
```

#Install rsyslog-mysql package
yum -y install rsyslog-mysql

```
[root@TWTPSVHQ018 ~]# yum -y install rsyslog-mysql
Last metadata expiration check: 2:45:02 ago on Mon 06 May 2024 10:44:55 AM CST.
Dependencies resolved.
================================================================================
 Package                  Arch       Version                  Repository      Size
================================================================================
Installing:
 rsyslog-mysql            x86_64     8.2310.0-4.el9           ol9_appstream   20 k
Upgrading:
 rsyslog                  x86_64     8.2310.0-4.el9           ol9_appstream  831 k
 rsyslog-logrotate        x86_64     8.2310.0-4.el9           ol9_appstream   11 k
 selinux-policy           noarch     38.1.35-2.0.1.el9_4      ol9_baseos_latest  58 k
 selinux-policy-targeted  noarch     38.1.35-2.0.1.el9_4      ol9_baseos_latest 7.8 M

Transaction Summary
================================================================================
Install  1 Package
Upgrade  4 Packages
```

systemctl restart rsyslog

```
[root@TWTPSVHQ018 ~]# systemctl restart rsyslog
[root@TWTPSVHQ018 ~]#
```

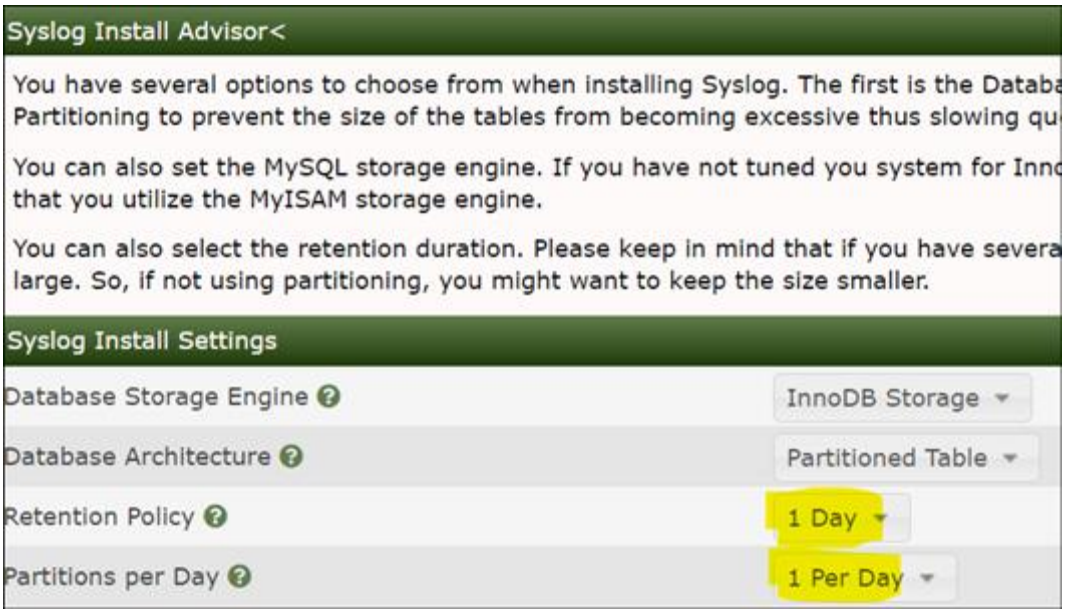
#configure syslog & DB connection
cd /usr/share/cacti/plugins/syslog
cp config.php.dist config.php
nano config.php
$use_cacti_db = false;
$syslogdb_password = 'c@CtiVser';

```
 GNU nano 5.6.1                  /usr/share/cacti/plugins/syslog/config.php

/* revert if you dont use the Cacti database */
$use_cacti_db = false;

if (!$use_cacti_db) {
        $syslogdb_type     = 'mysql';
        $syslogdb_default  = 'syslog';
        $syslogdb_hostname = 'localhost';
        $syslogdb_username = 'cactiuser';
        $syslogdb_password = 'c@CtiVser';
        $syslogdb_port     = 3306;
```

#Enable syslog as a service
cp /etc/rsyslog.d/cacti.conf.dist /etc/rsyslog.d/cacti.conf
cp /usr/share/cacti/plugins/syslog/config.php.dist /usr/share/cacti/plugins/syslog/config.php
cd /usr/share/cacti/plugins/syslog
cp config.php.dist /etc/rsyslog.d/cacti.conf
nano /etc/rsyslog.d/cacti.conf
rm nano /etc/rsyslog.d/cacti.conf
nano /etc/rsyslog.d/cacti.conf
yum -y install rsyslog-mysql
systemctl restart rsyslog
cp config.php.dist config.php
nano config.php

#Enable plug-in
Configuration =>Plugins =>Click red circle “Gear” to install

1 day for retention => Install

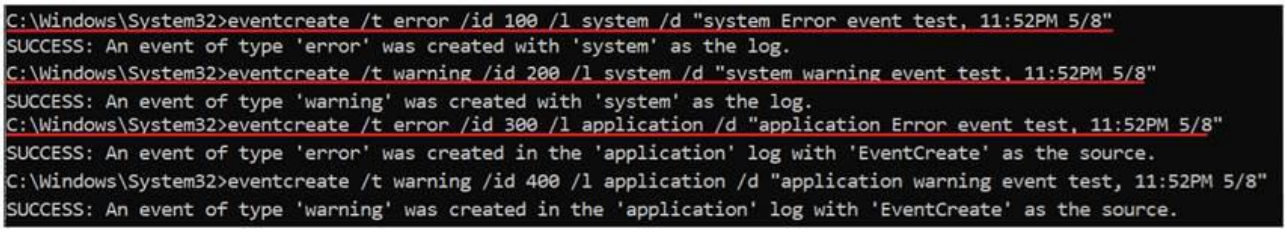


Click green point to activate => change to red & status in Active.

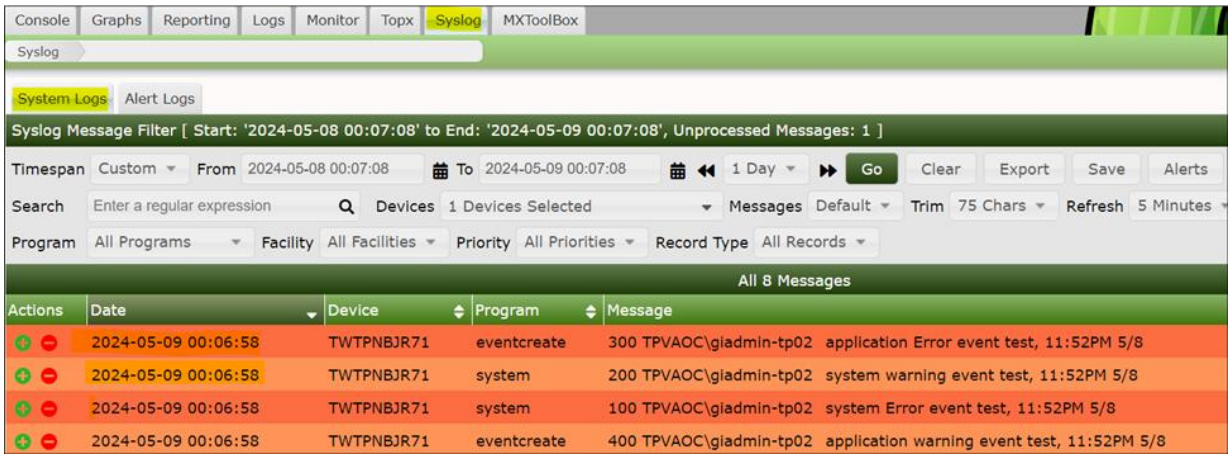
#Enable Win Server to export logs by follow attachment.

#On win server, generate testing event logs

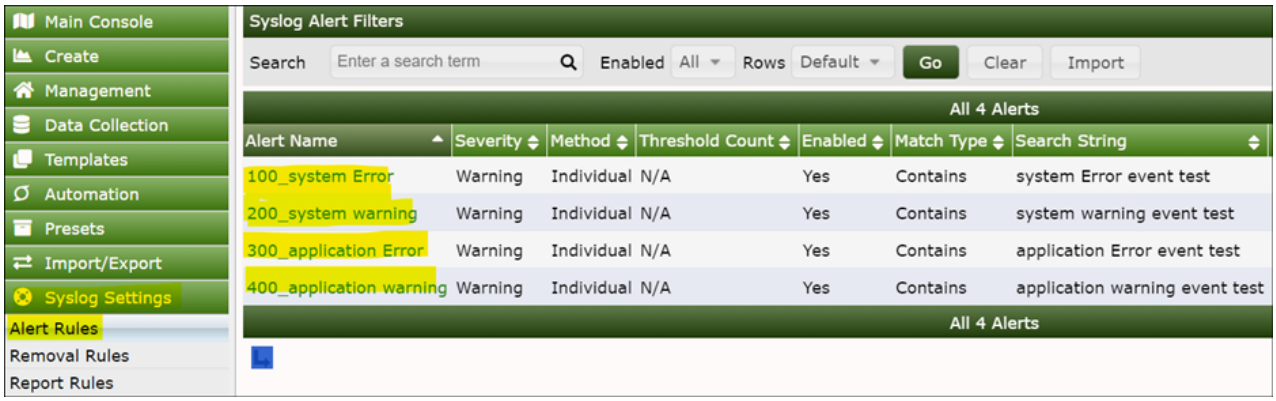
eventcreate /t error /id 100 /l system /d “system Error event test, 11:12PM 5/8“
eventcreate /t warning /id 200 /l system /d “system warning event test, 11:12PM 5/8“
eventcreate /t error /id 300 /l application /d "application Error event test, 11:12PM 5/8“
eventcreate /t warning /id 400 /l application /d "application warning event test, 11:12PM 5/8"



#Check result: Syslog => System Logs



#Create alert



#Check alerts mail

#On Cacti, use tcp dump to check if received event logs from Win Svr.

tcpdump -i ens192 host 172.17.36.19 and port 514

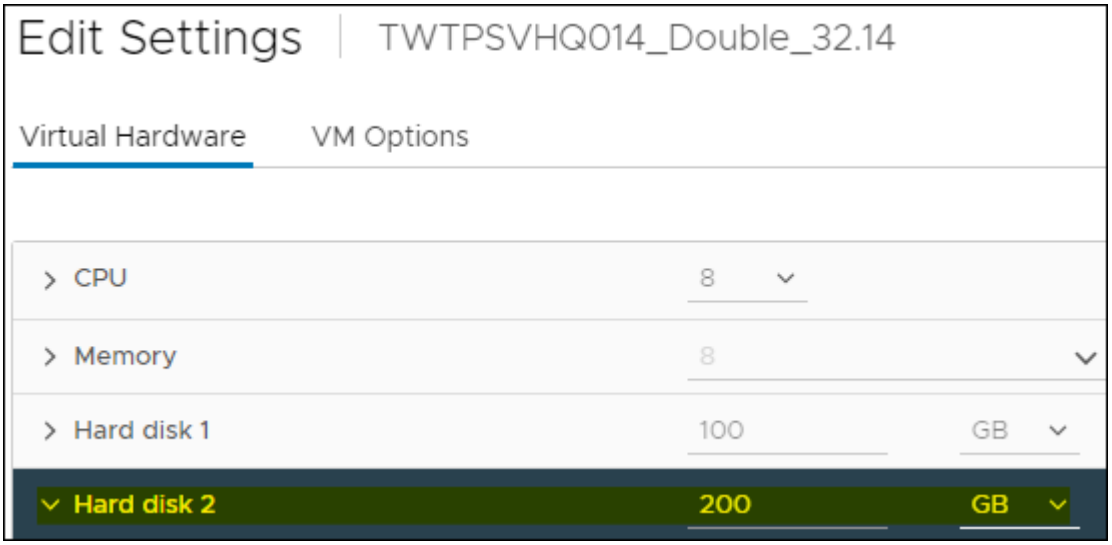
```
[root@TWTPSVHQ018 ~]# tcpdump -i ens192 host 172.17.36.19 and port 514
dropped privs to tcpdump
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on ens192, link-type EN10MB (Ethernet), snapshot length 262144 bytes
23:04:19.310678 IP SGTANB277.tpvaoc.com.61500 > TWTPSVHQ018.syslog: SYSLOG daemon.error, length: 107
23:04:19.310712 IP SGTANB277.tpvaoc.com.61500 > TWTPSVHQ018.syslog: SYSLOG daemon.warning, length: 111
23:04:19.310716 IP SGTANB277.tpvaoc.com.61500 > TWTPSVHQ018.syslog: SYSLOG local7.error, length: 118
23:04:19.310877 IP SGTANB277.tpvaoc.com.61500 > TWTPSVHQ018.syslog: SYSLOG local7.warning, length: 122
23:07:11.678786 IP SGTANB277.tpvaoc.com.61500 > TWTPSVHQ018.syslog: SYSLOG local7.warning, length: 444
```

6 Enable flowview plugin

Goal: Function will receive Cacti mail notification in 1~2 minutes, since Server generate error logs

6.1 Create a dedicated disk partition 200GB for flowview DB

#on vCenter, add a new 200GB partition to Cacti VM



#list current disk partition

lsblk

#sdb is new disk name & size is 200G

```
[root@twtpsvhq014 ~]# lsblk
NAME                      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                         8:0    0  100G  0 disk
├─sda1                      8:1    0    1G  0 part /boot
└─sda2                      8:2    0   99G  0 part
  ├─ol_twtpsvhq014-root   252:0    0 66.5G  0 lvm  /
  └─ol_twtpsvhq014-home   252:1    0 32.5G  0 lvm  /home
sdb                         8:16   0  200G  0 disk
sr0                        11:0    1 1024M  0 rom
```

#Create new partition with name “flowview” on new disk-sdb

fdisk /dev/sdb

```
[root@twtpsvhq014 ~]# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.37.4).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x1ef5fd41.
```

Type n => create a new partition
Type p => create a primary partition
Type 1 => 1st partition number
Type Enter twice => to use default value of beginning and end sector number
Type w => save settings.

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-419430399, default 2048):Enter
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-419430399, default 419430399):Enter

Created a new partition 1 of type 'Linux' and of size 200 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

mkfs.xfs /dev/sd**b1**

```
[root@twtpsvhq014 ~]# mkfs.xfs /dev/sdb1
meta-data=/dev/sdb1              isize=512    agcount=4, agsize=13107136 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=1, sparse=1, rmapbt=0
         =                       reflink=1    bigtime=1 inobtcount=1 nrext64=0
data     =                       bsize=4096   blocks=52428544, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0, ftype=1
log      =internal log           bsize=4096   blocks=25599, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
Discarding blocks...Done.
```

#create a mount point “flowview” for sdb1
mkdir /**flowview**
mount /dev/sd**b1** /flowview

```
[root@twtpsvhq014 ~]# mkdir /mnt/flowview
[root@twtpsvhq014 ~]# mount /dev/sdb1 /mnt/flowview
```

#verify new partition created and mounted
lsblk -f

```
[root@twtpsvhq014 ~]# lsblk -f
NAME                   FSTYPE      FSVER    LABEL UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1                 xfs                      8882e73a-aaf5-48ce-a5ae-782eae871c42    713.3M    26% /boot
└─sda2                 LVM2_member LVM2 001     9ekFty-fXEq-oOey-T6Je-oCPc-Gbl2-yI4ea1
  ├─ol_twtpsvhq014-root xfs                     5a1215a8-e143-4e81-853c-3f51413515ba     62.5G     6% /
  └─ol_twtpsvhq014-home xfs                     30744b32-5f1f-4485-bae4-f749a81832c2     32.2G     1% /home
sdb
└─sdb1                 xfs                      fb93812f-9845-4296-92fa-9e445a19ac9f    198.5G     1% /flowview
sr0
```

copy flowview’s UUID: fb93812f-9845-4296-92fa-9e445a19ac9f

#Auto mount flowview partition during server booting, adding new 1 line as below

nano /etc/fstab

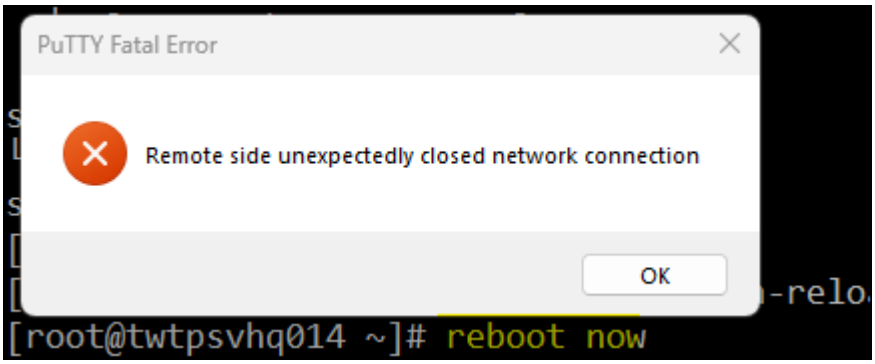
UUID=fb93812f-9845-4296-92fa-9e445a19ac9f /flowview xfs defaults 0 0

```
 GNU nano 5.6.1                                  /etc/fstab

#
# /etc/fstab
# Created by anaconda on Mon Jan  8 16:40:20 2024
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/ol_twtpsvhq014-root /                       xfs     defaults        0 0
UUID=8882e73a-aaf5-48ce-a5ae-782eae871c42 /boot                   xfs     defaults
/dev/mapper/ol_twtpsvhq014-home /home                   xfs     defaults        0 0
UUID=fb93812f-9845-4296-92fa-9e445a19ac9f /flowview     xfs     defaults        0 0
```

systemctl daemon-reload

```
[root@twtpsvhq014 ~]# systemctl daemon-reload
```

reboot now



`

#verify flowview mounted successful.

lsblk -f

```
[root@twtpsvhq014 ~]# lsblk -f
NAME                    FSTYPE      FSVER    LABEL UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1                  xfs                      8882e73a-aaf5-48ce-a5ae-782eae871c42    713.3M    26% /boot
└─sda2                  LVM2_member LVM2 001     9ekFty-fXEq-oOey-T6Je-oCPc-Gbl2-yI4ea1
  ├─ol_twtpsvhq014-root xfs                      5a1215a8-e143-4e81-853c-3f51413515ba     62.5G     6% /
  └─ol_twtpsvhq014-home xfs                      30744b32-5f1f-4485-bae4-f749a81832c2     32.2G     1% /home
sdb
└─sdb1                  xfs                      fb93812f-9845-4296-92fa-9e445a19ac9f    198.5G     1% /flowview
sr0
```

6.2 Create a dedicated DB for flowview

mysql -uroot

create database flowview;

GRANT ALL ON flowview.* TO 'cactiuser'@'localhost';

flush privileges;

exit;

```
MariaDB [(none)]> create database flowview;
Query OK, 1 row affected (0.002 sec)

MariaDB [(none)]>
MariaDB [(none)]> GRANT ALL ON flowview.* TO 'cactiuser'@'localhost';
Query OK, 0 rows affected (0.017 sec)

MariaDB [(none)]> flush privileges;
Query OK, 0 rows affected (0.003 sec)
```

verify DB is NO table

mysqlshow -uroot flowview

```
[root@TWTPSVHQ015 ~]# mysqlshow -uroot flowview
Database: flowview
+--------+
| Tables |
+--------+
+--------+
```

#verify flowview db folder created

ls -lh /var/lib/mysql/flowview/

```
[root@twtpsvhq014 ~]# ls -lh /var/lib/mysql/flowview/
total 4.0K
-rw-rw----. 1 mysql mysql 67 Aug 12 13:18 db.opt
```

#move flowview folders to new partition-flowview

systemctl stop httpd

systemctl stop mariadb

mv /var/lib/mysql/flowview /flowview/

ln -s /flowview/flowview /var/lib/mysql/flowview

systemctl start mariadb

systemctl start httpd

```
[root@twtpsvhq014 ~]# systemctl stop mariadb
[root@twtpsvhq014 ~]# mv /var/lib/mysql/flowview /flowview/
[root@twtpsvhq014 ~]# sudo ln -s /flowview/flowview /var/lib/mysql/flowview
[root@twtpsvhq014 ~]# systemctl start mariadb
```

#verify symbol link created

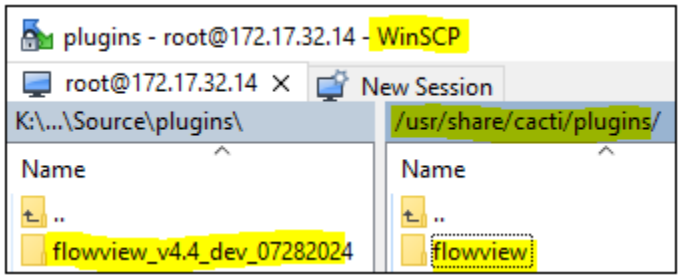
ls -lh /flowview/

ls -lh /var/lib/mysql/flowview/

```
[root@twtpsvhq014 ~]# ls -lh /flowview/
total 0
drwx------. 2 mysql mysql 20 Aug 12 13:18 flowview
[root@twtpsvhq014 ~]# ls -lh /var/lib/mysql/flowview/
total 4.0K
-rw-rw----. 1 mysql mysql 67 Aug 12 13:18 db.opt
```

6.3 Flowview install & configure

WinSCP Flowview develop version v4.4_07282024 & rename



cd /usr/share/cacti/plugins/flowview/
cp config.php.dist config.php
nano config.php

change from truth to **false**

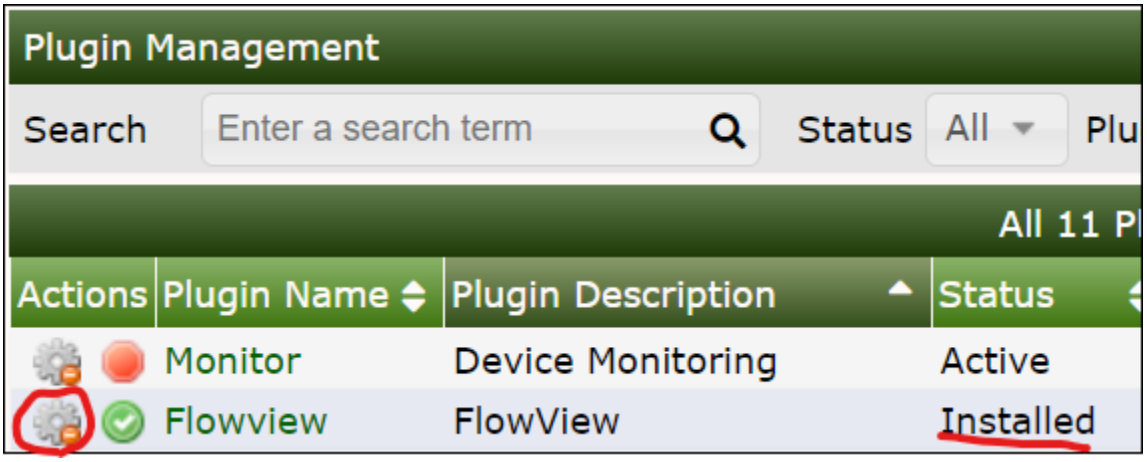
use **same credential with cacti (change PW)**

```
 GNU nano 5.6.1                                  config.php
/* revert if you dont use the Cacti database */
$flowview_use_cacti_db = false;

if (!$flowview_use_cacti_db) {
        $flowviewdb_type     = 'mysql';
        $flowviewdb_default  = 'flowview';
        $flowviewdb_hostname = 'localhost';
        $flowviewdb_username = 'cactiuser';
        $flowviewdb_password = 'c@Ct1Vser';
```

cp ./service/flow-capture.service /etc/systemd/system
#Modify flowview service 3 paths to **/usr/share/**…..
nano /etc/systemd/system/flow-capture.service

```
 GNU nano 5.6.1              /etc/systemd/system/flow-capture.service              Modifie
Description=Flow Capture Service for Cacti
After=network.target mariadb.service

[Service]
User=apache
Group=apache
TimeoutStartSec=0
Type=simple
KillMode=process
WorkingDirectory=/tmp
ExecStart=/usr/bin/php -q /usr/share/cacti/plugins/flowview/service/flow-capture --systemd
ExecStop=/usr/bin/php -q /usr/share/cacti/plugins/flowview/service/flow-capture stop
ExecReload=/usr/bin/php -q /usr/share/cacti/plugins/flowview/service/flow-capture reload
Restart=always
RestartSec=2
```

#On Cacti console, Install flowview plugin



#//verify tables created
mysqlshow -uroot flowview

```
[root@TWTPSVHQ015 flowview]# mysqlshow -uroot flowview
Database: flowview
+---------------------------------------+
|                Tables                 |
+---------------------------------------+
| parallel_database_query               |
| parallel_database_query_shard         |
| parallel_database_query_shard_cache   |
| plugin_flowview_arin_information      |
| plugin_flowview_device_streams        |
| plugin_flowview_device_templates      |
| plugin_flowview_devices               |
| plugin_flowview_dnscache              |
| plugin_flowview_irr_as_block          |
| plugin_flowview_irr_as_set            |
| plugin_flowview_irr_aut_num           |
| plugin_flowview_irr_domain            |
| plugin_flowview_irr_filter_set        |
| plugin_flowview_irr_inet_rtr          |
| plugin_flowview_irr_inetnum           |
| plugin_flowview_irr_irt               |
| plugin_flowview_irr_mntner            |
| plugin_flowview_irr_organisation      |
| plugin_flowview_irr_peering_set       |
| plugin_flowview_irr_person            |
| plugin_flowview_irr_poem              |
| plugin_flowview_irr_poetic_form       |
| plugin_flowview_irr_role              |
| plugin_flowview_irr_route             |
| plugin_flowview_irr_route_set         |
| plugin_flowview_irr_rtr_set           |
| plugin_flowview_ports                 |
| plugin_flowview_queries               |
| plugin_flowview_schedules             |
+---------------------------------------+
```

systemctl start flow-capture

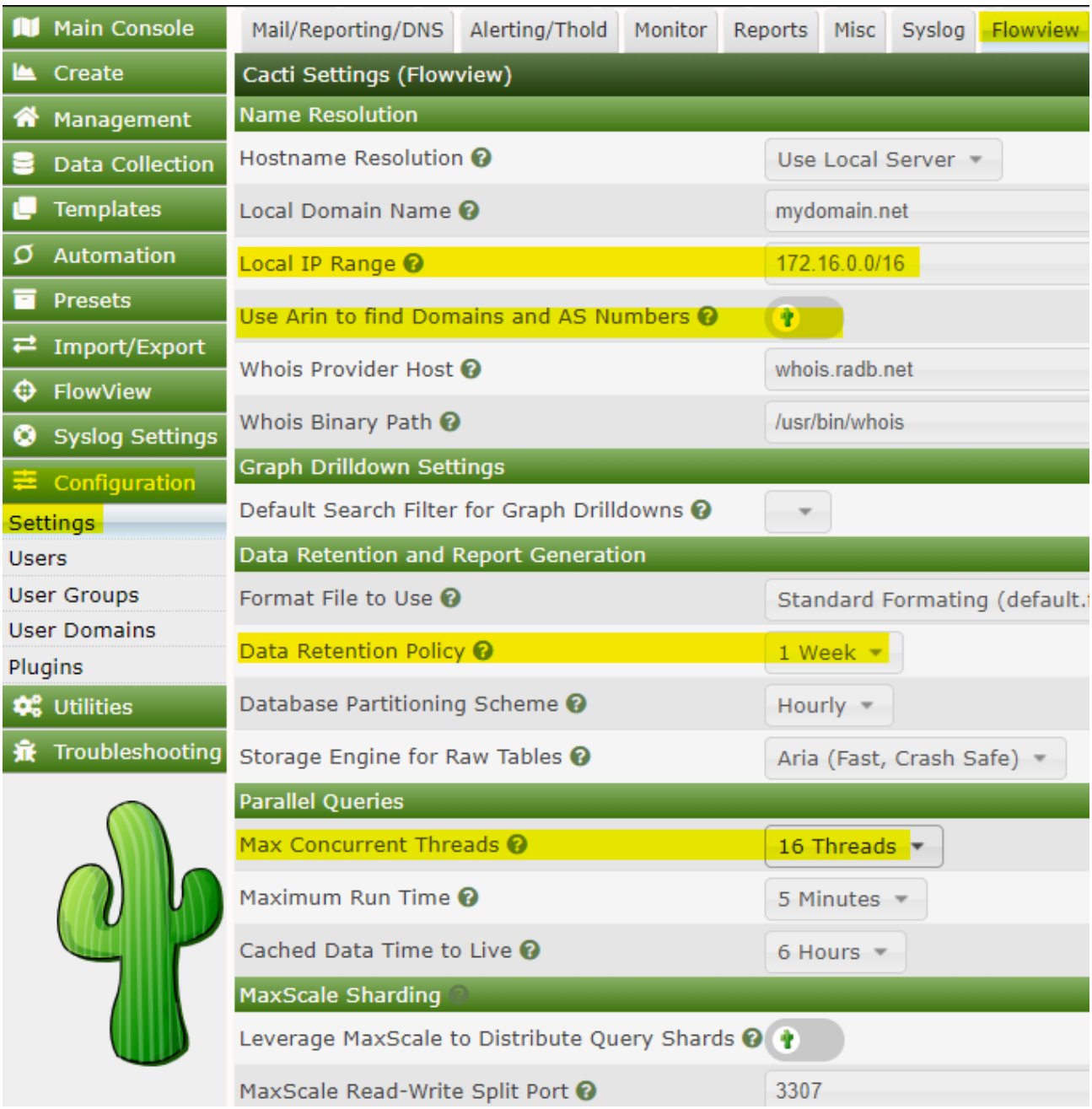
systemctl enable flow-capture

systemctl status flow-capture

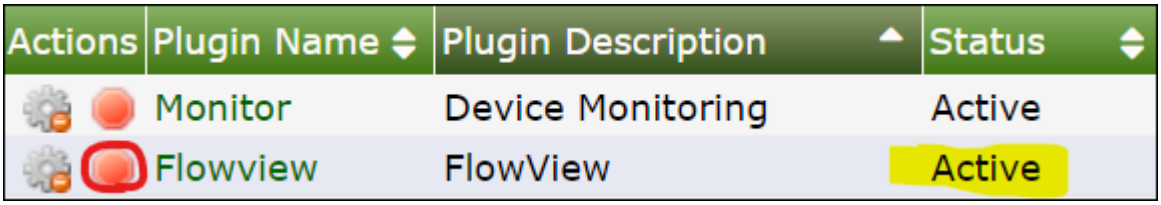
```
[root@TWTPSVHQ015 flowview]# systemctl enable flow-capture
Created symlink /etc/systemd/system/multi-user.target.wants/flow-capture.service → /etc/syste
md/system/flow-capture.service.
```

```
● flow-capture.service - Flow Capture Service for Cacti
     Loaded: loaded (/etc/systemd/system/flow-capture.service; enabled; preset: disabled)
     Active: active (running) since Mon 2024-07-22 11:06:20 CST; 19s ago
   Main PID: 10145 (php)
      Tasks: 1 (limit: 50492)
     Memory: 16.8M
        CPU: 282ms
     CGroup: /system.slice/flow-capture.service
             └─10145 /usr/bin/php -q /usr/share/cacti/plugins/flowview/service/flow-capture --systemd

Jul 22 11:06:20 TWTPSVHQ015.tpvaoc.com systemd[1]: Started Flow Capture Service for Cacti.
Jul 22 11:06:20 TWTPSVHQ015.tpvaoc.com php[10145]: NOTE: Starting Flow Collection
Jul 22 11:06:20 TWTPSVHQ015.tpvaoc.com php[10145]: NOTE: No Flow Capture Listeners configured
```

Reduce data retention to **1 week** (default is 1 month) & **16 Threads** (default is 4) on flowview Web Console, and below yellow marked.



Active flowview plugin



Actions	Plugin Name	Plugin Description	Status
	Monitor	Device Monitoring	Active
	Flowview	FlowView	Active

#Check logs & Solve error logs

Error: CMDPHP ERROR: A DB Row Failed!, Error: Table 'flowview.reports_que

```
#CREATE TABLE `reports_queued`
mysql -uroot flowview -e "
CREATE TABLE IF NOT EXISTS \`reports_queued\` (
    \`id\` int(10) unsigned NOT NULL AUTO_INCREMENT,
    \`name\` varchar(64) NOT NULL DEFAULT '',
    \`source\` varchar(20) NOT NULL DEFAULT '',
    \`source_id\` int(10) unsigned NOT NULL DEFAULT 0,
    \`status\` varchar(10) NOT NULL DEFAULT 'pending',
    \`scheduled_time\` timestamp NOT NULL DEFAULT '0000-00-00',
    \`start_time\` timestamp NOT NULL DEFAULT '0000-00-00',
    \`run_command\` varchar(512) NOT NULL DEFAULT '',
    \`run_timeout\` int(10) NOT NULL DEFAULT '60',
    \`notification\` blob NOT NULL,
    \`request_type\` int(10) unsigned NOT NULL DEFAULT 0,
    \`requested_by\` varchar(20) NOT NULL DEFAULT '',
    \`requested_id\` int(11) NOT NULL DEFAULT -1,
    PRIMARY KEY (\`id\`),
    KEY \`source\` (\`source\`),
    KEY \`source_id\` (\`source_id\`)
) ENGINE=InnoDB
ROW_FORMAT=DYNAMIC
COMMENT='Holds Scheduled Reports';
"
```

CMDPHP ERROR: A DB Row Failed!, Error: Table 'flowview.reports_log' doesn't exist

```
mysql -uroot flowview -e "
CREATE TABLE IF NOT EXISTS \`reports_log\` (
    \`id\` int(10) unsigned NOT NULL AUTO_INCREMENT,
    \`name\` varchar(64) NOT NULL DEFAULT '',
    \`source\` varchar(20) NOT NULL DEFAULT '',
    \`source_id\` int(10) unsigned NOT NULL DEFAULT 0,
    \`report_output_type\` varchar(5) NOT NULL DEFAULT '',
    \`report_raw_data\` longblob,
    \`report_raw_output\` longblob,
    \`report_txt_output\` longblob,
    \`report_html_output\` longblob,
    \`notification\` blob NOT NULL,
    \`send_type\` int(10) unsigned NOT NULL DEFAULT 0,
```

\`send_time\` timestamp NOT NULL DEFAULT current_timestamp(),
\`run_time\` double NOT NULL DEFAULT 0,
\`sent_by\` varchar(20) NOT NULL DEFAULT '',
\`sent_id\` int(11) NOT NULL DEFAULT -1,
PRIMARY KEY (\`id\`),
KEY \`source\` (\`source\`),
KEY \`source_id\` (\`source_id\`)
) ENGINE=InnoDB
COMMENT='Holds All Cacti Report Output';
"

DBCALL ERROR: SQL Save on table 'reports_queued': Column 'request_type' does not exist, unable to save!

#Check columes's name of this table.

mysql -uroot -e "SHOW COLUMNS FROM flowview.reports_queued;"

```
[root@twtpsvhq018 ~]# mysql -uroot -e "SHOW COLUMNS FROM flowview.reports_queued;"
+----------------+------------------+------+-----+---------------------+----------------+
| Field          | Type             | Null | Key | Default             | Extra          |
+----------------+------------------+------+-----+---------------------+----------------+
| id             | int(10) unsigned | NO   | PRI | NULL                | auto_increment |
| name           | varchar(64)      | NO   |     |                     |                |
| source         | varchar(20)      | NO   | MUL |                     |                |
| source_id      | int(10) unsigned | NO   | MUL | 0                   |                |
| status         | varchar(10)      | NO   |     | pending             |                |
| scheduled_time | timestamp        | NO   |     | 0000-00-00 00:00:00 |                |
| start_time     | timestamp        | NO   |     | 0000-00-00 00:00:00 |                |
| run_command    | varchar(512)     | NO   |     |                     |                |
| run_timeout    | int(10)          | NO   |     | 60                  |                |
| notification   | blob             | NO   |     | NULL                |                |
| requeste_type  | int(10) unsigned | NO   |     | 0                   |                |
| requested_by   | varchar(20)      | NO   |     |                     |                |
| requested_id   | int(11)          | NO   |     | -1                  |                |
+----------------+------------------+------+-----+---------------------+----------------+
```

Result is filename is incorrect, "e" is typo.

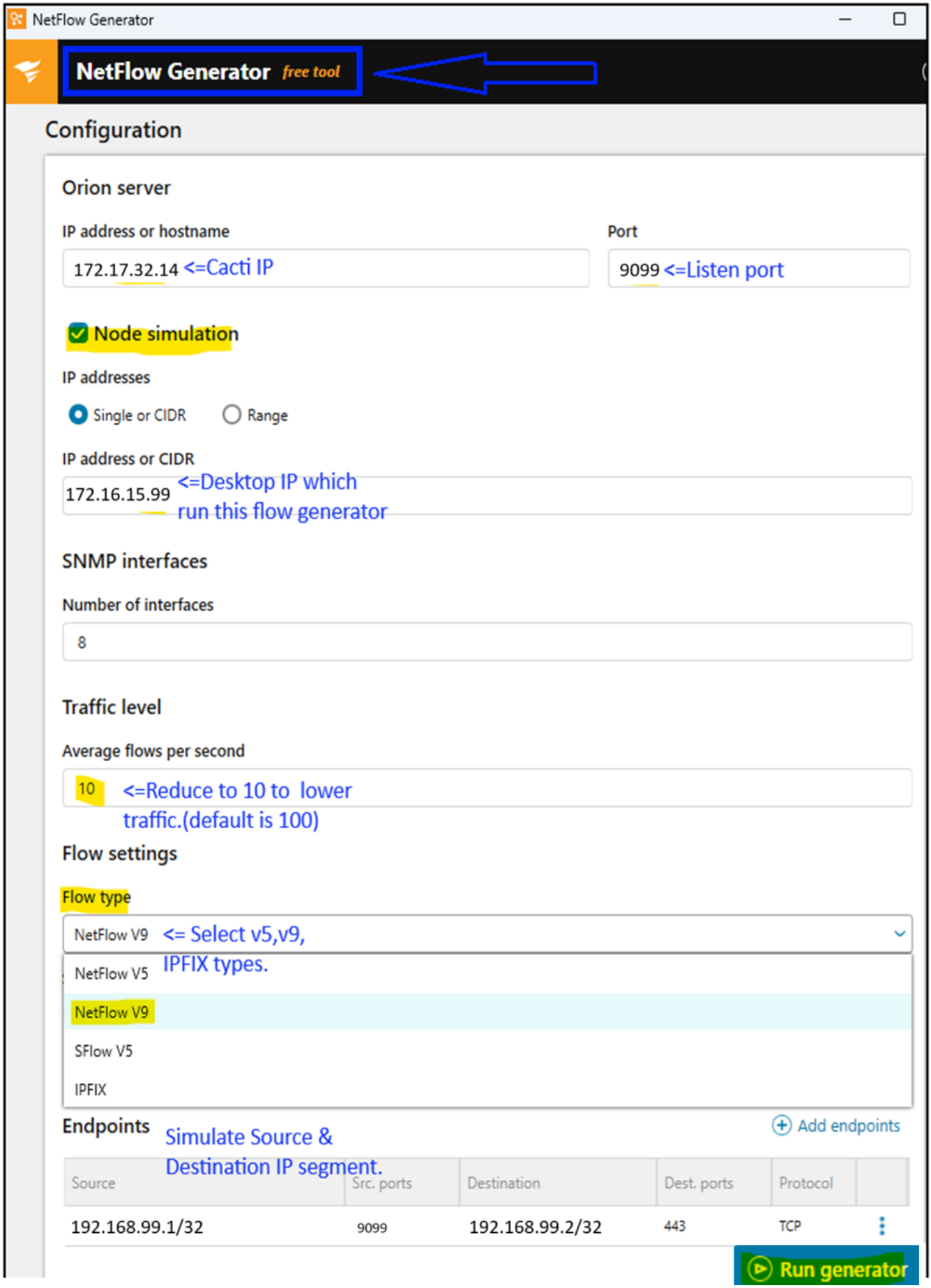
#On table "reports_queued", replace column's name from "requeste_type" to "request_type"

mysql -uroot flowview -e "ALTER TABLE flowview.reports_queued CHANGE COLUMN requeste_type request_type int(10) unsigned NOT NULL DEFAULT 0;"

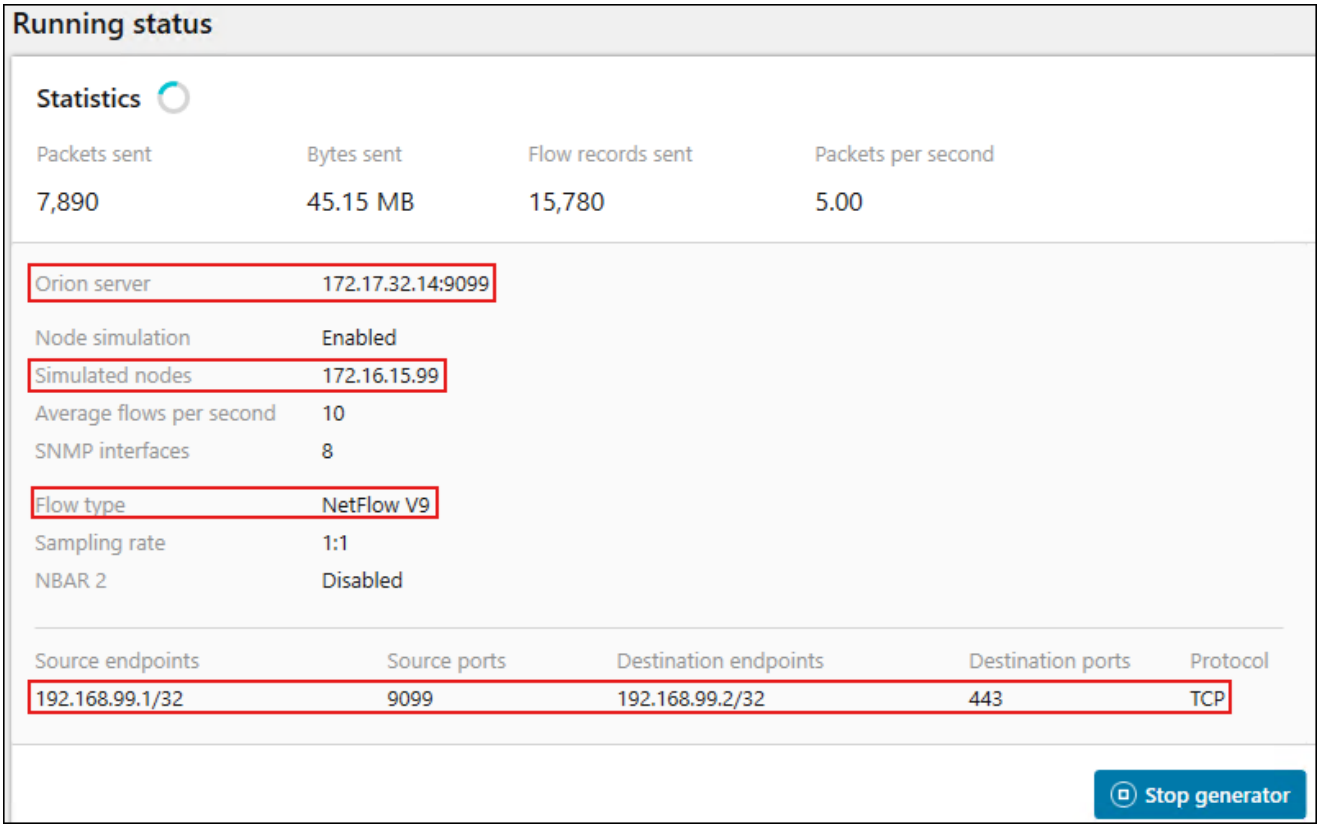
```
[root@twtpsvhq018 ~]# mysql -uroot flowview -e "ALTER TABLE flowview.reports_queued CHANGE
signed NOT NULL DEFAULT 0;"
[root@twtpsvhq018 ~]# mysql -uroot -e "SHOW COLUMNS FROM flowview.reports_queued;"
+----------------+------------------+------+-----+---------------------+----------------+
| Field          | Type             | Null | Key | Default             | Extra          |
+----------------+------------------+------+-----+---------------------+----------------+
| id             | int(10) unsigned | NO   | PRI | NULL                | auto_increment |
| name           | varchar(64)      | NO   |     |                     |                |
| source         | varchar(20)      | NO   | MUL |                     |                |
| source_id      | int(10) unsigned | NO   | MUL | 0                   |                |
| status         | varchar(10)      | NO   |     | pending             |                |
| scheduled_time | timestamp        | NO   |     | 0000-00-00 00:00:00 |                |
| start_time     | timestamp        | NO   |     | 0000-00-00 00:00:00 |                |
| run_command    | varchar(512)     | NO   |     |                     |                |
| run_timeout    | int(10)          | NO   |     | 60                  |                |
| notification   | blob             | NO   |     | NULL                |                |
| request_type   | int(10) unsigned | NO   |     | 0                   |                |
| requested_by   | varchar(20)      | NO   |     |                     |                |
| requested_id   | int(11)          | NO   |     | -1                  |                |
+----------------+------------------+------+-----+---------------------+----------------+
```

6.4 Configure flowview generator simulator

Download and Configure NetFlow Generator to create test flow source traffic on UDP port 9099, version 9

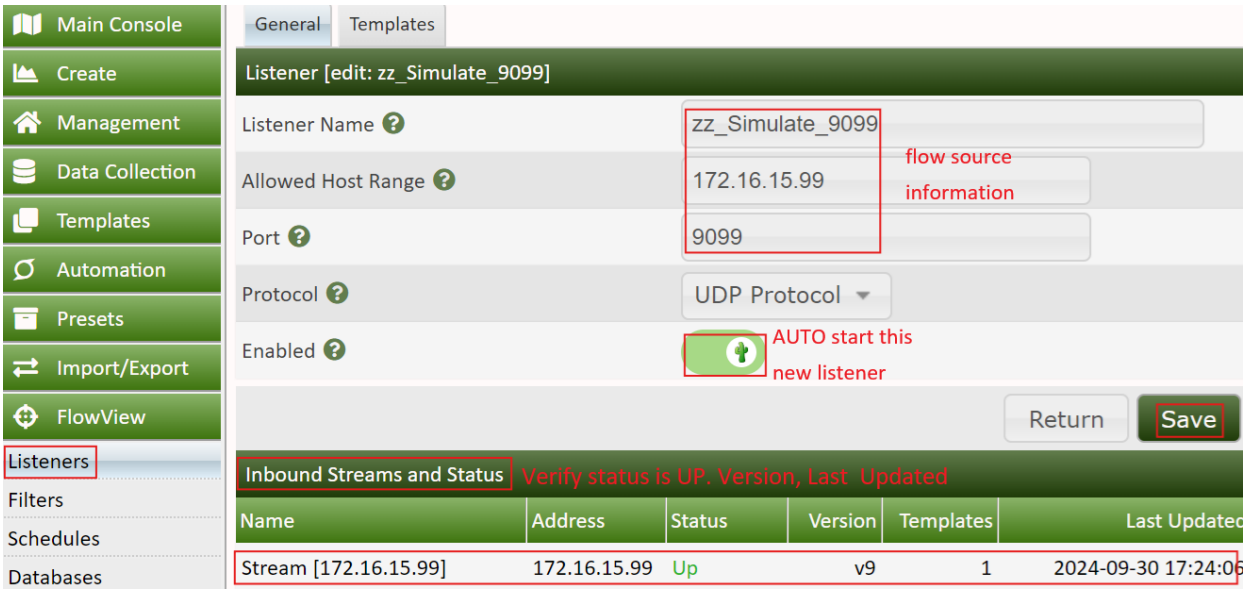

NetFlow Generator
NetFlow Generator free tool
Configuration
Orion server
IP address or hostname
172.17.32.14 <=Cacti IP
Port
9099 <=Listen port
Node simulation
IP addresses
Single or CIDR
Range
IP address or CIDR
172.16.15.99 <=Desktop IP which run this flow generator
SNMP interfaces
Number of interfaces
8
Traffic level
Average flows per second
10 <=Reduce to 10 to lower traffic.(default is 100)
Flow settings
Flow type
NetFlow V9 <= Select v5,v9, IPFIX types.
NetFlow V5
NetFlow V9
SFlow V5
IPFIX
Endpoints
Simulate Source & Destination IP segment.
Add endpoints
Source
Src. ports
Destination
Dest. ports
Protocol
192.168.99.1/32
9099
192.168.99.2/32
443
TCP
Run generator

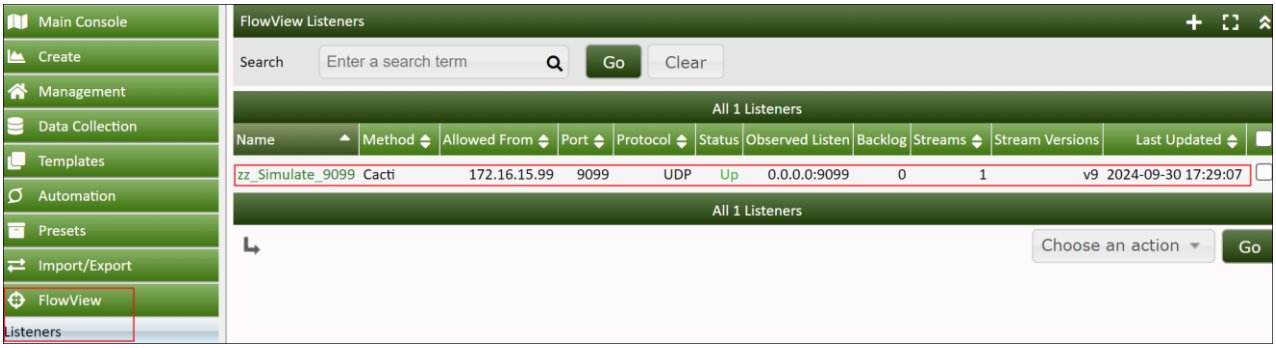
Start generating flow v9 traffics…



6.5 Configure listeners

Configure folwview generator to create test flow traffic on UDP port 9995 (v5), 9996(v9, 9997(IPFIX)





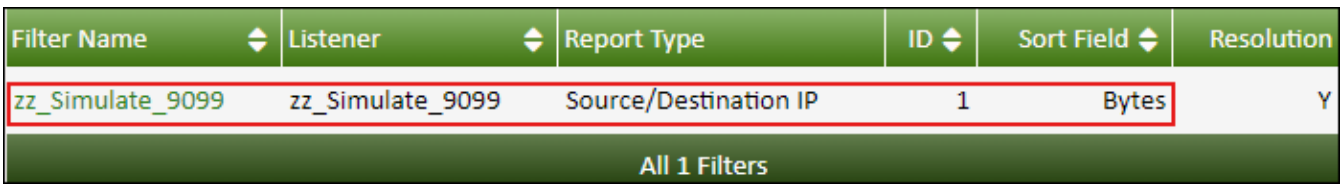
systemctl status flow-capture

```
● flow-capture.service - Flow Capture Service for Cacti
     Loaded: loaded (/etc/systemd/system/flow-capture.service; enabled; preset: disabled)
     Active: active (running) since Mon 2024-09-30 17:10:10 CST; 24min ago
   Main PID: 2499 (php)
      Tasks: 2 (limit: 153762)
     Memory: 40.5M
        CPU: 13.356s
     CGroup: /system.slice/flow-capture.service
             ├─2499 /usr/bin/php -q /usr/share/cacti/plugins/flowview/service/flow-capture --systemd
             └─2501 /usr/bin/php -q /usr/share/cacti/plugins/flowview/flow_collector.php --listener-id=1

Sep 30 17:10:10 twtpsvhq014.tpvaoc.com systemd[1]: Started Flow Capture Service for Cacti.
Sep 30 17:10:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Starting Flow Collection
Sep 30 17:10:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Launching cacti-flow-capture as '/usr/share/cacti/plugins/flowview/flow_collector.php --listener-id=1'
Sep 30 17:15:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
Sep 30 17:20:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
Sep 30 17:25:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
Sep 30 17:30:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
```

6.6 Configure filters

Create filters map to listeners, “Stream Address” IP & Max. Row “Top 15” must be assigned to increase stability.

Result of 4 filters



Click “FlowView” => Select Filter & Listener => Click “GO” => Click “Table”

a. Show flowview DB table size & row number

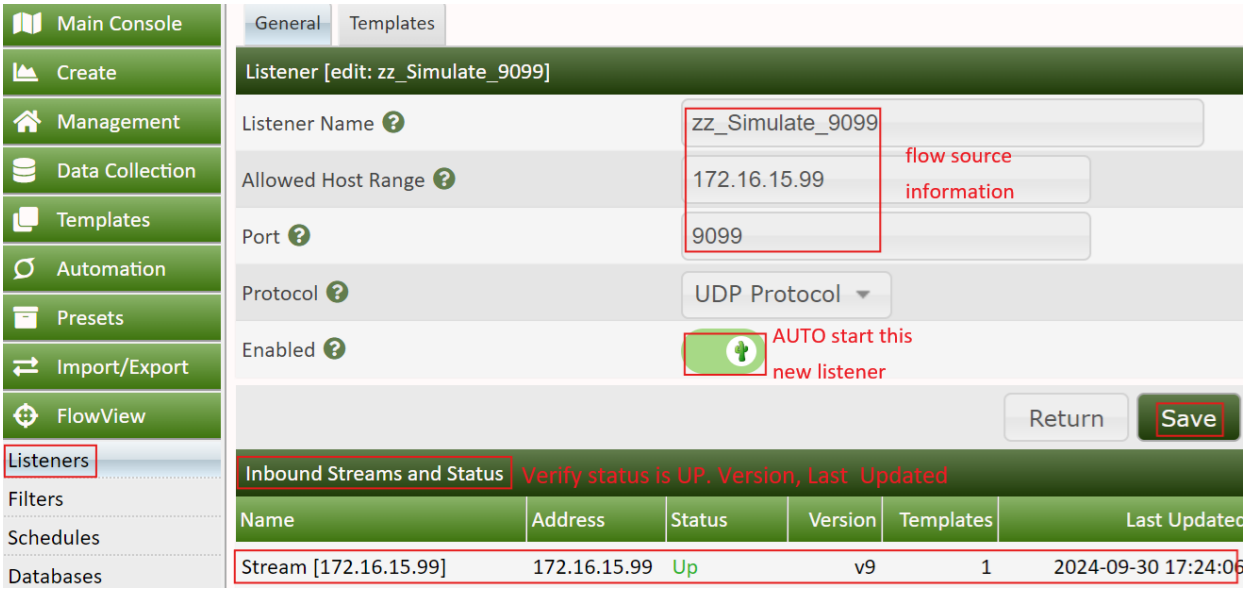
#Show flowview DB table size & row number

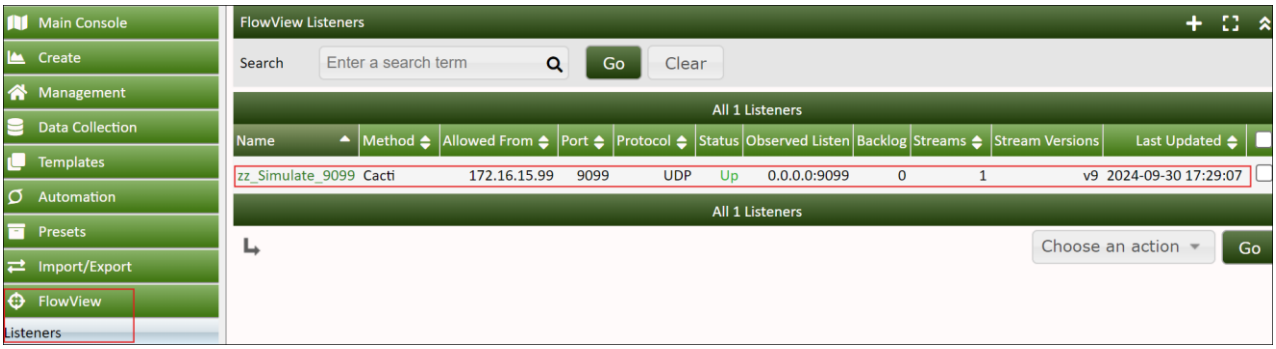
mysql -uroot -e "SELECT t.table_name AS \`Table\`, ROUND(((t.data_length + t.index_length) / 1024 / 1024), 2) AS \`Size (MB)\`, t.table_rows AS \`Rows\` FROM information_schema.tables t WHERE t.table_schema = 'flowview' ORDER BY (t.data_length + t.index_length) DESC;"

Table	Size (MB)	Rows
plugin_flowview_irr_inetnum	6468.88	6076708
plugin_flowview_irr_route	1099.82	4165912
plugin_flowview_raw_202421511	675.35	2458674
plugin_flowview_raw_202421510	669.52	2433973
plugin_flowview_raw_202421500	669.21	2435004
plugin_flowview_raw_202421509	666.79	2422586
plugin_flowview_raw_202421508	666.03	2419226
plugin_flowview_raw_202421507	662.62	2404484
plugin_flowview_raw_202421505	661.58	2400437
plugin_flowview_raw_202421504	661.52	2400879
plugin_flowview_raw_202421506	661.32	2399050
plugin_flowview_raw_202421501	660.09	2398581
plugin_flowview_raw_202421502	657.93	2389060
plugin_flowview_raw_202421503	655.13	2378987
plugin_flowview_raw_202421423	515.02	1878653
plugin_flowview_irr_domain	485.66	1183215
plugin_flowview_irr_role	68.68	146182

6.7 Configure listeners

Configure folwview generator to create test flow traffic on UDP port 9099 (v9)



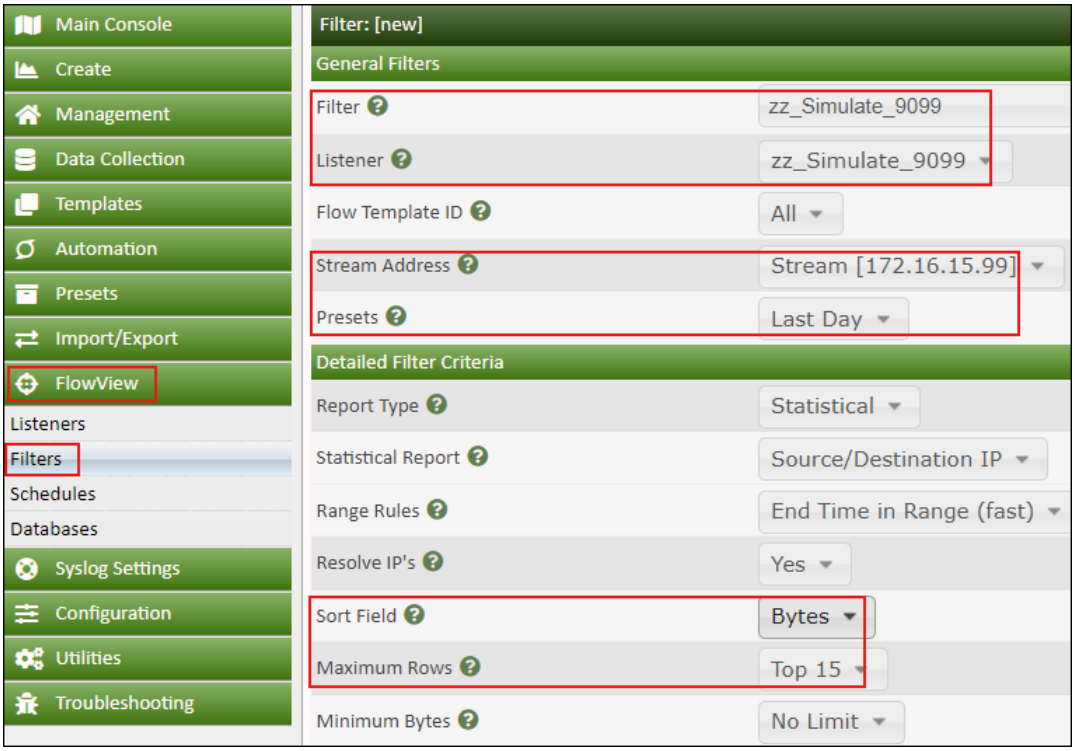


systemctl status flow-capture

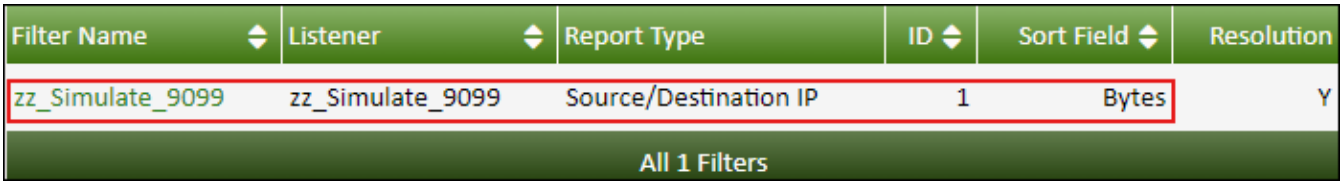
```
● flow-capture.service - Flow Capture Service for Cacti
     Loaded: loaded (/etc/systemd/system/flow-capture.service; enabled; preset: disabled)
     Active: active (running) since Mon 2024-09-30 17:10:10 CST; 24min ago
   Main PID: 2499 (php)
      Tasks: 2 (limit: 153762)
     Memory: 40.5M
        CPU: 13.356s
     CGroup: /system.slice/flow-capture.service
             ├─2499 /usr/bin/php -q /usr/share/cacti/plugins/flowview/service/flow-capture --systemd
             └─2501 /usr/bin/php -q /usr/share/cacti/plugins/flowview/flow_collector.php --listener-id=1

Sep 30 17:10:10 twtpsvhq014.tpvaoc.com systemd[1]: Started Flow Capture Service for Cacti.
Sep 30 17:10:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Starting Flow Collection
Sep 30 17:10:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Launching cacti-flow-capture as '/usr/share/cacti/plugins/flowview/flow_collector.php --listener-id=1'
Sep 30 17:15:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
Sep 30 17:20:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
Sep 30 17:25:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
Sep 30 17:30:11 twtpsvhq014.tpvaoc.com php[2499]: NOTE: Checking for new or gone listeners
```

6.8 Configure filters

Create filters map to listeners, “Stream Address” IP & Max. Row “Top 15” must be assigned to increase stability.



Result



6.9 Statistical Report

Click “FlowView” => Select Filter & Listener => Click “GO” => Click “Table”

6.10 Check DB size & Row numbers

#Show flowview DB table size & row number

mysql -uroot -e "SELECT t.table_name AS \`Table\`, ROUND(((t.data_length + t.index_length) / 1024 / 1024), 2) AS \`Size (MB)\`, t.table_rows AS \`Rows\` FROM information_schema.tables t WHERE t.table_schema = 'flowview' ORDER BY (t.data_length + t.index_length) DESC;"

Table	Size (MB)	Rows
plugin_flowview_irr_inetnum	6468.88	6076708
plugin_flowview_irr_route	1099.82	4165912
plugin_flowview_raw_202421511	675.35	2458674
plugin_flowview_raw_202421510	669.52	2433973
plugin_flowview_raw_202421500	669.21	2435004
plugin_flowview_raw_202421509	666.79	2422586
plugin_flowview_raw_202421508	666.03	2419226
plugin_flowview_raw_202421507	662.62	2404484
plugin_flowview_raw_202421505	661.58	2400437
plugin_flowview_raw_202421504	661.52	2400879
plugin_flowview_raw_202421506	661.32	2399050
plugin_flowview_raw_202421501	660.09	2398581
plugin_flowview_raw_202421502	657.93	2389060
plugin_flowview_raw_202421503	655.13	2378987
plugin_flowview_raw_202421423	515.02	1878653
plugin_flowview_irr_domain	485.66	1183215
plugin_flowview_irr_role	68.68	146182

6.11 Sample flow export configuration on Cisco SW & Fortigate

Cisco Switch:

flow record TPV-Flow-Record
match ipv4 destination address
match ipv4 source address
match transport source-port
match transport destination-port
match ipv4 protocol
match interface input
match ipv4 tos
match flow direction
collect counter bytes long
collect counter packets long
collect transport tcp flags
collect timestamp absolute first
collect timestamp absolute last
collect interface output
!
!
flow record TPV-Flow-Record-OUT

```
match ipv4 destination address
match ipv4 source address
match transport source-port
match transport destination-port
match ipv4 protocol
match interface output
match ipv4 tos
match flow direction
collect counter bytes long
collect counter packets long
collect transport tcp flags
collect timestamp absolute first
collect timestamp absolute last
collect interface input
!
!
flow exporter FNFexp
destination 172.17.32.16
source Vlan99
transport udp 2055
!
!
flow exporter test
destination 172.17.32.14
source Vlan99
transport udp 2055
!
!
flow monitor FlowMonitor1
exporter FNFexp
exporter test
record TPV-Flow-Record
!
!
flow monitor FlowMonitorOUT
exporter FNFexp
exporter test
record TPV-Flow-Record-OUT
!
!
sampler sampler1
description sample at 50%
mode random 1 out-of 2
!
!
interface GigabitEthernet1/1/2
```

switchport trunk allowed vlan 99
switchport mode trunk
ip flow monitor FlowMonitor1 sampler sampler1 input
ip flow monitor FlowMonitorOUT sampler sampler1 output
channel-group 2 mode active

interface GigabitEthernet2/1/2
switchport trunk allowed vlan 99
switchport mode trunk
ip flow monitor FlowMonitor1 **sampler sampler1** input
ip flow monitor FlowMonitorOUT **sampler sampler1** output
channel-group 2 mode active

Fortigate Firewall:

FG3H1E5819903613 (global) # show system netflow
config system netflow
    set collector-ip 172.17.32.14
    set collector-port 9005
    set source-ip 172.17.32.100
    set active-flow-timeout 60
    set inactive-flow-timeout 10
end

FG3H1E5819903613 (global) # show system interface "port3"
config system interface
    edit "port3"
        set vdom "root"
        set ip 172.17.32.100 255.255.255.0
        set allowaccess ping https snmp
        set type physical
        set netflow-sampler both
        set sflow-sampler enable
        set sample-rate 50
        set explicit-web-proxy enable
        set description "LAN"
        set alias "lan"
        set device-identification enable
        set role lan
        set snmp-index 5
    next
end