

# Nagios XI - MySQL/MariaDB - Max Connections

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## Overview

This KB article is about the MySQL / MariaDB database and adjusting the maximum connections allowed. This can be required in larger XI installations.

Historically MySQL has been the database used by Nagios XI, however in CentOS 7 & Debian 9 onwards MariaDB is used instead of MySQL. MariaDB is simply a fork of the MySQL data for each scenario.

This KB article applies to Nagios XI implementations that have the database server on the same server as Nagios XI (default) OR if you have offloaded the database server to an ext

This KB article covers three topics:

1. Identifying the current maximum connections allowed and what it has peaked at
2. Increasing the maximum connections allowed to the database application
3. Ongoing monitoring of the connections to help identify if they need increasing in the future

Generally you'll be reading this article because you may have noticed events like this in your log files:

```
PHP Warning: mysql_connect(): Too many connections
```

## Identifying Connections

By default, the database server allows 151 connections. You can determine the current maximum allowed connections using this command:

```
mysql -uroot -pnagiosxi -e "show variables like 'max_connections';"
```

The output will be something like this:

```
+-----+-----+
| Variable_name | Value |
+-----+-----+
| max_connections | 151 |
+-----+-----+
```

How do you know if you need to increase this value? We can run another query that shows us what the peak number of connections has been since the database server daemon was

```
mysql -uroot -pnagiosxi -e "show global status like 'Max_used_connections';"
```

The output will be something like this:

```
+-----+-----+
| Variable_name | Value |
+-----+-----+
| Max_used_connections | 65 |
+-----+-----+
```

If the number returned is the same as (or close to max\_connections) then you need to increase the allowed number of max\_connections.



If you have an offloaded database server, execute those commands on the offloaded database server.

## Increasing Max Connections

In this example we are going to define max\_connections at 1000.



It has been observed that MariaDB can only have its max\_connections= set to a maximum of 818. If you use any value greater MariaDB will default back to a value of 214. If

On your Nagios XI server OR your offloaded database server, edit the config file with the following command:

**RHEL | CentOS | Oracle Linux**

```
vi /etc/my.cnf
```

**Ubuntu 16/18/20**

```
vi /etc/mysql/mysql.conf.d/mysqld.cnf
```

## Debian 9/10

```
vi /etc/mysql/mariadb.conf.d/50-server.cnf
```

When using the *vi* editor, to make changes press *i* on the keyboard first to enter insert mode. Press *Esc* to exit insert mode.

Add the following lines in the section `[mysqld]`

```
max_connections=1000
open_files_limit = 4096
```

If the lines already exists, simply change the value to a higher number.

When you have finished, save the changes in *vi* by typing:

```
:wq
```

and press **Enter**.

Now execute the following commands (*three sets of commands required*):

### ***Nagios XI Server (part 1):***

**RHEL | CentOS | Oracle Linux | Debian | Ubuntu**

```
systemctl stop nagios.service
```

```
systemctl stop ndo2db.service (Nagios 5.6 and lower only)
```

### ***Nagios XI Server OR Offloaded Database Server (part 2):***

**RHEL 7 | CentOS 7 | Oracle Linux 7 | Debian 9/10**

```
systemctl restart mariadb.service
```

**RHEL 8 | CentOS 8 | Oracle Linux 8**

```
systemctl restart mysqld.service
```

**Ubuntu 16/18/20**

```
systemctl restart mysql.service
```

### ***Nagios XI Server (part 3):***

**RHEL | CentOS | Oracle Linux | Debian | Ubuntu 16/18/20**

```
systemctl start ndo2db.service (Nagios XI 5.6 or lower only)
```

```
systemctl start nagios.service
```

Once you have performed these steps, you can execute the commands outlined in the [Identifying Connections](#) section of this KB article to ensure the changes have applied.

## Ongoing Monitoring

Now that you have made the changes, you should create some Nagios services to monitor the connections. This will allow you to observe the changes you have made as you may need.

There are two different metrics we will monitor:

- `Max_used_connections`
  - The maximum number of connections that have been in use simultaneously since the server started
- `Threads_connected`
  - The number of currently open connections

The services will generate performance graphs, which will help identify trends.

First, we need to create a user account in the database server that can access these metrics. This read only account will not be granted access to any of the databases, it is simply

In the following commands, the username is `readonly` and the password is `readonly_password`

**Nagios XI Server**

```
echo "CREATE USER 'readonly'@'localhost' IDENTIFIED BY 'readonly_password';" | mysql -u root -p'nagiosxi'
```

**Offloaded Database Server:**

If you have an offloaded database server, you will need to run this command instead. This command uses `10.25.5.2` as the IP address of the Nagios XI server. You will need to cha

```
echo "CREATE USER 'readonly'@'10.25.5.2' IDENTIFIED BY 'readonly_password';" | mysql -u root -p'nagiosxi'
```

Now we can test the plugin commands before creating the services. Nagios XI comes bundled with the `check_mysql_query` plugin which will be used for the services.

This command checks the `Max_used_connections` and has the critical threshold of `1000`:

**Nagios XI Server**

```
/usr/local/nagios/libexec/check_mysql_query -u readonly -preadonly_password -d information_schema -q "select variable_value from global
```

**Nagios XI Server Connecting To Remote Database Server:**

```
/usr/local/nagios/libexec/check_mysql_query -H offloaded_server -u readonly -preadonly_password -d information_schema -q "select variab
```

The output will be something like this:

```
QUERY OK: 'select variable_value from global_status where Variable_name='Max_used_connections',' returned 67.000000 | result=67.000000;
```

This command checks the `Threads_connected` and has the warning threshold of `900`:

**Nagios XI Server**

```
/usr/local/nagios/libexec/check_mysql_query -u readonly -preadonly_password -d information_schema -q "select variable_value from global
```

**Nagios XI Server Connecting To Remote Database Server:**

```
/usr/local/nagios/libexec/check_mysql_query -H offloaded_server -u readonly -preadonly_password -d information_schema -q "select variab
```

The output will be something like this:

```
QUERY OK: 'select variable_value from global_status where Variable_name='Threads_connected',' returned 42.000000 | result=42.000000;900
```

After testing that both of those commands worked, the next step is to create the services in Nagios XI.

Click the **Configure** menu

Click **Core Configuration Manager**

In the left pane under **Commands** click **Commands**

Click the **+Add New** button

Populate the fields as follows:

Command Name	check_mysql_query
Command Line	\$USER1\$/check_mysql_query \$ARG1\$ \$ARG2\$ \$ARG3\$
Command Type	check command
Active	Checked

Click **Save**

In the left pane under **Monitoring** click **Services**

Click the **+Add New** button

This is for `Max_used_connections`

Populate the fields on each tab as follows:

**Common Settings**

Config Name	localhost
Description	Database Max_used_connections

Manage Hosts button	<i>Select</i> localhost
Manage Templates button	<i>Select</i> xiwizard_mysqlquery_service
Active	checked
Check command	check_mysql_query
\$ARG1\$	-u readonly -p'readonly_password'
\$ARG2\$	-d information_schema -q "select variable_value from global_status where Variable_name='Max_used_conr
\$ARG3\$	-c :1000

**Check Settings**

Check interval	15
Retry interval	5
Max check attempts	6
Check period	xi_timeperiod_24x7

**Alert Settings**

Complete any notification options as required

Click **Save**

Click the **+Add New** button

This is for `Threads_connected`

Populate the fields on each tab as follows:

**Common Settings**

Config Name	localhost
Description	Database Threads_connected
Manage Hosts button	<i>Select</i> localhost
Manage Templates button	<i>Select</i> xiwizard_mysqlquery_service
Active	checked
Check command	check_mysql_query
\$ARG1\$	-u readonly -p'readonly_password'
\$ARG2\$	-d information_schema -q "select variable_value from global_status where Variable_name='Threads_connect
\$ARG3\$	-w :900

**Check Settings**

Check interval	15

Retry interval	5
Max check attempts	6
Check period	xi_timeperiod_24x7

### Alert Settings

Complete any notification options as required

Click **Save**

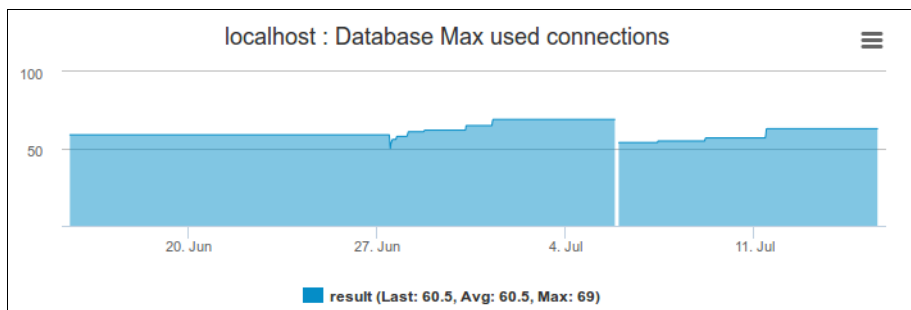
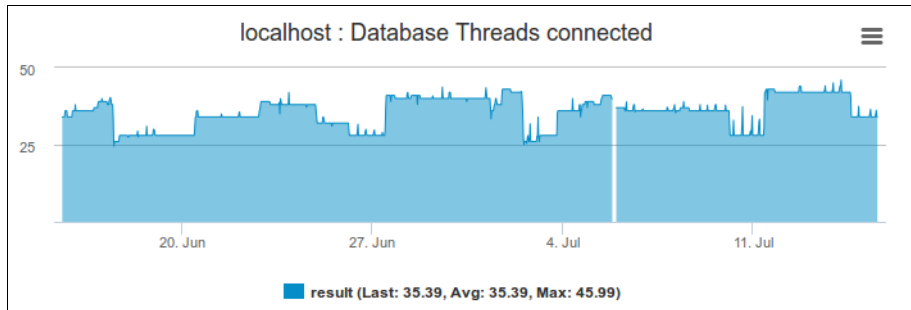
Click **Apply Configuration**

In the services above, if you have an offloaded database server, change the following:

### Common Settings

Config Name	The name of the offloaded database server (you'll need a host object for this)
Manage Hosts button	<i>Select the offloaded database server</i>
Active	checked
Check command	check_mysql_query
\$ARG1\$	-H <i>offloaded_server</i> -u readonly -p' <i>readonly_password</i> '

Here are some performance graphs to demonstrate the history collected by these services.



## Final Thoughts

For any support related questions please visit the [Nagios Support Forums](http://support.nagios.com/forum/) at:

<http://support.nagios.com/forum/>

Posted by: **tlea** - Thu, Jun 2, 2016 at 2:30 AM. This article has been viewed 19683 times.

Online URL: <https://support.nagios.com/kb/article/nagios-xi-mysql-mariadb-max-connections-513.html>