

# Monyog object model

The Monyog Object model (MOM) abstracts all OS/MySQL values required for calculating all performance metric. It relieves the user from performing low level tasks like connecting to the servers, executing SQL statement, checking return codes, etc.

Values from MOM are used to calculate and display metric, check thresholds, send notification mails, etc.

All output returned from the "SHOW GLOBAL STATUS" is available as `MONyog.MySQL.GlobalStatus.*`. For example: to get the value of Uptime status variable, you can use `MySQL.GlobalStatus.Uptime`.

Similarly the following Object Models are defined as follows:

Variable	MOM Object
SHOW GLOBAL VARIABLES	<code>MONyog.MySQL.GlobalVariables.*</code>
SHOW GLOBAL STATUS	<code>MONyog.MySQL.GlobalStatus.*</code>
SHOW SLAVE STATUS	<code>MONyog.MySQL.Slave.*</code>
OS-level counters	<code>MONyog.System.*</code>



Operating system-level counters measure CPU, memory usage, and so on.

[MOM variable for SQL DM for MySQL tags and server names](#)

## AlertCondition:

This attribute expects an expression that should evaluate to one the following 3 values: Critical, Warning, or None. Generally, a JS expression or function is specified which compares some of the MOM values to the Warning or Critical threshold values defined above. (Optional) Consider two examples of a monitor to receive alerts based on an alert condition.

```
function()  
{  
    if(ToInt(MONyog.MySQL.GlobalStatus.Select_scan) > 1000)  
        return GetWarnStatusInt(this.Value, this.Critical, this.Warning, true);  
    else  
        return "None";  
}
```

```
function()  
{  
    if(this.Value != "(n/a)" && this.Value > 1)  
        return "Critical";  
    else  
        return "None";  
}
```

**WarmUpRequired:** A value of Yes specifies that this metric makes sense only if the server is running for a minimum period of time. If the server is not running for the minimum period, AlertCondition is not evaluated and no alerts would be displayed or notified. The default value is 3 hours, if you want to change this value; go to Settings, select **General** you find MYSQL WARMUP PERIOD.

**MailAlert:** Specifies whether the user wants mail alerts for this metric in case the thresholds are crossed. (Optional)

**Graph:** This value defines whether real-time graphs are shown for this metric. (Optional)

**Bargraph:** This value defines whether Percentage type value should be plotted as Bar Graph. (Optional)

**Uptime:** This value determines whether this metric contain cumulative values. Cumulative values are those values which always increase continuously since server startup (or since last FLUSH STATUS). For example: Connection Attempts. The value of Connection Attempts is always incremented by the MySQL server. Cumulative values are treated differently from "point in time" values like "Currently Running Threads".

If a metric is Cumulative you should always set the value of this attribute to a constant expression: `"MONyog.MySQL.GlobalStatus.Uptime"`

**Format:** The display format of various counters. The only possible value currently applicable is - NumCounterWithSeconds. This specifies whether the metric values should also be displayed in "per second" value.

**AdviceText:** The advice text that is shown to a user whenever any AlertCondition evaluates to "Critical" or "Warning". This text is also shown as the tool tip when the user points the mouse over the alert icons.

**RetryOverride:** A MOM variable that takes an integer value and overrides the server-level "Send notification when alert-able" setting at the counter-level. Note: It does not take the value "0".

**NotifyStableOverride:** A MOM variable that takes either "Yes" or "No" as a value and overrides the server-level "Notify when stable" setting at the counter-level.

## MOM variables for SQL DM for MySQL tags and server names

Tags and server names that are used in SQL DM for MySQL are exposed as Monyog Object Model (MOM) variables. `MONyog.Connections.TagName` returns an array of tags for that server.

`MONyog.Connections.ConnectionName` Gives the name of that server. This can be extremely useful while setting different threshold levels (based on tags or server names) for a monitor. For example:

The following can be added to the critical/warning field in **Add/Edit server->View Advanced** to set server and tag specific thresholds.

```
// Threshold based on server names
if(MONyog.Connections.ConnectionName == "Testserver")
    return 80; // Threshold value for 'Testserver' is 80
if(MONyog.Connections.ConnectionName == "Productionserver")
    return 50;
// Thresholds based on tag names
if(MONyog.Connections.TagName.indexOf("SomeTag") >=0 )
    return 10; // Threshold value for 'SomeTag' is 10
if(MONyog.Connections.TagName.indexOf("SomeOtherTag") >=0 )
    return 39;
```

Example of a Monitor(Percentage of max allowed reached) that is customized to receive alerts based on server names and tags.

EDIT MONITOR - Percentage of refused connections
Close
Save

General
Advanced
Alerts

### Alert Condition

```
function()
{
    return GetWarnStatusInt(this.Value, this.Critical, this.Warning, true);
}
```

Specify a JavaScript expression which evaluates to one of "None", "Warning" or "Critical" based on the value of this Monitor. This is used by MONyog to determine which state it is in.

### Set Critical Threshold

```
function()
{
    // Threshold specific to server names
    if(MONyog.Connections.ConnectionName == "Testserver")
        return 80; // Threshold value for 'Testserver' is 80
    // Thresholds specific to tag names
    if(MONyog.Connections.TagName.indexOf("Slaves") >= 0)
        return 70; // Threshold value for 'SomeTag' is 10

    return 65; // Threshold value for every other server and tag
}
```

If the value of this Monitor equals or exceeds the value specified here then it will enter "Critical" state and, if you've configured it, MONyog will send notifications in the event of this happening.

### Set Warning Threshold

50

If the value of this Monitor equals or exceeds the value specified here then it will enter "Warning" state and, if you've configured it, MONyog will send notifications in the event of this happening.

### Notifications

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Selecting yes will cause MONyog to send notifications on this Monitor in the event of it entering "Critical" or "Warning" state. Note that you also have to configure SMTP or(and) SNMP for MONyog and Notification Settings for servers for this feature to work.

## SQL DM for MySQL Attribute Reference - Charts Interface

- **Chart Name:** The name of the new Chart.
- **ChartType:** The type of chart can be MySQL or System.
- **SeriesCaption:** Array containing labels for every series in a graph.
- **SeriesValues:** Array containing the values of each series in a graph.
- **ChartValue:** The type to plot the actual values of the seconds\_behind\_master where it is the difference between the 2 intervals. It can plot the values in 2 ways:
  - **Delta**
  - **Current**
 And the default is **Delta**.

- **This chart shows boolean values:** Possible values are "OnOff" only. This is a special type of Y-Axis plotting that has only 2 possible values - "On" or "Off". This type of graph is useful for plotting Availability status of MySQL/OS across a timeframe. (Optional)
- **Unit:** Specify y-axis unit in the chart. Ex: ['','KB','MB','GB','TB']
- **Unit Factor:** The limit when the unit should be incremented. Ex: if this value is 1024 then, 1024 = 1KB, 1024KB=1MB and so on.
- **Uptime:** See the section for "SQL DM for MySQL Attribute Reference - Monitors Interface". (Optional)

## System Information Populated by MOM

The System Information is populated by MOM is divided into the following categories:

### General

- `MONyog.System.General.version`: The Linux kernel version.

### Physical Memory (in Kilobytes)

- `MONyog.System.Mem.sys_mem_total`: Total physical memory.
- `MONyog.System.Mem.sys_mem_free`: Available physical memory.
- `MONyog.System.Mem.proc_mem_vmrss`: Physical memory being used by MySQL.

### Swap memory (in Kilobytes)

- `MONyog.System.Swp.sys_swp_total`: Total swap memory.
- `MONyog.System.Swp.sys_swp_free`: Free Swap memory.
- `MONyog.System.Swp.proc_swp_vmsize`: Swap memory being used by MySQL.

### CPU

Below are the CPU related metrics. Each gives the number of jiffies spent in various modes, since the last capture.

- `MONyog.System.Cpu.sys_cpu_user`: User mode
- `MONyog.System.Cpu.sys_cpu_nice`: Nice mode
- `MONyog.System.Cpu.sys_cpu_system`: System/Kernel mode
- `MONyog.System.Cpu.sys_cpu_idle`: Spent Idly
- `MONyog.System.Cpu.sys_cpu_iowait`: Spent in waiting for IO
- `MONyog.System.Cpu.sys_cpu_hi`: Spent in hardware interrupts
- `MONyog.System.Cpu.sys_cpu_si`: Spent in Software interrupts

### I/O

Below are the block devices related metrics. Each gives the number of blocks read and written to the devices attach to the system.

- `MONyog.System.Io.blocks_in`: Total number of blocks read from the devices.
- `MONyog.System.Io.blocks_out`: Total number of blocks written to the devices.

### Custom

- `MONyog.System.Custom.Available`: If the system is available to Monyog or not.



Currently "Timeframe" does not have any effect on system related values.

### Disk

- `MONyog.System.Disk.sys_disk_free_mysql`: Amount of free space left on the volume where MySQL data resides.
- `MONyog.System.Disk.sys_disk_freepercent_mysql`: Percentage of free space left.
- `MONyog.System.Disk.sys_disk_total_mysql`: Total size of the volume where MySQL data resides.
- `MONyog.System.Disk.sys_disk_used_mysql`: Space being used by various files on the volume.
- `MONyog.System.Disk.sys_disk_free_innodb`: Amount of free space left on the volume where InnoDB data resides.
- `MONyog.System.Disk.sys_disk_freepercent_innodb`: Percentage of free space left.
- `MONyog.System.Disk.sys_disk_total_innodb`: Total size of the volume where InnoDB data resides.
- `MONyog.System.Disk.sys_disk_used_innodb`: Space being used by various files on the volume.

### Connection:

Connection name, MySQL user, SSH user, SSH tunneling user which are saved in connection details are exposed for customization in Monitors. (For instance 'connection name' can be accessed using `MONyog.Connections.ConnectionName`, 'MySQL user' as `MONyog.connections.MySQLUser` etc.)

- `MONyog.connections.ConnectionName`: Name of that server

- `MONyog.connections.TagName`: Returns an array of tags for that server
- `MONyog.connections.MySQLUser`: Using this MySQL user can be accessed
- `MONyog.connections.MySQLHost`: MySQL host can be accessed
- `MONyog.connections.MySQLPort`: MySQL port can be accessed



To retrieve system counters from Linux and access log files from remote system on all platforms, SSH server uses below variables:

- `MONyog.connections.SSHHostSystem`: To access SSH host
- `MONyog.connections.SSHPortSystem`: To access SSH port
- `MONyog.connections.SSHUserNameSystem`: To access SSH username



If you have used SSH tunneling to your MySQL server below variables can be used:

- `MONyog.connections.SSHHostTunnel`: To access SSH host
- `MONyog.connections.SSHUserNameTunnel`: To access SSH username
- `MONyog.connections.SSHPortTunnel`: To access SSH port

## MySQL Information Populated by MOM:

### MySQL Error log

- `MONyog.MySQL.ErrorLog.Is_accessible`: To access the MySQL error log
- `MONyog.MySQL.ErrorLog.Total_size`: Size of MySQL error log
- `MONyog.MySQL.ErrorLog.Size_changed`: To determine any new entry is there or not in MySQL error log
- `MONyog.MySQL.ErrorLog.Last_error`: Last error in the MySQL error log

### Innodb Deadlock

- `MONyog.MySQL.InnodbStatus.Deadlock_detected`: Any new Innodb deadlock is found
- `MONyog.MySQL.InnodbStatus.Last_detected_time`: Period in which last deadlock is detected
- `MONyog.MySQL.InnodbStatus.Latest_deadlock`: Latest deadlock is detected

SQL Diagnostic Manager for MySQL agentless and cost-effective performance monitoring for MySQL and MariaDB.

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