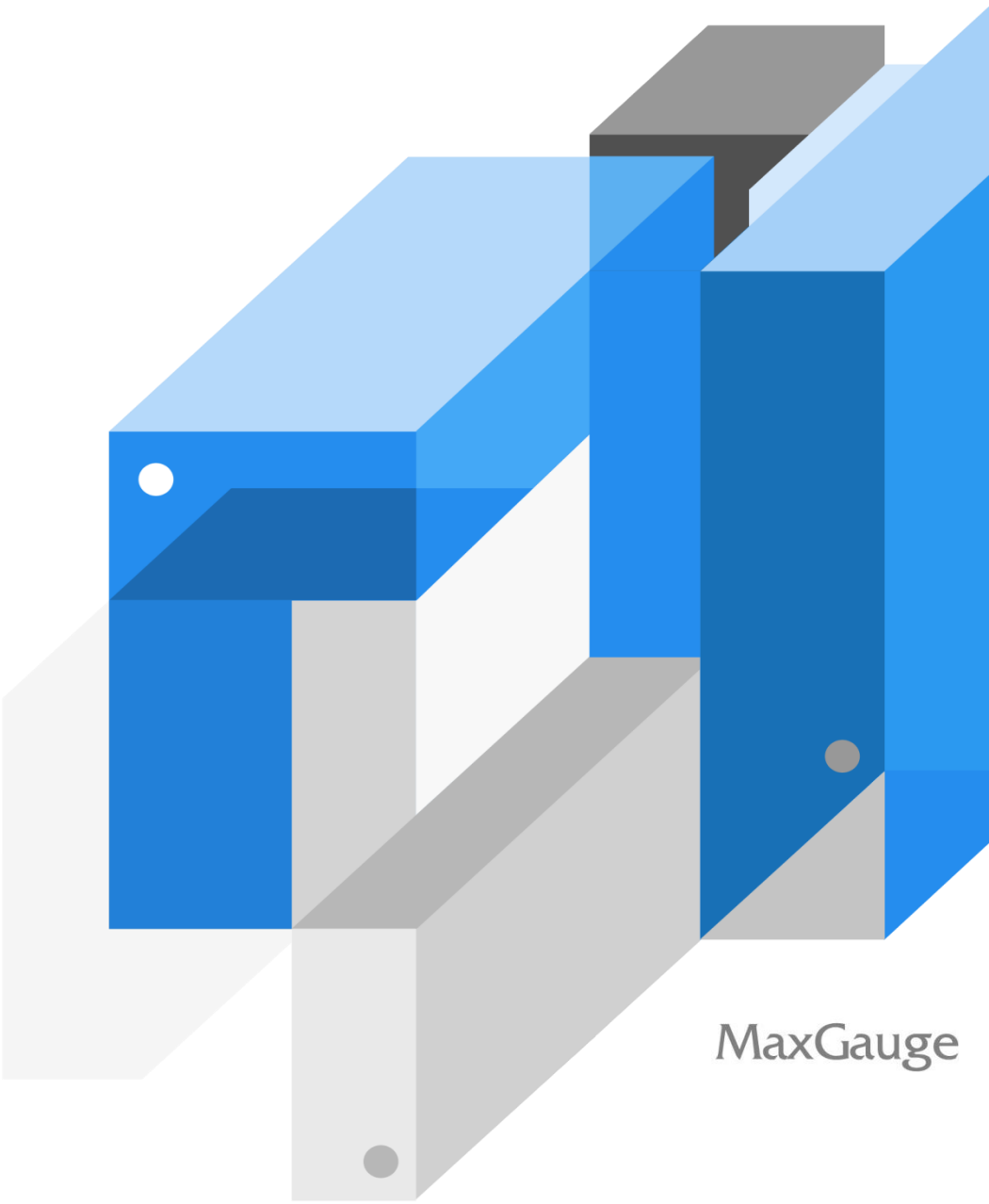
MFM 4.2 AWS

User Manual



MaxGauge

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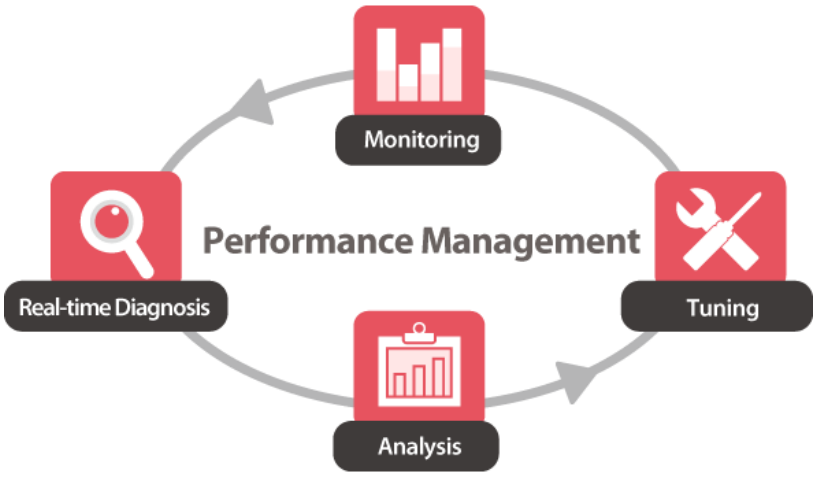
PRODUCT OVERVIEW

1. Product Overview

MaxGauge is a performance management tool designed to support an effective performance management and fault management of each component which make up the computer system including the database, system, applications, and etc. In respect of a system administrator who oversees the system operation, the three tasks shown in the diagram below are essential to performance management, and each task must be carried out on the basis of a mutual interworking relationship.



MaxGauge supports system administrators or database and application administrators who oversee the performance management and fault management, to be effective in real-time monitoring, diagnosis, and analysis. And through the real-time monitoring feature, it allows the administrator to easily and quickly identify in which database or server the error occurred or the performance degradation occurred, among the many servers and databases. In the event of an error or performance degradation, it easily identifies exactly in which part by what factors the problem occurred through a diagnosis process, ensuring a real-time resolution as much as possible, and it further investigates the root cause of the error or performance degradation through a post-analysis so that appropriate troubleshooting actions may be taken.

Main Functions

Let us explain about the functions which MaxGague provides for the performance management of MySQL database. The functions can be largely divided into real-time monitoring and diagnosis section and the post-anlysis section. We will briefly explain the functions provided by each section. MaxGauge provides functions which checks the current performance status of MySQL database, monitors if any indicator has exceeded the predefined threshold values, and tracks down the root cause of the problem in the event of performance issues. These functions allow the MySQL DBA or performance administrators to recognize potential performance issues and make corrections to prevent problems before they occur. And the activities which occur during the database operation are logged in detail and made available by date and time as a resource for identifying the problems.

Integrated Monitoring Function

By monitoring multiple MySQL databases on a single screen, you can easily identify and resolve the MySQL performance issues scattered across the system network. You can also monitor by comparing the data of several databases in respect of one particular indicator.

Session Monitoring Function

By monitoring the current wait information and SQL information of a particular session from a single screen organically, you can identify the current performance status of a session in real-time.

REPLICATION Environment Monitoring Function

You can monitor replication delays and replication fails of a database configured with replication in real-time.

Session Query Function

You can search for several sessions connected to a single database by conditions and simultaneously monitor the aggregates of sessions which meet the conditions. You can query a session’s ID, Thread ID, User Name, Host Name, and the SQL Text currently executing.

LOCK Tracing Function

You can trace the wait relationships of locks generated in MySQL database in real-time. You can analyze the the session holding the lock and the waiting sessions organically through a tree format, and monitor dead locks in real-time.

Cloudwatch metrics monitoring feature

By providing information provided in Cloudwatch such as the server's CPU Utilization, Freeable Memory, etc., it allows the user to effectively monitor even more performance metrics.

Wait Indicator Logging Function

Provides logging data of all the wait indicators generated in MySQL for the user's convenience in analysis.

Active Thread Logging Function

According to the logging cycle defined by the user, it provides the details of all the active threads executed during the period and the currently executing SQL Text.

Lock Logging Function

According to the logging cycle defined by the user, it provides the logging data through which you can analyzethe lock and the lock holders generated during the period in a tree structure.

Parameter Logging Function

Logs parameters once a day and is provided to the user.

Deadlock Logging Function

Logs InnoDB's deadlock information taken every minute.

Innodb Status Logging Function

Logs InnoDB's status information taken every 5 minutes.

Threshold Values Alarm Function

Besides the collected indicators, it also provides alarms for the monitoring server's Disk Free Size and the Replication information.

2

MAXGAUGE DAEMON & CLIENT

2. Maxgauge Daemon & Client

MaxGauge Startup and Shutdown

MaxGauge For MySQL is by default driven by the Real-time Client.

MaxGauge Real-time Client Startup

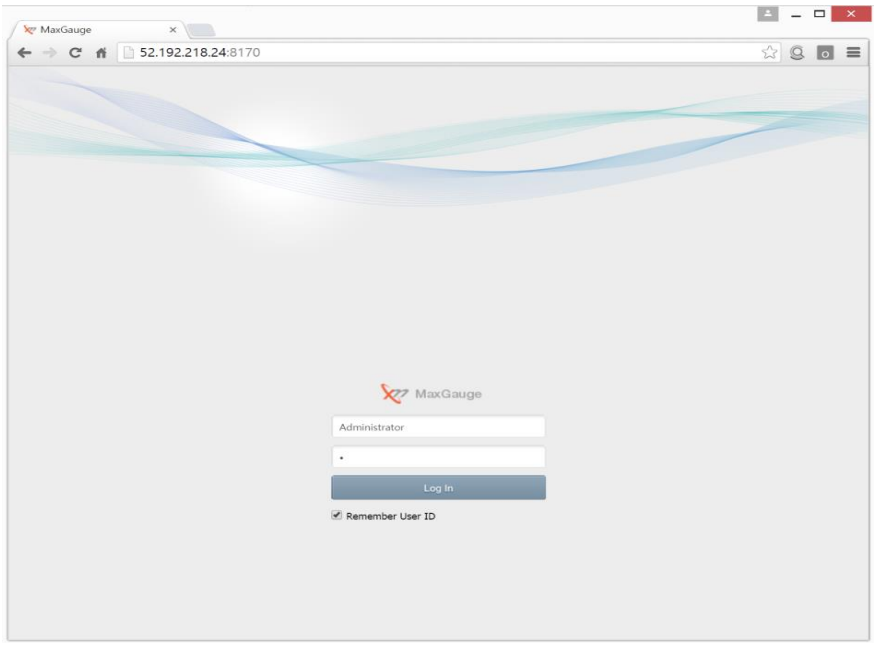
```
SHELL> ./bin/all.start.sh
```

MaxGauge Real-time Client Shutdown

```
SHELL> ./bin/all.stop .sh
```

Login

Open the Chrome browser and enter the IP's WAS Port (ex. 52.192.218.24:8170) which is currently in service.



(Default Account : Administrator / Password : 1)

Monitoring Server Registration (Admin > Server(s) > Server)

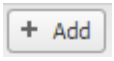
'Server' is a screen for registering and managing the connection information of the monitoring target database.

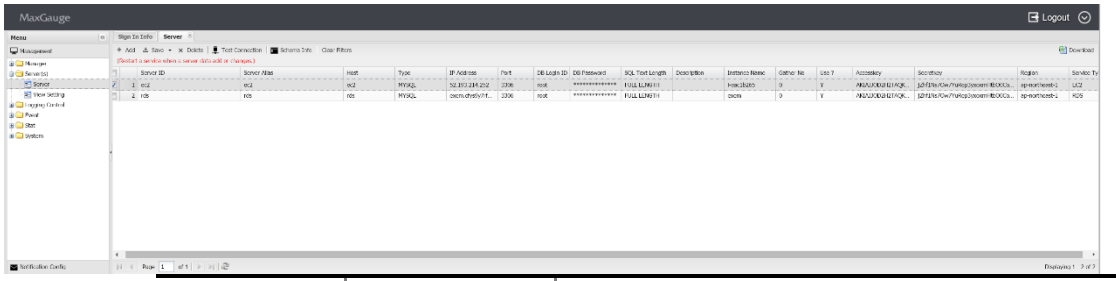
Administrator Menu Location

After login, reference the image below to go to the administrator screen.

Connection Information Registration

To register the connection information, click the 'Add' button on the 'server' screen.

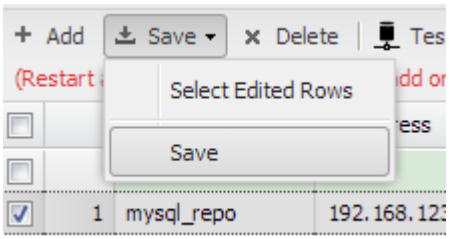
1. Click  button on the server window.
2. Input Connection information.



Item	Item	Description
MySQL Connection	Server Alias	Connection Name
	IP Address	IP address of the server in which MySQL is operating.
	Port	Port used by MySQL.
	DB Login ID	User name used to connect to MySQL.
	DB Password	Database user's password to connect to MySQL.
CloudWatch	Accesskey	Key Accesskey to access the CloudWatch

	Secretkey	Secretkey to access the CloudWatch
	Region	Location of server
	Service Type	Type of server
	Instance Name	Name of instance
	Gather No	In case of high volume logging, the process numbering for division, Default Value '0'.
	Description	Memo Input Window
	Use ?	Whether to use or not the log collection and real-time.

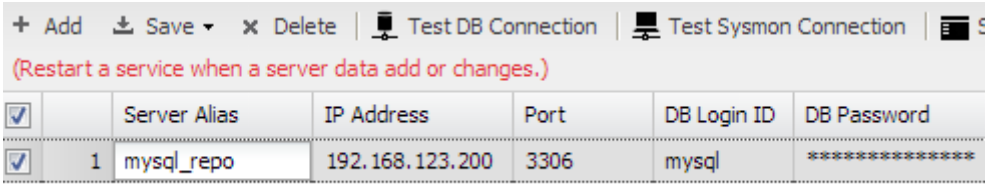
3. After checking the items entered, click the Save button to save information.



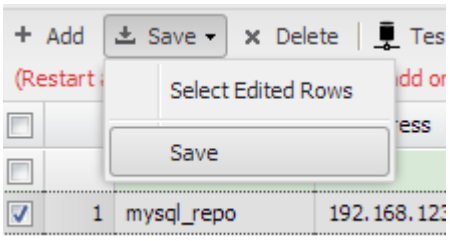
Edit Connection Information

To edit the connection information, click on the server you wish to edit on the 'Server' screen.

1. Select the connection information you wish to edit and edit the information.

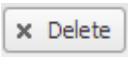


2. When finished, click Save.

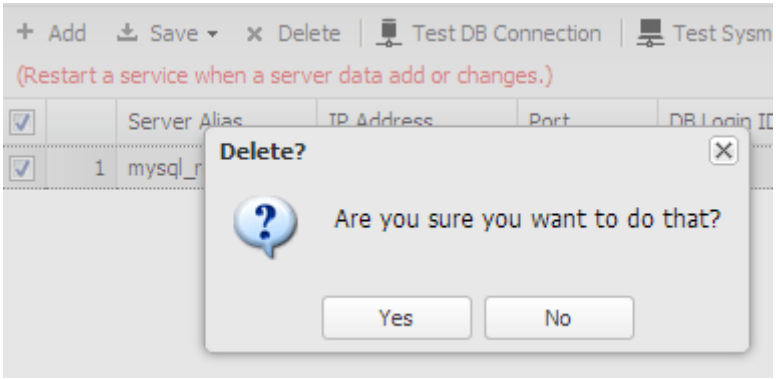


Delete Connection Information

To delete connection information, click the 'Delete' button on the 'Server' screen.

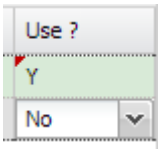
1. After checking the connection information you wish to delete, click the 

button on the Instance Manager screen.



2. Click 'Yes' button on the confirmation window.

Start Log Collection and Monitoring

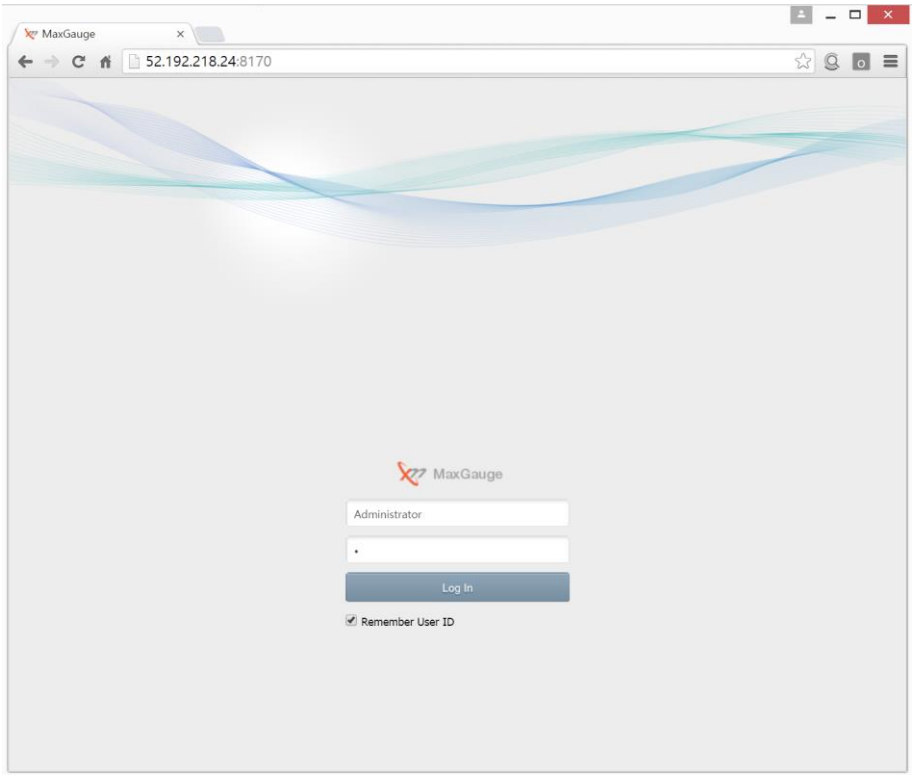
Only 'Y' from the following items 

will become active for log collection and monitoring.

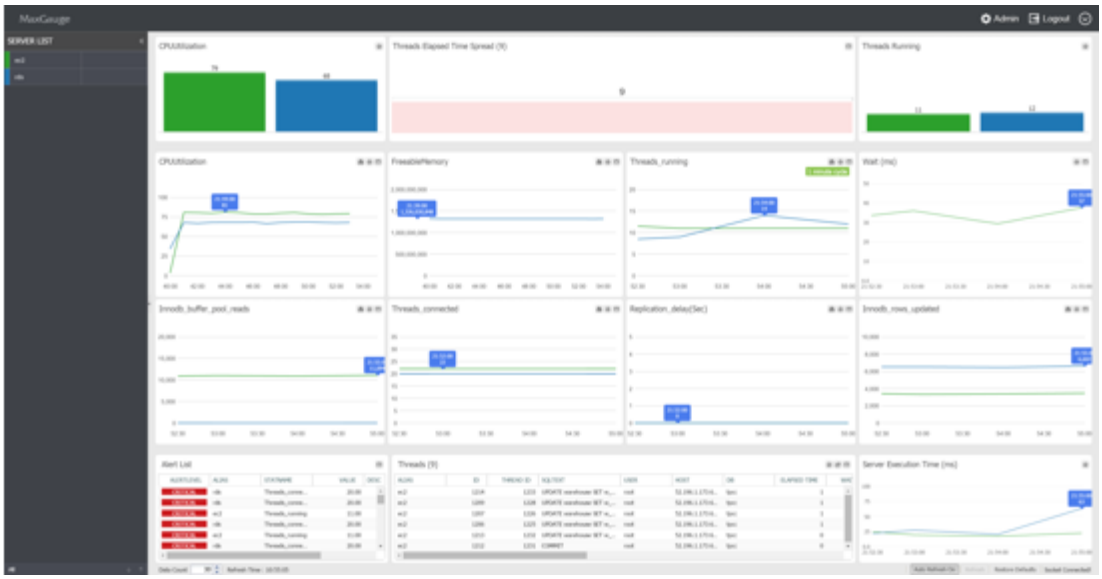
From the EXEM Maxgauge for Mysql screen, when you click Process > All STOP , START to reflect the changed server information, you can check the collected data in Real-time and Performance Analyzer.

```
SHELL> ./bin/all.start.sh
```

Open Chrome browser and enter "52.192.218.24 ".



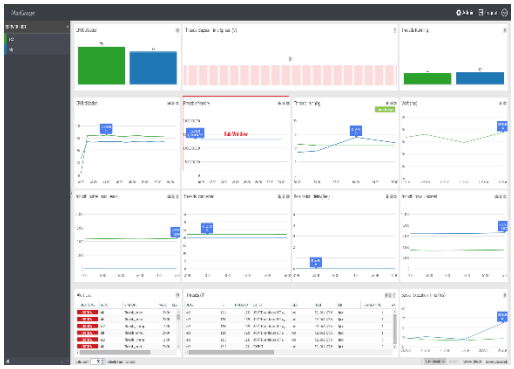
(Default Account : Administrator / Password : 1)



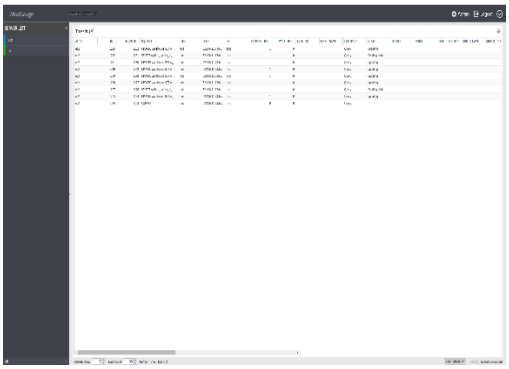
(Integrated Real-time)

Types of Real-time Views

MaxGauge For Mysql products can be categorized into two types - Real-time and Threads.



(Integrated Real-time)

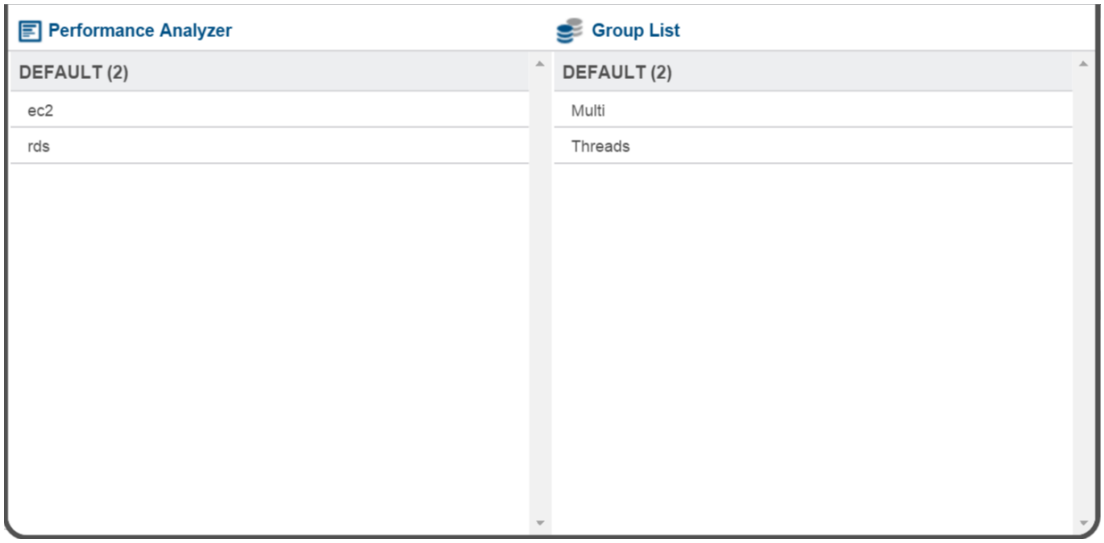


(Thred)

Product's View Shift

You can shift between products using the configuration at the top of the product as shown below.

(Integrated Real-Time) **(Shift Menu)**



(Shift Menu)

Performance Analyzer

You can easily move to the Performance Analyzer which is Maxgauge for mysql's post-analysis tool.

View Change

Changes the current group's view. It shifts to Threads.

Admin

Shifts to the ADMIN page on which you can manage users and monitoring servers.

Log Out

Ends the session to which you were logged and shifts to the login page.

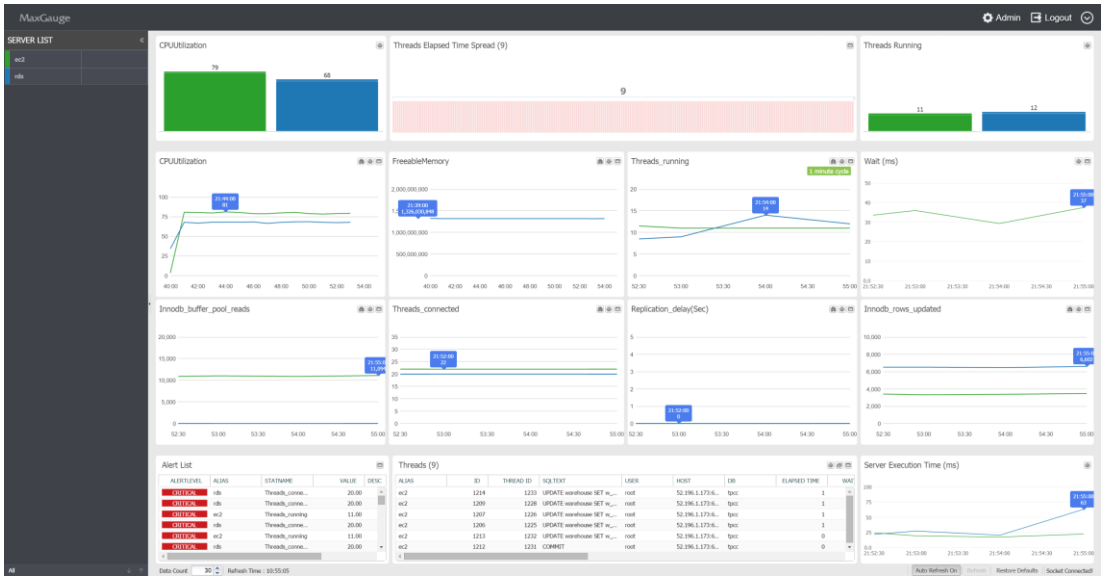
3

MaxGauge Main Features

3. MaxGauge Main Features

MaxGauge Main Screen Configuration (Multi Real-time View)

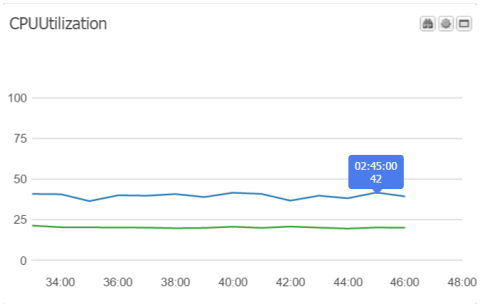
MaxGauge's main screen monitors the performance issues of multiple MySQL database simultaneously, from the system's overall perspective on a single screen, to ensure quick and effective real-time performance management of MySQL database.



MaxGauge For MySQL's DBMS performance information collects data using the query method, and you can immediately start monitoring after installation without the database' downtime. Also, through the integrated monitoring of multiple databases on a single screen, in the case of performance degradation and faillures in the database, you can quicklly and effectively trace the the session and the SQL identified as the root cause of the problem.

To Change the Monitoring Indicator Items

1. The monitoring indicators displayed on MaxGauge's Multi Monitor Area may be changed according to user's preference. To change the items, click on the button on the right.

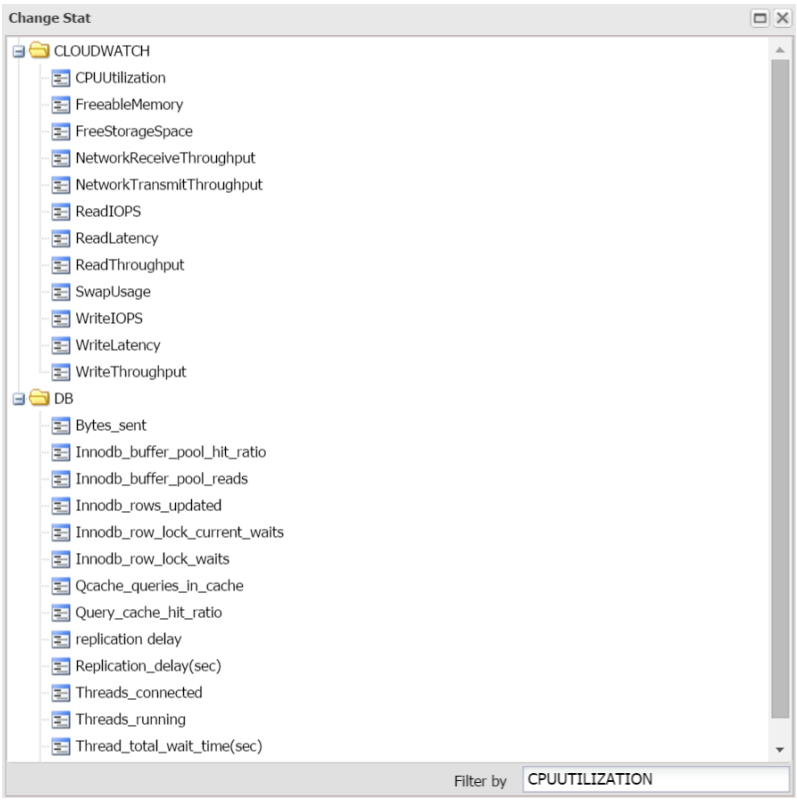


View the 24Hour trends of the current day.

Change the viewing chart format.

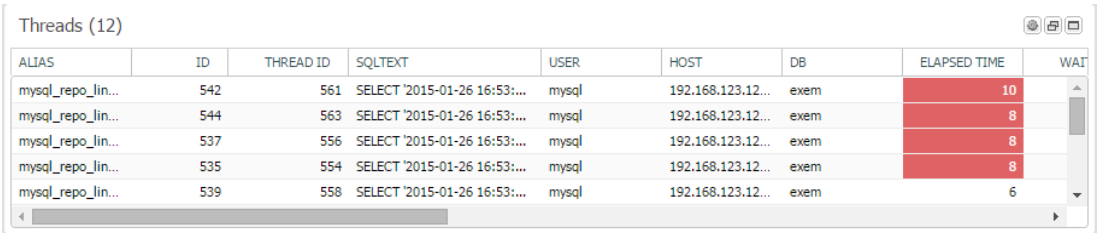
View more details in a pop-up.

2. Outputs a list of items you can change. Click the indicator you wish to change. MAXGAUGE FOR MYSQL transmits only the pre-selected indicators to the Real-Time View. If you do not need to change the indicators, go to ADMIN > Stat > Stat Info and change to Yes for Use, and you will be able to use the corresponding indicators on the Real-Time View.



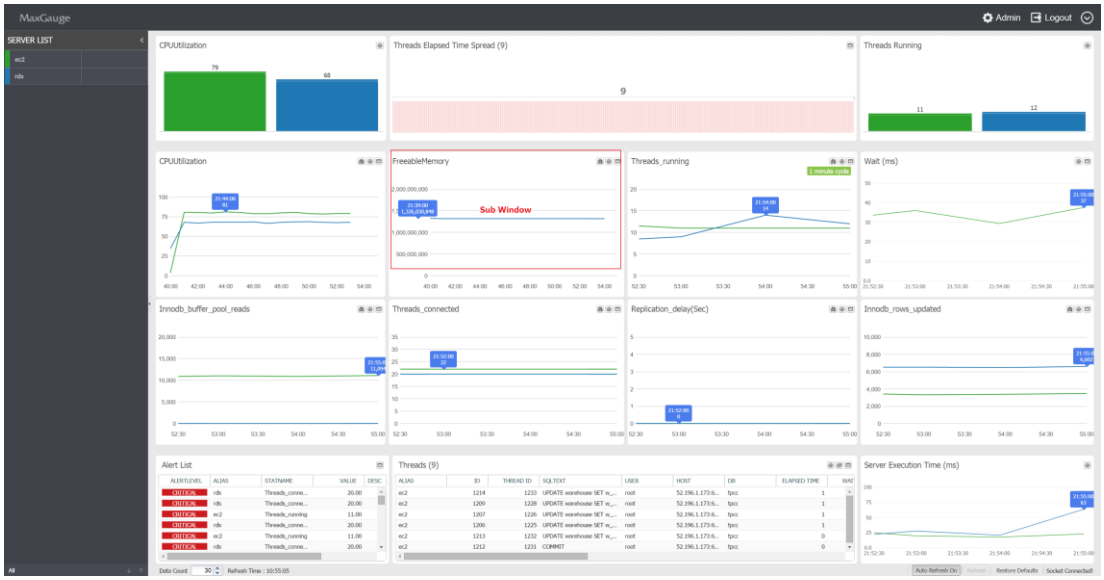
To View Threads

3. In the Threads area at the bottom, you will find a list of Threads that are currently active.



Multi Monitor Area

The 'Multi Monitor Area' of MaxGauge's main screen is composed of 10 sub-windows, and the user can choose various information provided by MaxGauge such as MySQL's performance indicator, CPU indicator, and the ratio indicator from each sub-window.



Monitoring Target Main Performance Indicators

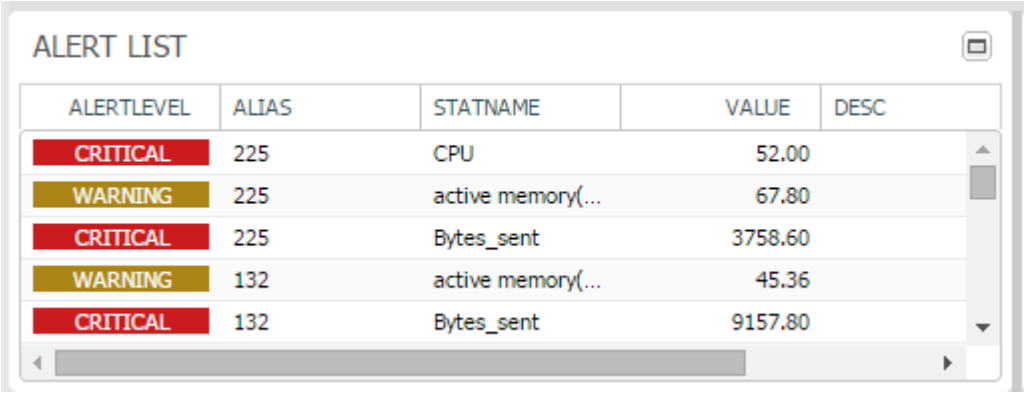
- CPUUtilization
- FreeableMemory
- Threads running
- Innodb buffer pool reads

- Threads connected
- Innodb rows updated

The Multi Monitor Areadisplays 6 performance indicators by default. The graph and the values displayed on the screen are defined as the average value per second of the difference value of the time (t) and the previous time (t-1) divided by the elapsed time (sec) in the case of performance indicators logging values in cumulative format; and the current values in the case of performance indicators logging current values.

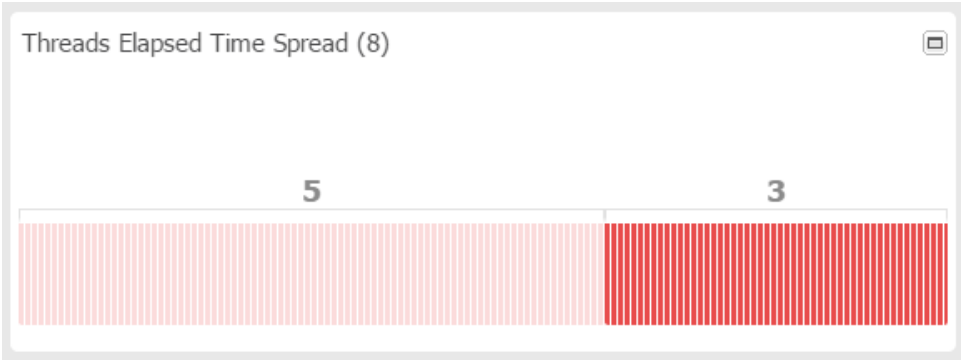
Alert Area

In the Alert Area, you can check the alarm history of the instance currently being monitored.



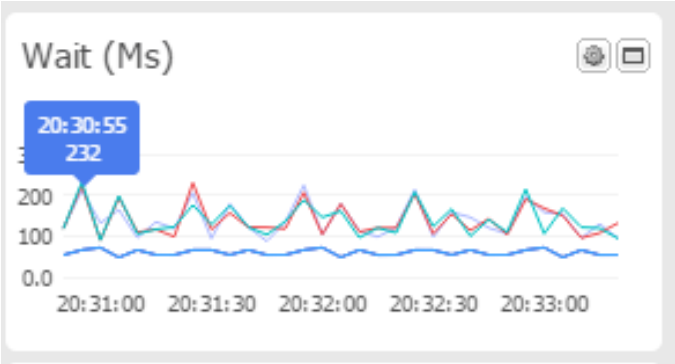
Thread Elapsed Time Spread Area

Checks the individual elapsed time of each active thread and indicates the thread count by each elapsed time segment.



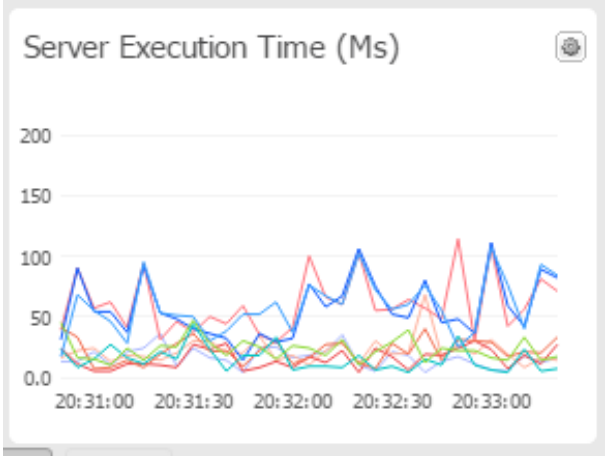
WAIT (ms) Area

Displays the average wait time of the monitoring target database.



SERVER EXECUTION TIME (ms) Area

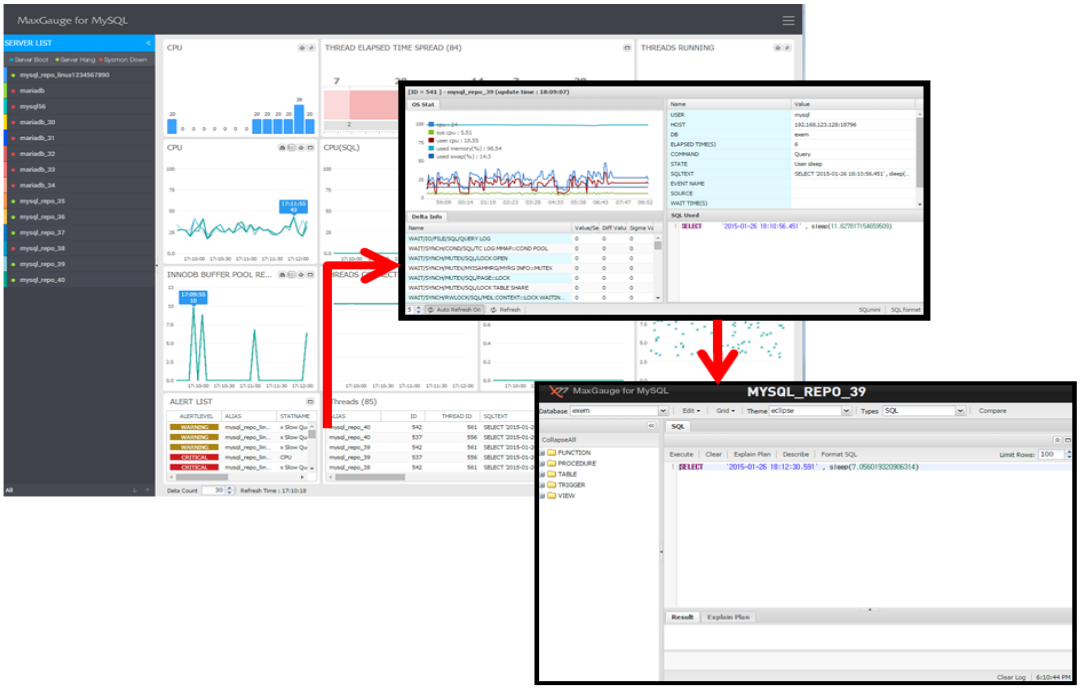
The Server Execution Time is an indicator which checks the elapsed time by continuously executing simple quieries as to know whether normal query execution is possible in the monitoring server.



Session Tracking by Top Down Method

Tracking Top Sessions

Some of MaxGauge's greatest advantages are the Top-Down approach method which allows you to track down the root cause of the problem from the main screen to the 'Session Detail', SQL Level', and the 'Execution Plan Level', and the ability to collect all the necessary performance information in a short period of time to investigate the root cause of the problem.



(Thread -> Session Detail -> Sql Mini)

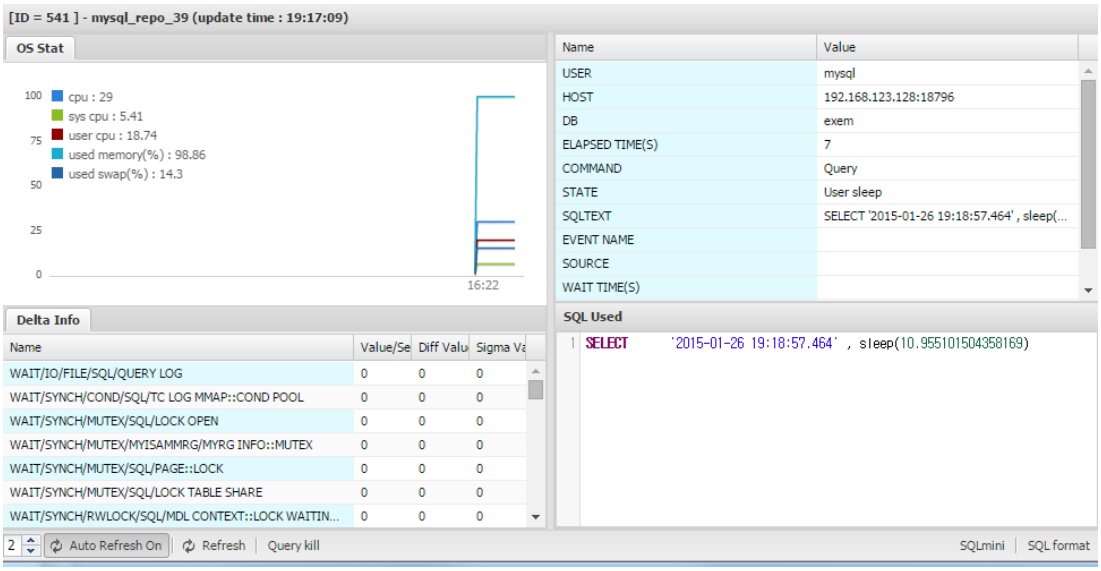
Thread Detail

Thread Detail Overview

The THREAD Detail can provide detailed information about a particular thread in the database system and has the following functions.

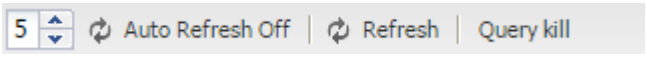
- Wait indicator’s content and activity amount from the time of connection to an individual thread until now.
- Wait indicator’s content and activity amount between the current time and the previous time.
- Thread default information and the SQL text currently executing.
- Query Kill function

The following is the Tread Detail Initial Screen.



Thread Detail Description by Each Area

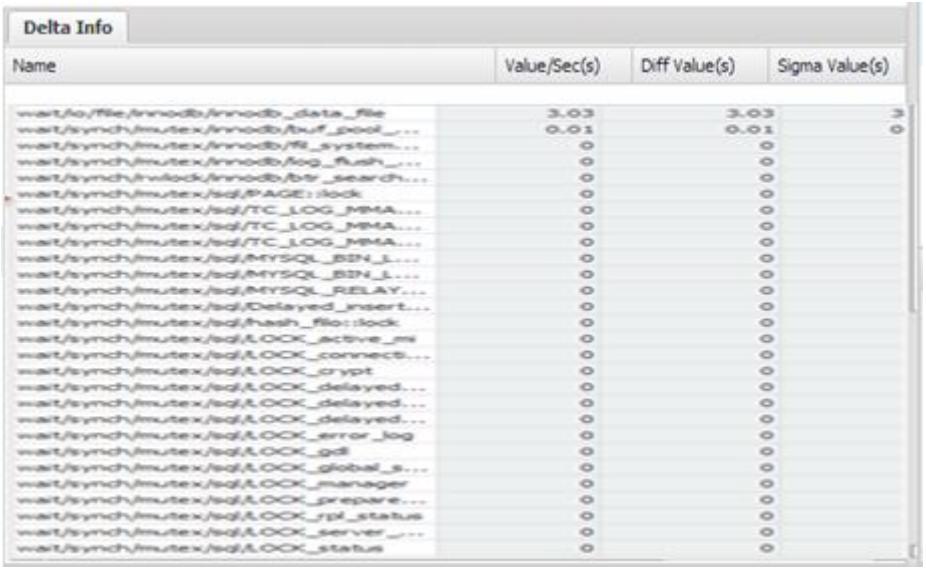
Thread Control Area



You can manually Refresh or Query Kill the threads actually operating.

Detail Info Area

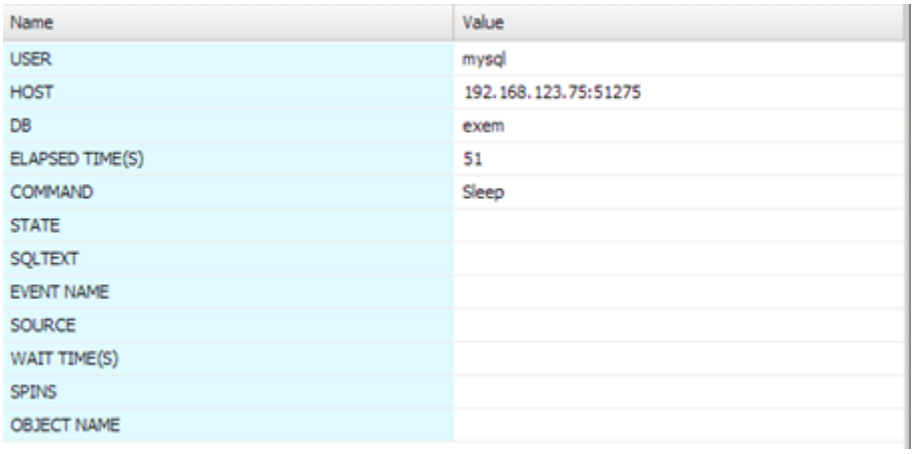
Displays the cumulative value (Sigma) and the Value/Se of the wait information about the corresponding session which has been waiting until the present.



Item	Description
Name	MySQL Wait Indicator Name
Value/Sec(s)	Average value per second of the value generated in between times.
Diff Value(s)	The difference value in between times.
Sigma Value(s)	The cumulative value until the present time.

Session Basic Information and Current Wait Area

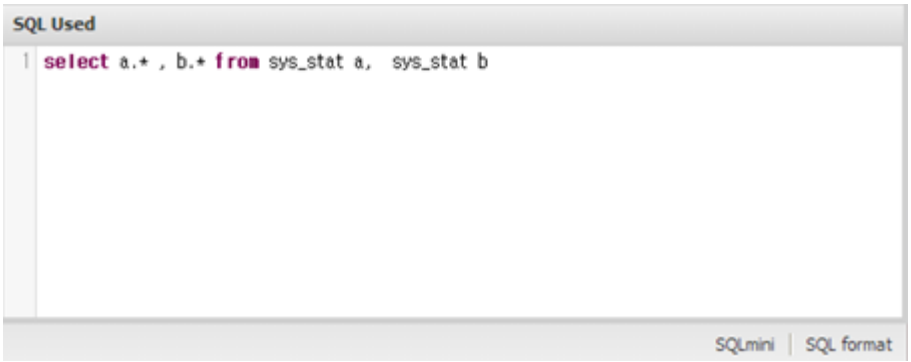
Displyas the User Name, Host Name, DB Name, Elapsed Time Information and the Current Wait Information.



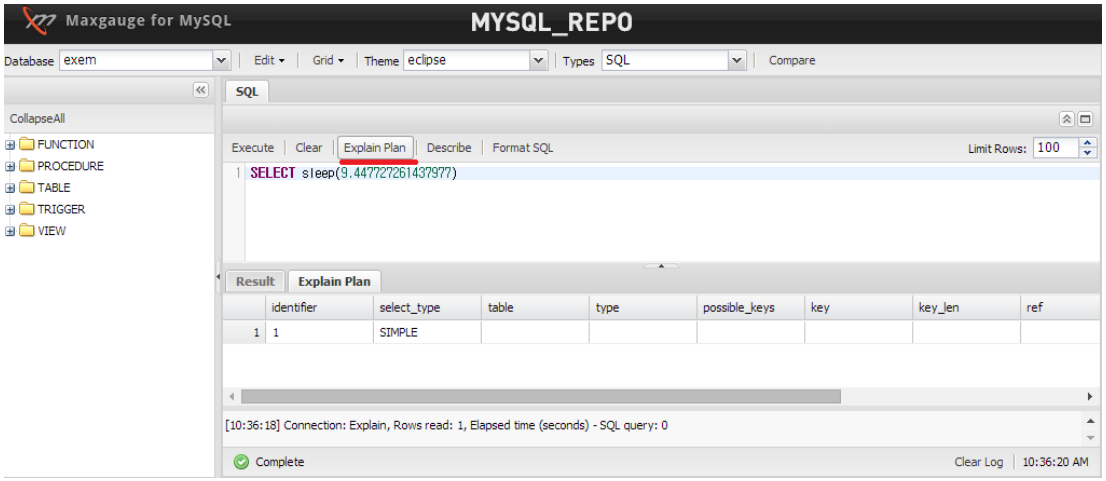
Name	Value
USER	mysql
HOST	192.168.123.75:51275
DB	exem
ELAPSED TIME(S)	51
COMMAND	Sleep
STATE	
SQLTEXT	
EVENT NAME	
SOURCE	
WAIT TIME(S)	
SPINS	
OBJECT NAME	

SQL Used Area

The is the area where the currently executing used SQL text is displayed.



To see the execution plan of the SQL Text, click on the SQLmini button located on the right bottom.



If the SQL text is not readable due to long length, use the SQL formatting function. Click the Format SQL button at the bottom of the window.

Thread Detail Drive Method

To drive the Thread Detail, use the following methods.

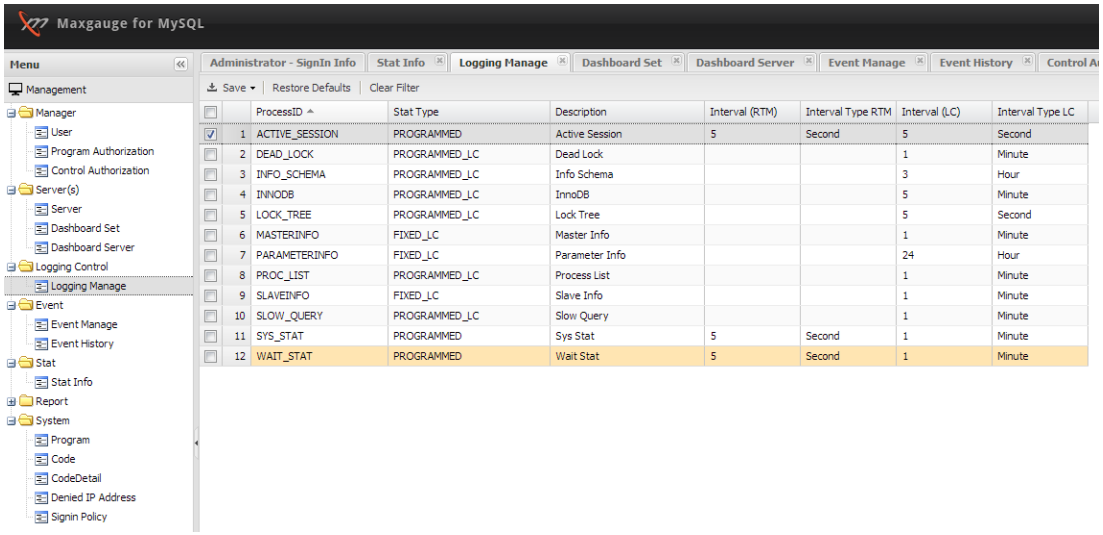
- From MaxGauge's main screen' Thread Tab, double-click on the session.
- From MaxGauge's Threads Manager screen, double-click on the session.
- From MaxGauge's Lock Tree screen, double-click on the Thread.

Refresh Function

For most of the windows monitoring the performance information including MaxGauge's main screen, once the initial installation is complete, the Auto Refresh Time is set for every 5 seconds, and the user may adjust the Refresh time as necessary. The Auto Refresh Time can also be adjusted by the user as necessary, and the interval should be a minimum 5 seconds.

Collection Cycle Settings

1. Admin > Logging Control > Logging Manager.



(Full View Shot)

Description	Interval (RTM)	Interval Type RTM	Interval (LC)	Interval Type LC
Active Session	5	Second	5	Second
Dead Lock			1	Minute
Info Schema			3	Hour
InnoDB			5	Minute
Lock Tree			5	Second
Master Info			1	Minute
Parameter Info			24	Hour
Process List			1	Minute
Slave Info			1	Minute
Slow Query			1	Minute
Sys Stat	5	Second	1	Minute
Wait Stat	5	Second	1	Minute

(Configuration)

You can configure the Real-Time and Logging collection cycle. Once the changes have been made, you must restart the product (all.stop.sh -> all.start.sh).

4

Main Functions

4. Main Functions

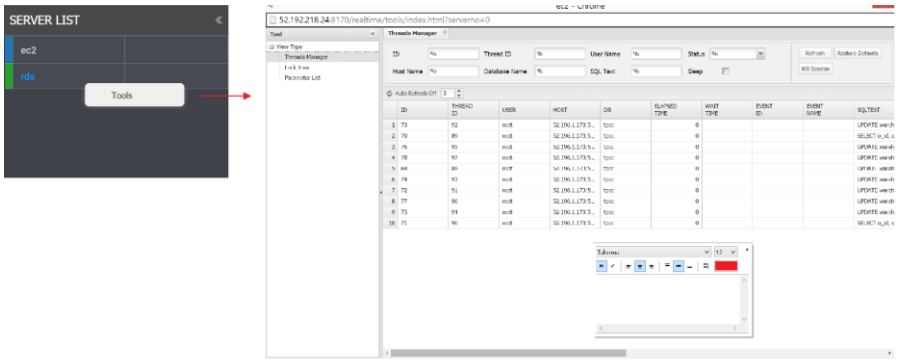
Threads Monitor

THREADS Manager is intended for monitoring the sessions that are connected to the database and currently running, and helps to find the sessions you want to look up through several conditions.

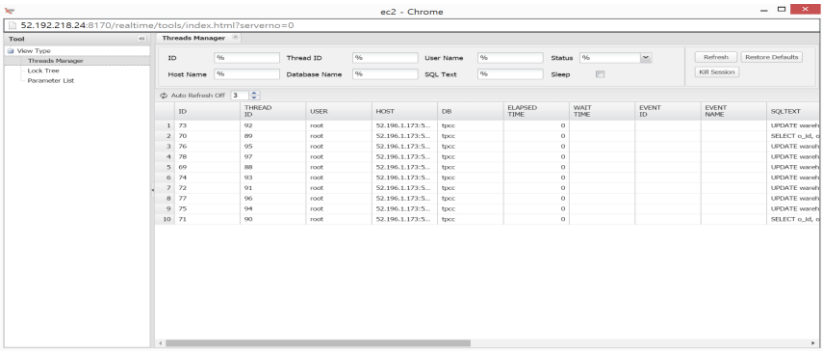
Drive Threads Manager

Go to Tool of the Server you wish to monitor.

1. On the Server List on the left, mouse right-click and go to Tool -> Threads Manager.



2. When the corresponding database' Threads Manager window opens, it will show the information of all the sessions currently connected to the database.



Search Thread

The user can pull up specific threads from the total list by entering certain values in the conditions input box located at the bottom of the Threads Manager.

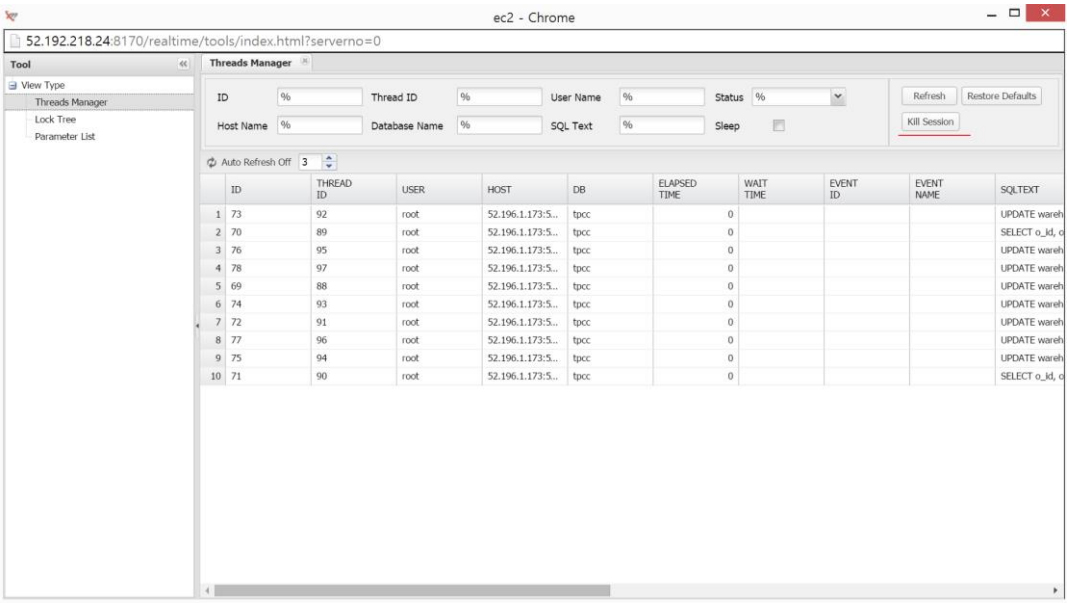
The following provides descriptions of items used in search condtions.

Item	Description
ID	Search with the ID.
Thread ID	Search with the Tread ID.
User Name	Search with the User Name
Host Name	Search with the Host Name.
DB Name	Search with the Database Name.
SQL Text	Search with the SQL Text.
Elapsed Time	Search based on the Elapsed Time (Sec).
Sleep	Displays threads that are in sleep mode.

Kill in Threads Manager Results Window

The sessions displayed on the Threads Manager Results window may be selected by using the direction arrow keys, and the session is highlighted when selected.

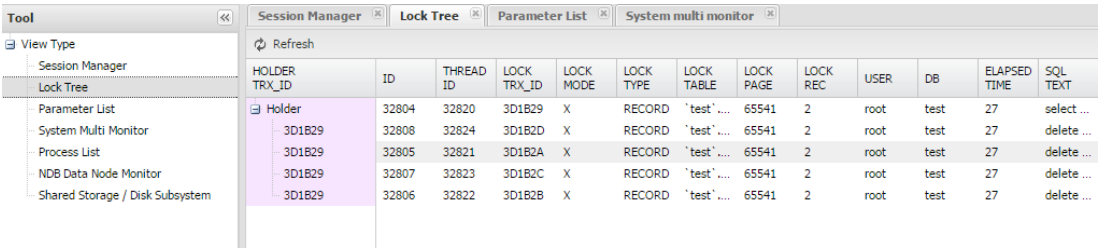
When in selected mode, the kill function which forces the session to end may be executed and hence, it must be handled with caution.



Lock Session Trace (Lock Tree)

The Lock Tree screen displays the information about sessions waiting on the Lock and the sessions which caused the lock, among all the sessions currently connected to the database system.

1. Tools > Select Lock Tree
2. Lock Tree window of the corresponding database.



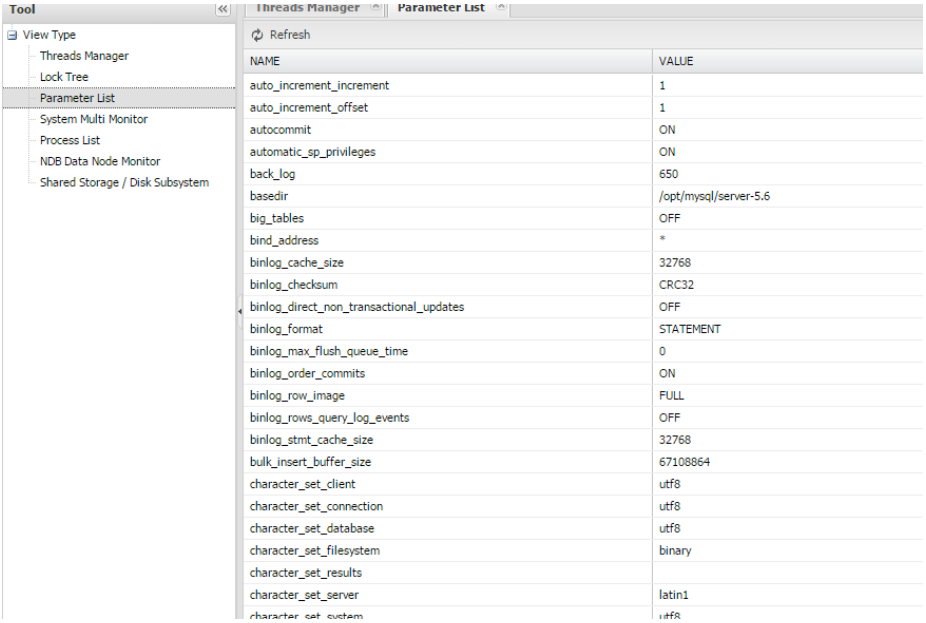
The Lock Tree screen displays the selected database' lock holder and the requests relationship in a layer structure, which allows you to quickly distinguish the lock relationships among the sessions.

Parameter

You can check the current database' parameter values.

1. Tools > Select Parameter

2. The corresponding database' Parameter screen

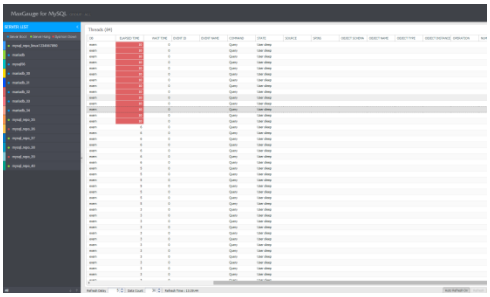


5

INTENSIVE MONITORING WINDOW

5. Intensive Monitoring Window (Threads)

You can do an intensive monitoring of THREADS and SLOW QUERIES from the Real-Time Monitoring window.

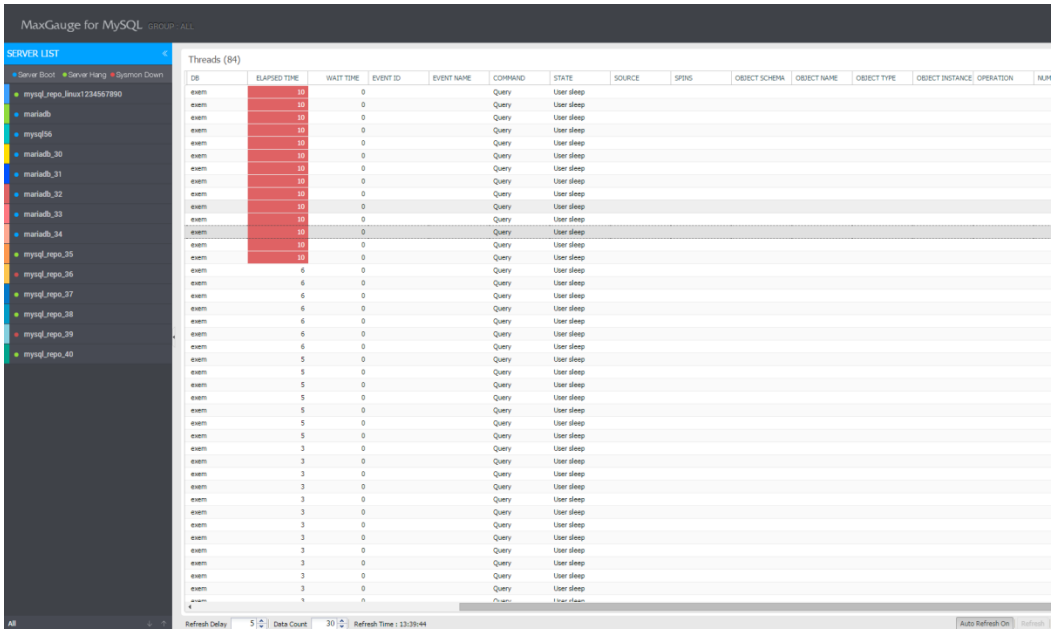


READS Window)

Threads

Threads Window

The Server List of the corresponding group will be on the left, and the THREADS within the GROUP will be output on the right.



(THREAD Window)

Advanced Filter by ELAPSED TIME

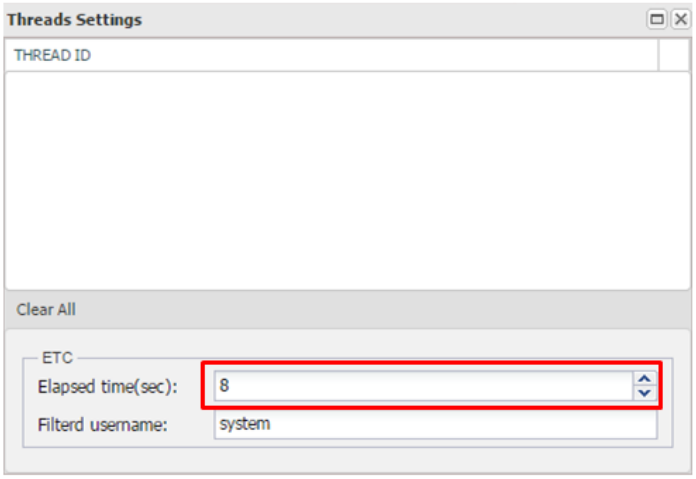
Do an advanced filter of threads by ELAPSED TIME >= ? .

Threads (109)

ALIAS	ID	THREAD ID	SQLTEXT	USER	HOST	DB	ELAPSED TIME
mysql_repo_40	716	734	SELECT '2015-01-29 14:02:...	mysql	192.168.123.12...	exem	13
mysql_repo_39	716	734	SELECT '2015-01-29 14:02:...	mysql	192.168.123.12...	exem	13
mysql_repo_38	716	734	SELECT '2015-01-29 14:02:...	mysql	192.168.123.12...	exem	13

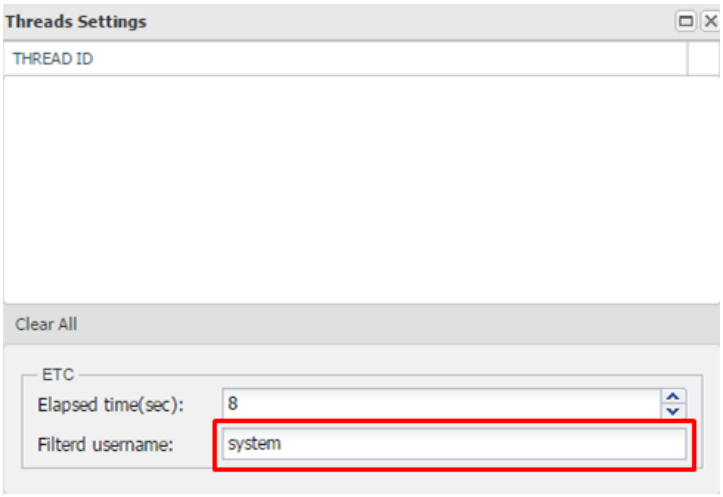
Configure Advanced Filter by ELAPSED TIME

1. Click the button.
2. Enter the values in the Elapsed time(sec) input box.
3. Click button to apply.

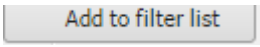


Filtering by Specific Users From the Threads List

1. Click on the button.
2. Enter the values in the Filter by Username input box.
3. Click on the button to apply.

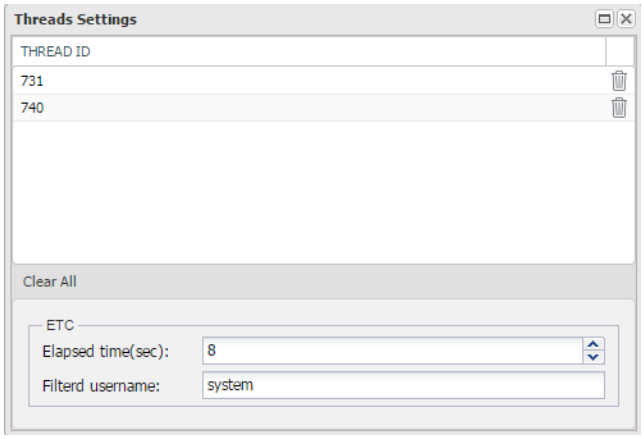


Filtering by Specific THREAD ID From the THREADS List

From the Threads List, right-click and select the 

, and it will immediately show the filtered results. To cancel the filter, click the  button and click the  button of the corresponding Thread ID.

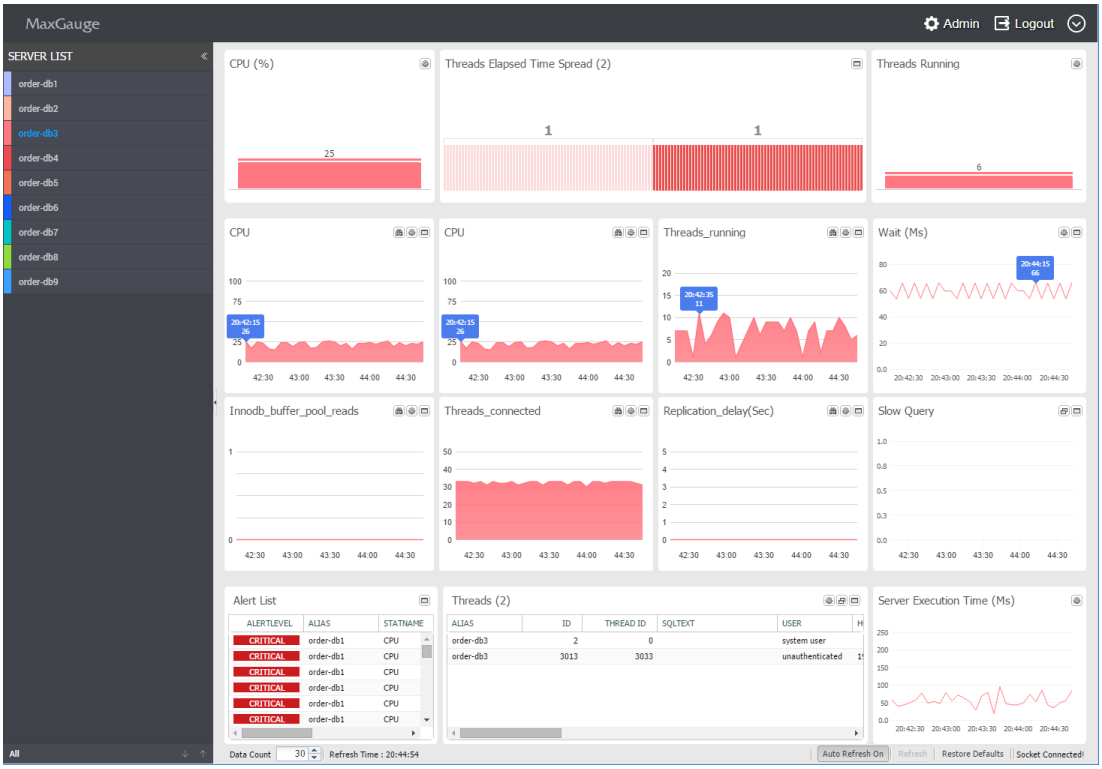
.



Single Server View

From the Server List on the left, click on the servers you wish to see. To undo, click on 

button to clear the selections.



6

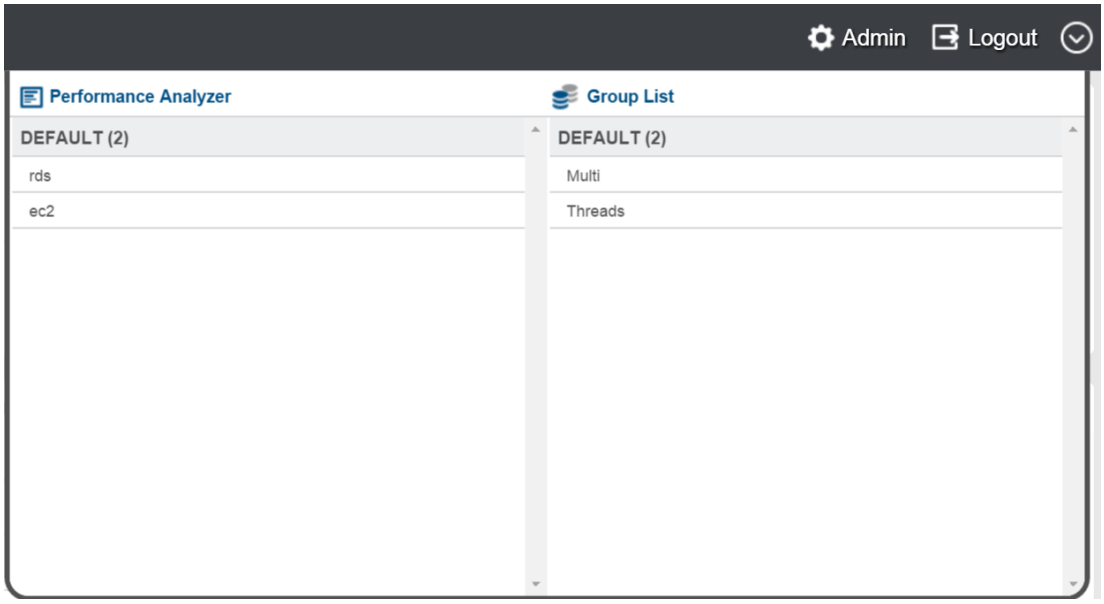
MANAGE FUNCTIONS

6. Manage Functions

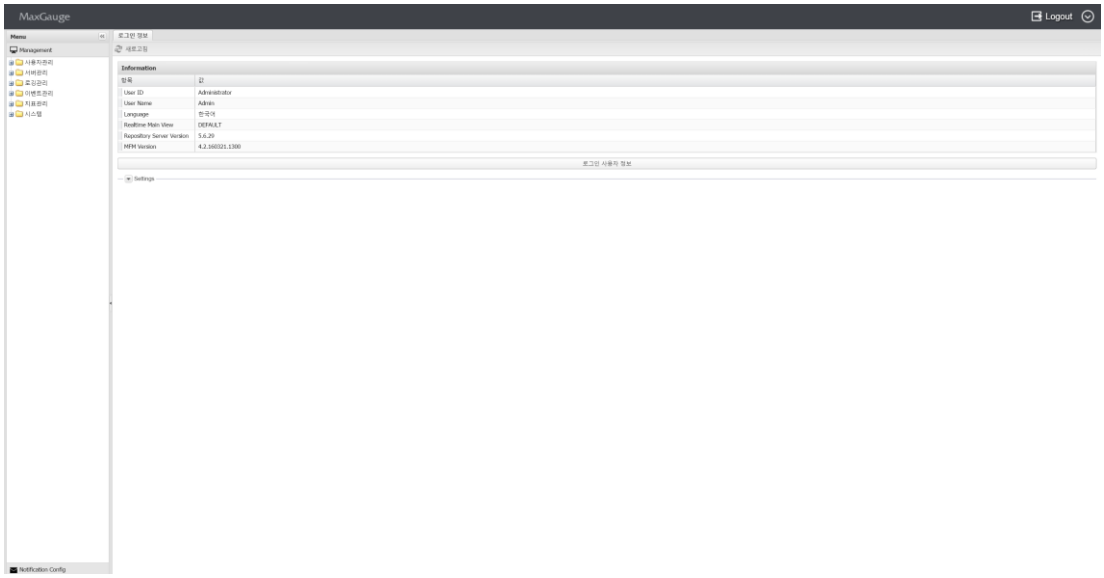
Configures detailed items in Maxgauge product. For some of the features, after configuration, you must restart the Gather to reflect changes.

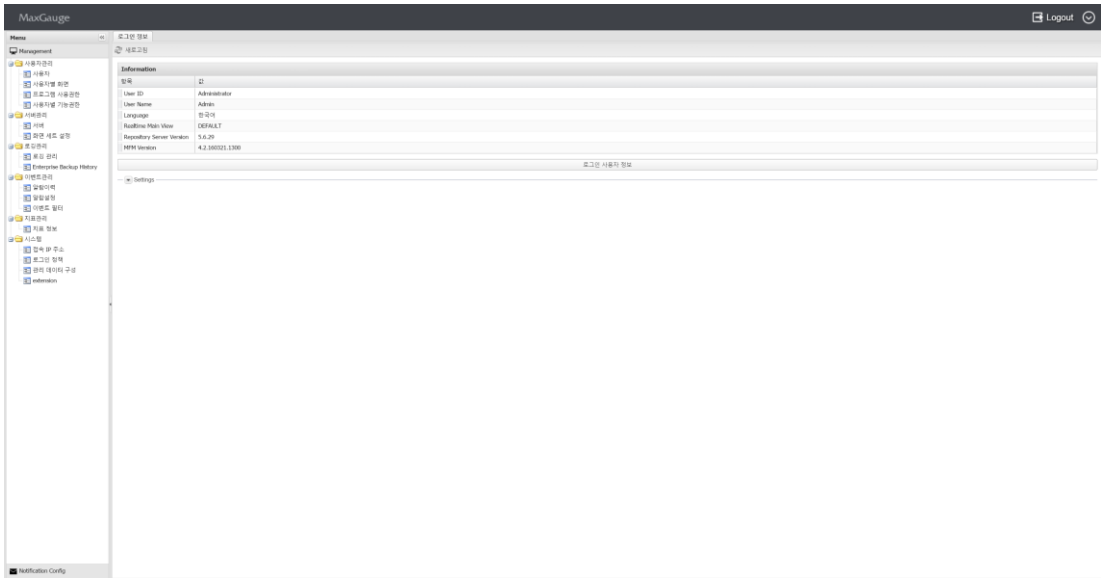
Admin Access

1. Click on Admin.



Admin Screen





Manager Menu

Menu	Description
Manage Server(s)	Monitoring target servers settings ● Add, edit, or delete the monitoring target server. ● Add, edit, or delete views (service group).
Manager **(Manage Users)**	Maxgauge Client User Setting ● Add, edit, or delete Maxguage Client users. ● Add, edit, or delete multiple screens (service group)

	● Add, edit, or delete the Admin Menu access rights for each user.
Logging Control	Logging Settings ● Sets the monitoring's Refresh cycle, and the logging collection cycle. ● Check the period of the data saving & Capacity for data collection ● Sets the Backup cycle
Manage Events	Sets the alarms of the stat and disc ● Sets the alarms of the stat and disc ● History of stats alarms ● Sets the Event filter
Stat	Stat setting ● Add, edit, or delete stat ● Sets the stat type
System	System settings

Notification Config

Menu	Description
Notification Settings	SMS Notification Settings ● Add, edit, or delete indicators for which notifications sending permission will be given for each group ● Set up sending rules. ● Set up the text format.
Notification Report	● View the sent history.

7

GATHER

7. Gather
(MaxGauge Logging ontroller)

Gather Overview

The limitation of real-time performance management is in that the problem diagnosis and resolution must be done in real-time. However, a DBA cannot work 24 hours around the clock at the workstation for real-time monitoring and diagnosis. And in the event performance issues arise, if we try to resolve the issues by rebooting the database, cancelling sessions by force, or program's automatic shutdown, the source of data through which the root cause of the problem may be identified will be destroyed, making it impossible to further investigate the problem through a post-analysis.

MaxGauge logs various performance information collected from MySQL in a safe repository to support post-analysis of the performance issues, and it compensates for the timing limitation of real-time monitoring through log analysis.

Especially, it replays the past execution situations as if in real-time, and by rewinding back to a specific time in the past, the analyzing function of the sessions and SQL executed at the corresponding time can be a helpful resource in identifying the root cause of the problem and finding the solutions. MaxGauge also provides trends analysis function for a log accumulated over a period of several of days.

MaxGauge collects and logs MySQL 's performance information, session information, and lock information by using the queries. The DBA can set up the logging cycle and logging data through the Logging Controller program, and do an analysis with the Performance Analyzer program.

You can check the performance degradation and database error phenomenon generated in the system, after it has occurred. Since you can check the performance indicators trends of data for specific time period by using the Performance Analyzer, you can accurately and conveniently pinpoint the time at which overload occurred, and by migrating to that specific time, you can identify the sessions and SQL executed at that time.

Environment Configuration

MaxGauge saves the performance information to the Repository.

Repository Configuration

Repository Configuration is used to save performance information in MySQL DB.

The configuration file location is conf/properties .

1. dbpool.properties

   Configure the information for Gather to access the Repository DB.

Configuration KEY	DEFAULT VALUE	Description
manager.logging	true	Logging Options
manager.pool_type	bonecp	DB Pool Type
mydb.driver	com.mysql.jdbc.Driver	Connect Driver
mydb.url	jdbc:mysql://<HOST NAME>:3306/<DB_NAME>	Repository Access Location
mydb.user		REPOSITORY User
mydb.password		REPOSITORY Password
mydb.connectTimeout	3	Connection Delay Wait Time
mydb.readTimeout	30	Read Time Duration
mydb.loginTimeout	1	Login Time Duration
mydb.testQuery	SELECT 1	Query for remaining connected
mydb.minConnectionsPerPartition	3	DB Pooling Minimum
mydb.maxConnectionsPerPartition	30	DB Pooling Maximum
dynamic.instance.connectTimeout	3	Connection Delay Wait

		Time
dynamic.instance.readTimeout	30	Read Time Duration
dynamic.instance.loginTimeout	1	Login Time Duration
dynamic.instance.testQuery	SELECT 1	Query for remaining connected
dynamic.instance.minConnections PerPartition	3	DB Pooling Minimum
dynamic.instance.maxConnection sPerPartition	30	DB Pooling Maximum

2. system.properties

   Configure the Port the WEB CLIENT will connect to and other client related settings.

Configuration KEY	**DEFAULT VALUE**	**Description**
socket.ip	localhost	Do Not Change
socket.port	8170	PORT for WEB CLIENT
socket.context	/ws	Fixed Value for internal operation
websocket.max_message_size	524288	Maximum size per transmission through the web socket.
websocket.compress	false	Compress web socket data
websocket.sqltext.len	30	Configures the length of SQL Text which will be shown on the THREADS LIST.

3. daemon.properties

   Configure Gather details. In general situations, no changes are necessary.

4. version.properties

   Contains the product version information. You can also check product version information from Admin’s Information area.

Gather Start and Stop

Once configuration is complete, execute Gather with all.start.sh.

```
SHELL > ./bin/all.start.sh
```

You can stop Gather with ALL.STOP.sh.

```
SHELL > ./bin/all.stop.sh
```

Dashboard Support Function

You can connect to data in MAXGAUGE for MySQL and other house products from EXEM DASHBOARD.

There is no separate environment configuration in this product, but since a linking job is required on EXEM Dashboard, seek technical support for assistance in set up.

8

MaxGauge Performance Analyzer

8. MaxGauge Performance Analyzer

Performance Analyzer Overview

The Performance Analyzer replays the performance indicators, Active Sessions, SQL Text and CPU indicator, and Top Processes saved to the repository by gather exactly the same as in real-time to analyze the performance and to identify the root cause of the problem in MySQL database.

Performance Analyzer is generally used most frequently for the following situations.

- To analyze performance issues throughout the overall system
- To analyze Peak Times of specific dates, problem sessions, and to trace SQLs.
- To analyze system resource usage type and trends analysis

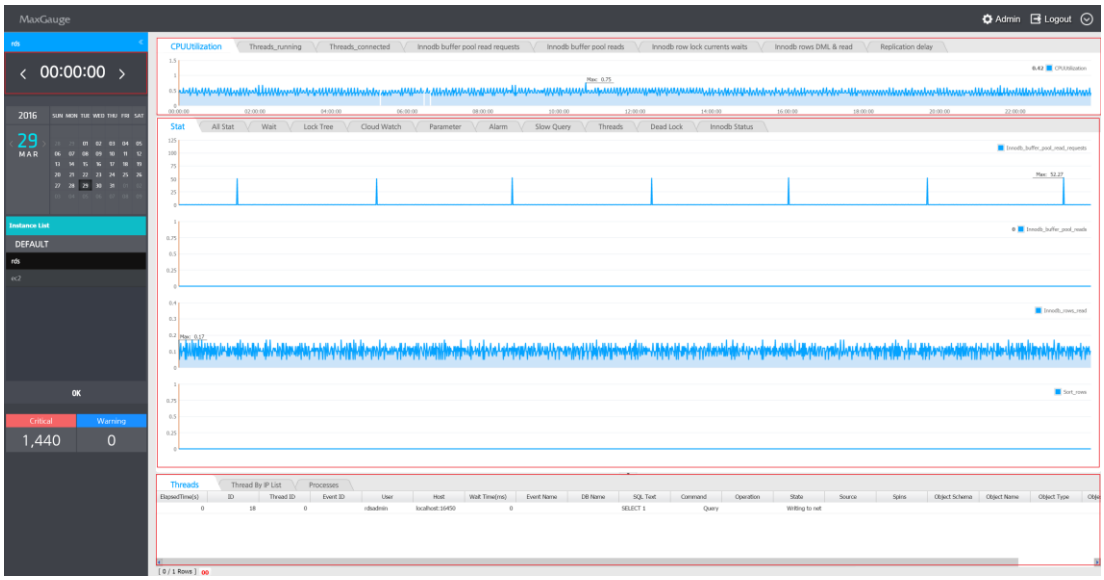
Performance Analyzer Home Screen

Select Log

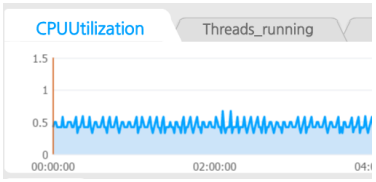
Repository is used as the supporting logging type for Maxgauge For MySQL. For the corresponding log, innodb engine and partitions are used and it is a database creating structure.

Performance Analyzer Screen Overview

The Performance Analyzer displays MySQL database' daily execution status. All indicators are displayed in a 24 hour trends graph, and you can easily identify the Peak Time and navigate to the time you wish to analyze with just a mouse click. MySQL performance indicator, Session information, SQL Text and O/S process information are organically connected which allows you to accurately analyze the Peak Times and the times at which errors occurred.

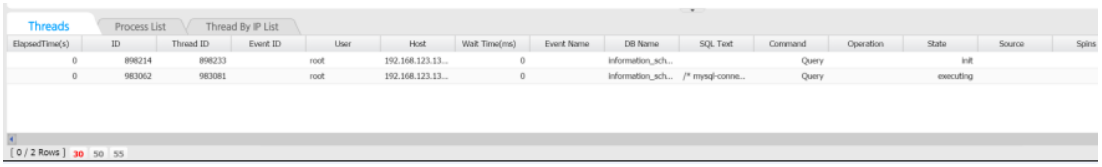


Location	Item	Description
	Searching Time	Provides current time and the target time
	Thread Information	Check Active Sessions and O/S Process of the selected time

	Main Indicators Area	Displays the main performance indicators graph. The user can change the indicator for the graph in indicator details area, however, the user cannot change the indicators for the graph in the main indicators area.
	Indicator Details Area	The details window consists of several tabs for each item such as performance indicators, wait indicators and others. For the description of each item, reference the corresponding section below.

Thread and Process List Window

By looking at the trends of performance indicators displayed on the screen, you can know the type of resource usage during the collection period and the peak time of database system usage, and from the Session & Process window, since you can sort the values by clicking on the column header of each indicator, you can easily identify which sessions have used up the most resources. In general, excessive usage of resource calls for special attention and you can check the SQL text of such sessions to take appropriate actions to resolve the problem.



Main Indicators Area

The Main Indicators Area displays O/S CPU , Active Sessions and other important performance indicators provided by MySQL.

Item	Description
CPUUtilization	OS CPU Usage Rate(%)
Threads Running	Active Sessions

Threads Connected	Total Sessions
Inndb buffer pool read requests	Number of blocks read from the Buffer Pool (memory I/O)
Innodb buffer pool reads	Number of blocks read from the Disk (Disk I/O)
Innodb row lock currents waits	Number of sessions waiting on the Lock
Innodb rows DML & Read	Innodb rows deleted: Number of records deleted. Innodb rows updated: Number of records updated. Innodb rows inserted: Number of records inserted. Innodb rows read: Number of records read.
Replication delay	Replication Environment Master – Replication delays between Slaves (Unit: sec)

Indicator Details Area

The Indicator Details Area is divided into 9 tabs and each tab provides the following information.

Item	**Description**
Stat	Provides Trends of MySQL Performance Indicators and Active Sessions List.
All Stat	Provides the current values of all the performance indicators provided in MySQL and the Active Sessions List.
Wait	Provides the current values of all the wait indicators provided in MySQL and the Active Sessions List.
Lock Tree	Provides the Lock Tree details of the corresponding time in a tree structure.
Cloud Watch	Provides metrics information provided in CloudWatch
Parameter	Provides parameter information
Slow Query	Provides Slow Query Information

Alarm	Provides function for checking the details of alarms generated due to threshold values.
Deadlock	Provides function for checking the details of Deadlocks.
Innodb Status	Provides function for checking the Innodb Status.

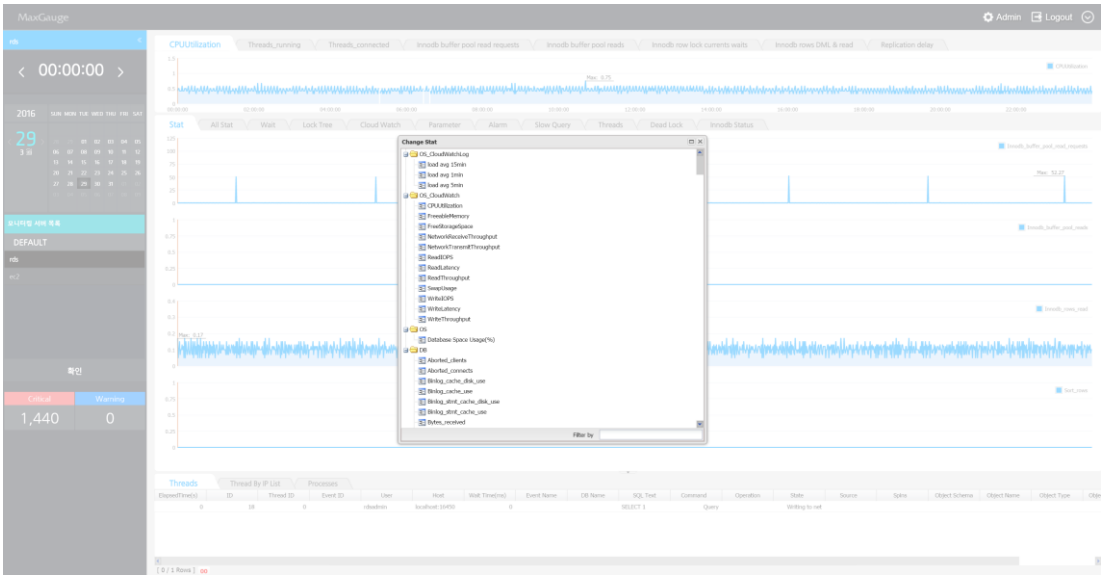
STAT

The Stat screen displays the trends graph by using the difference values of performance indicators generated in between the segments and the active sessions list. You can easily recognize the MySQL database' peak time on the Stat screen, and you can navigate to the corresponding time by double-clicking the specific time on the graph. You can also easily identify the sessions which caused the peak times through the resource usage information shown in the Active Sessions List.

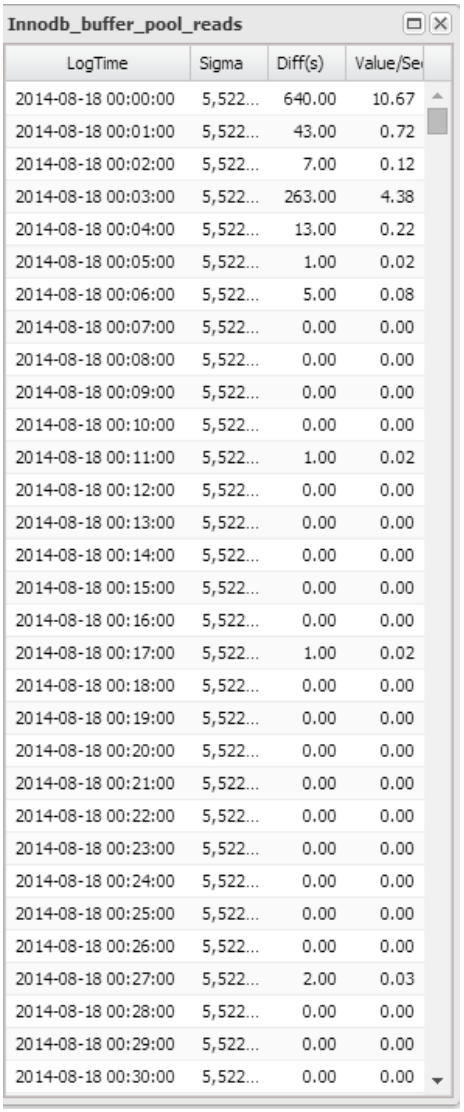
The 4 indicators displayed on the screen can be changed to different indicators by the user. To change the indicator, click on the performance indicator name located on the right side of the screen.

1. Click performance indicator name.

2. Enter or select the desired indicator and click ‘OK’.



When you click on the blue square on the left of the performance indicator, it displays the all the logged values by time.

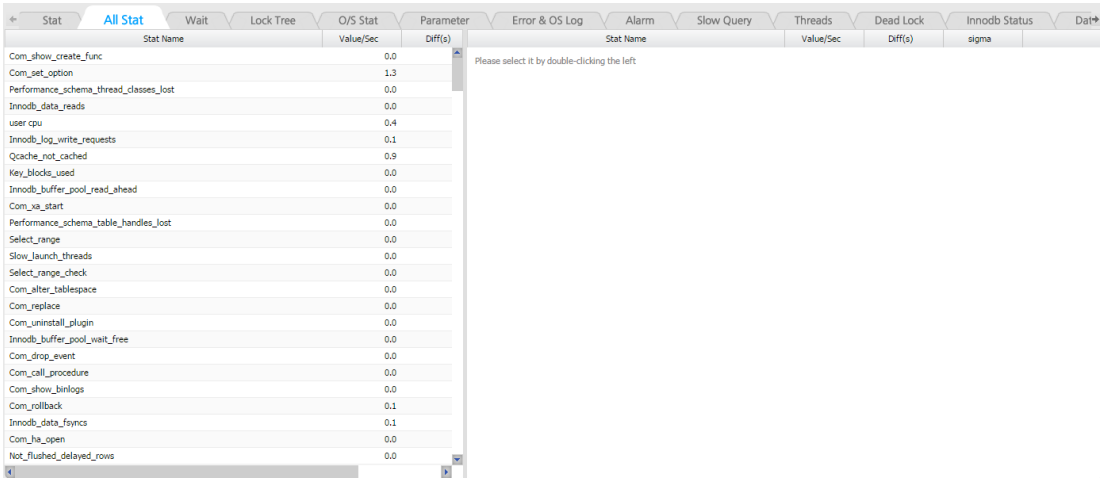


Innodb_buffer_pool_reads

LogTime	Sigma	Diff(s)	Value/Se
2014-08-18 00:00:00	5,522...	640.00	10.67
2014-08-18 00:01:00	5,522...	43.00	0.72
2014-08-18 00:02:00	5,522...	7.00	0.12
2014-08-18 00:03:00	5,522...	263.00	4.38
2014-08-18 00:04:00	5,522...	13.00	0.22
2014-08-18 00:05:00	5,522...	1.00	0.02
2014-08-18 00:06:00	5,522...	5.00	0.08
2014-08-18 00:07:00	5,522...	0.00	0.00
2014-08-18 00:08:00	5,522...	0.00	0.00
2014-08-18 00:09:00	5,522...	0.00	0.00
2014-08-18 00:10:00	5,522...	0.00	0.00
2014-08-18 00:11:00	5,522...	1.00	0.02
2014-08-18 00:12:00	5,522...	0.00	0.00
2014-08-18 00:13:00	5,522...	0.00	0.00
2014-08-18 00:14:00	5,522...	0.00	0.00
2014-08-18 00:15:00	5,522...	0.00	0.00
2014-08-18 00:16:00	5,522...	0.00	0.00
2014-08-18 00:17:00	5,522...	1.00	0.02
2014-08-18 00:18:00	5,522...	0.00	0.00
2014-08-18 00:19:00	5,522...	0.00	0.00
2014-08-18 00:20:00	5,522...	0.00	0.00
2014-08-18 00:21:00	5,522...	0.00	0.00
2014-08-18 00:22:00	5,522...	0.00	0.00
2014-08-18 00:23:00	5,522...	0.00	0.00
2014-08-18 00:24:00	5,522...	0.00	0.00
2014-08-18 00:25:00	5,522...	0.00	0.00
2014-08-18 00:26:00	5,522...	0.00	0.00
2014-08-18 00:27:00	5,522...	2.00	0.03
2014-08-18 00:28:00	5,522...	0.00	0.00
2014-08-18 00:29:00	5,522...	0.00	0.00
2014-08-18 00:30:00	5,522...	0.00	0.00

All Stat

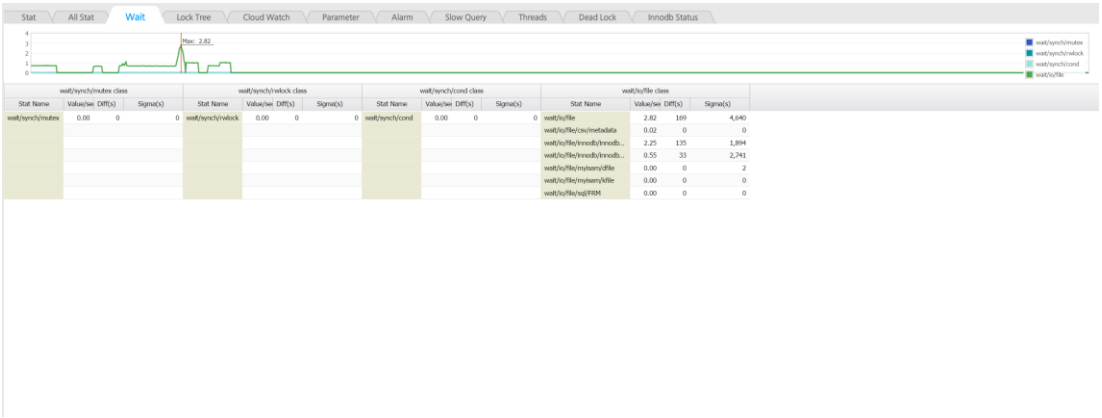
Provides all the performance indicators provided in MySQL.



Performance Indicator Area	
Stat	Performance Indicator Name
Value/sec(s)	The difference value of previous time and current time per second.
Diff(s)	Difference value of previous time and the current time.
Sigma(s)	Cumulative Value

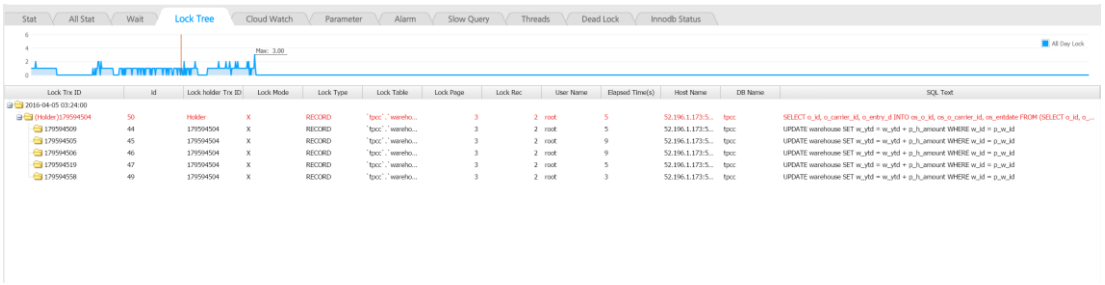
Wait

Provides all the wait information provided in MySQL.



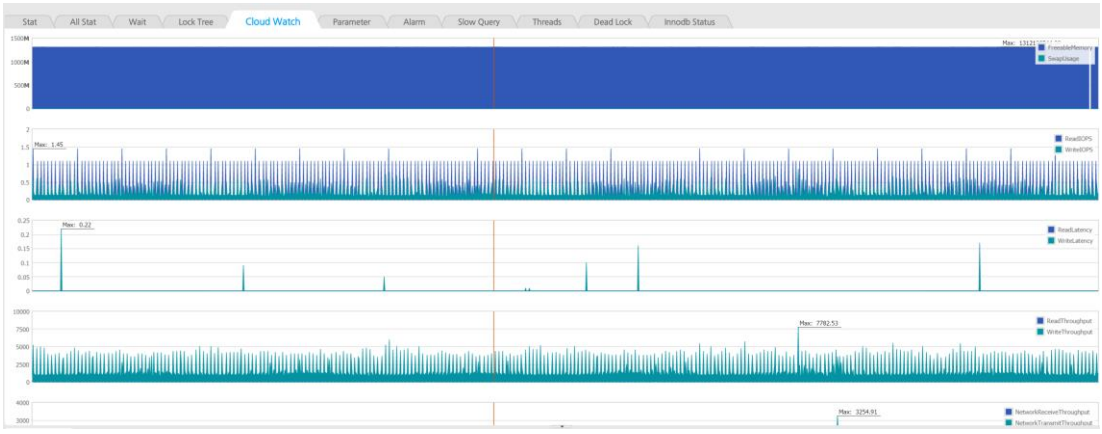
Lock Tree

The Lock Tree screen displays the relationship between the Lock Holder sessions and the Waiter sessions in a tree format, and provides the Mode, SQL Text, and Wait Time information. This screen is configured the same as the Real-Time Lock Tree screen.



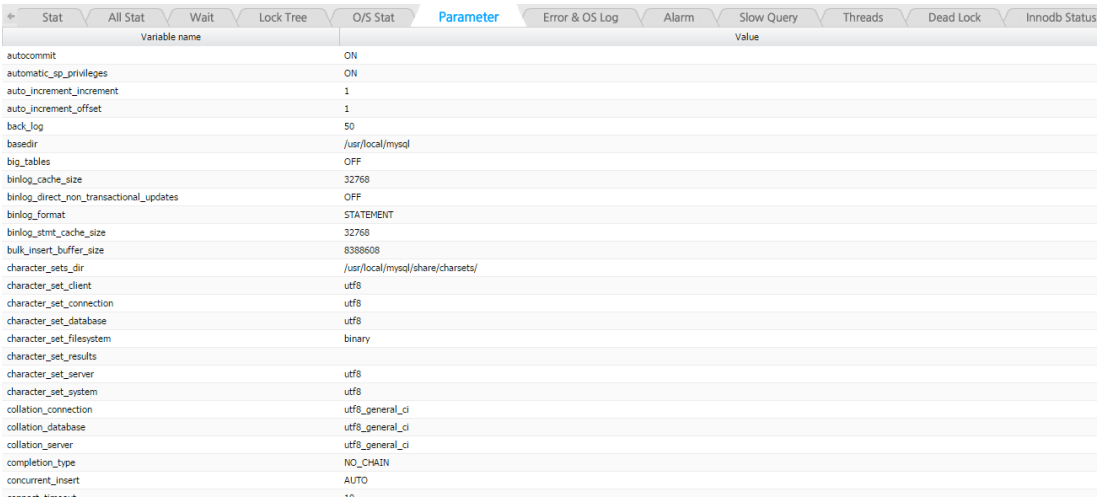
CloudWatch

Provides metrics information provided in CloudWatch



Parameter

Provides parameter information. Parameter information is logged once a day.



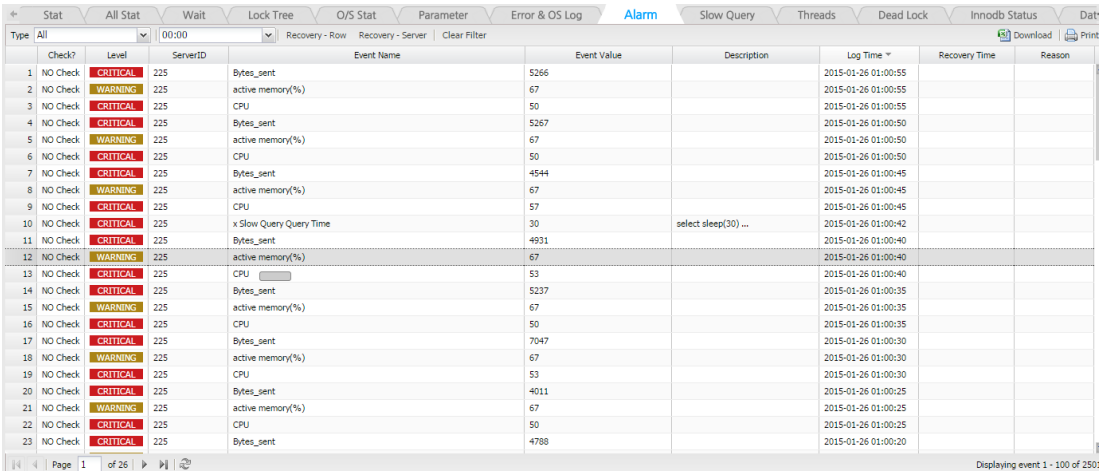
Variable name	Value
autocommit	ON
automatic_sp_privileges	ON
auto_increment_increment	1
auto_increment_offset	1
back_log	50
basedir	/usr/local/mysql
big_tables	OFF
binlog_cache_size	32768
binlog_direct_non_transactional_updates	OFF
binlog_format	STATEMENT
binlog_stmt_cache_size	32768
bulk_insert_buffer_size	8388608
character_sets_dir	/usr/local/mysql/share/charsets/
character_set_client	utf8
character_set_connection	utf8
character_set_database	utf8
character_set_filesystem	binary
character_set_results	
character_set_server	utf8
character_set_system	utf8
collation_connection	utf8_general_ci
collation_database	utf8_general_ci
collation_server	utf8_general_ci
completion_type	NO_CHAIN
concurrent_insert	AUTO

Alarm

In the event alarms are generated for the indicators for which threshold values have been set up in the Admin's Alarm Setup, the alarm details of the corresponding time will be logged. You can check the alarm time and details through the Performance Analyzer.

1. When you find red (or yellow) points on the graph, it means that alerts have been generated for the corresponding time according to the threshold values set by the user.

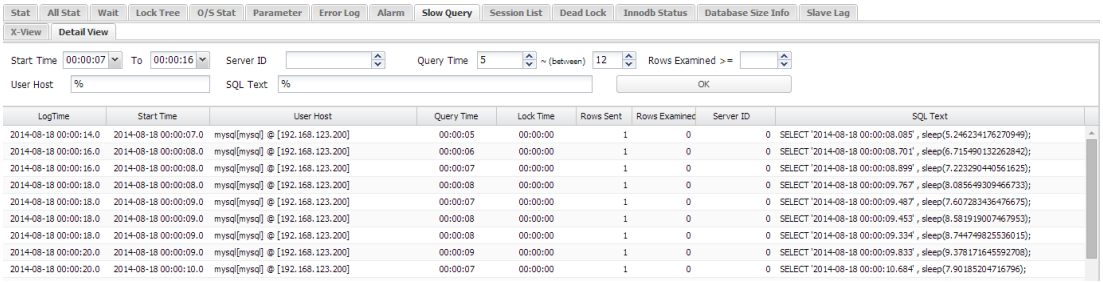
2. Click on the corresponding time and go to the Alarm Tab and you will find the details of alarms generated as shown below.



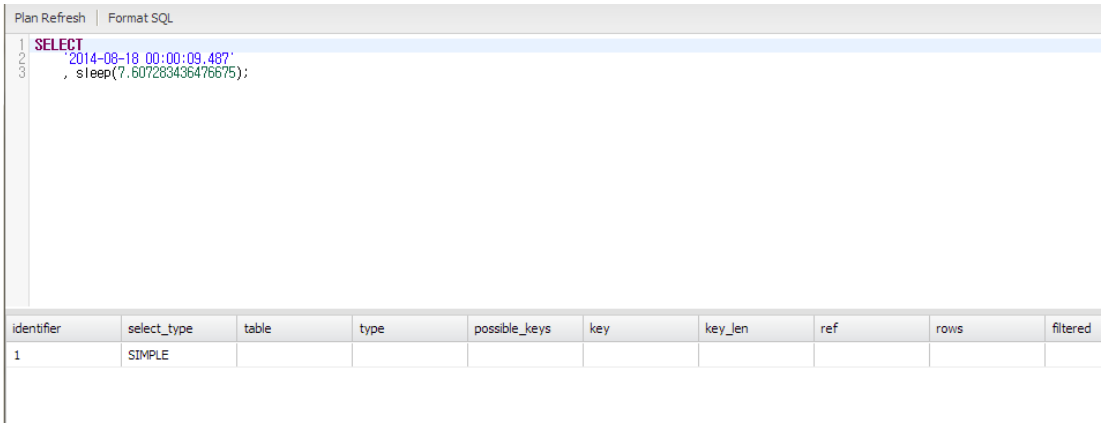
Slow Query

Provides the Slow Query information. Displays the slow queries within the 1 minute of the time period searched with an X symbol. You can select a specific segment with a mouse drag and navigate to its details to use the Plan and Thread Tracking function.

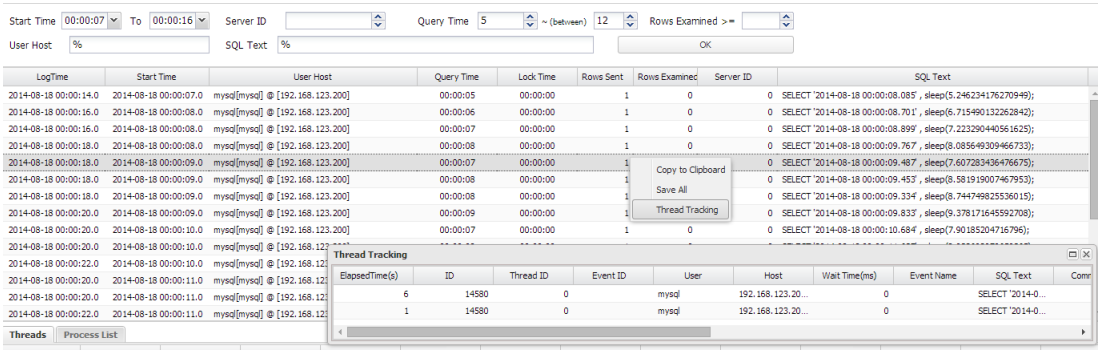
(X-View : Slow query 1minute Data)



Details View Screen



(Double-Click to see Real-Time Plan View)



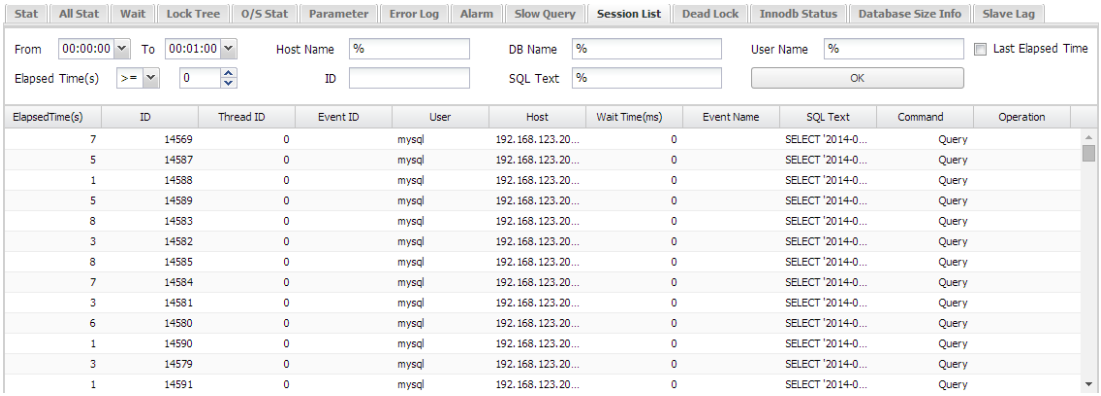
(Thread Tracking function on the Mouse Right-Click Menu 등)

Threads

This function allows the user to enter specific time period and conditions to search the corresponding session information from the logged Threads list.

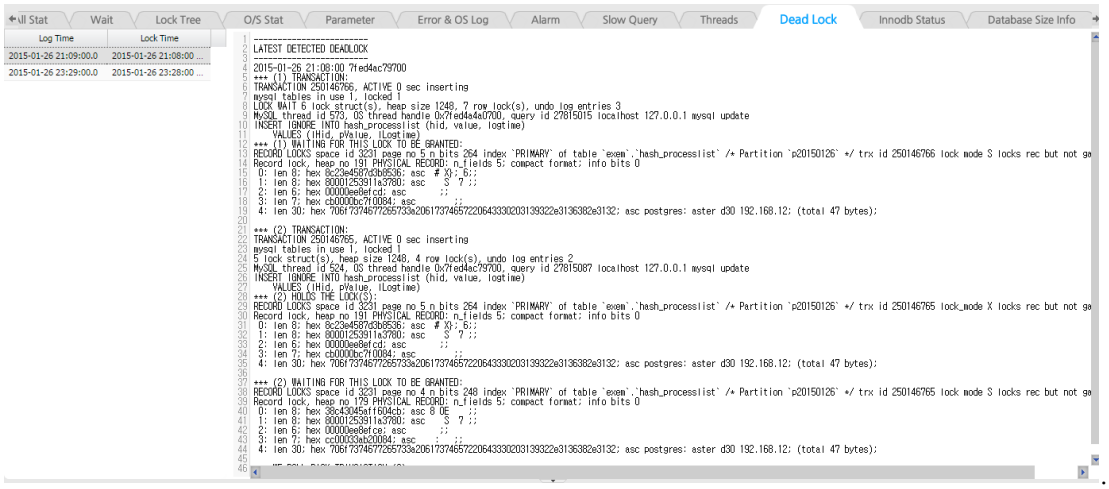
If you check the Last Elapsed Time condition, you can search for the SQL's Last Query Time executed by the same thread.

Threads Details Menu		
Search Options	TIME	Logged time search condition
	HOST NAME	Connection HOST search condition
	DB NAME	SCHEMA search condition
	USER NAME	DB USER search condition
	ID	ID search condition
	ELAPSED TIME(S)	QUERY TIME search condition
	SQL TEXT	SQL TEXT search condition
LAST ELAPSED TIME		For long running threads, the logs may be duplicated and in such a case, you can use this option to check the last time. Grouped by THREAD ID + ID + SQL TEXT.



Deadlock

This function allows you to check the DEADLOCK details. Logging occurs if any changes occur for every 1 minute.



Innodb Status

This function allows you to check the Innodb Status information. The data is logged every 5 minute.


ıll Stat
Wait
Lock Tree
O/S Stat
Parameter
Error & OS Log
Alarm
Slow Query
Threads
Dead Lock
Innodb Status
Database Size Info
Log Time
Time
2015-01-26 21:09:00.0
2015-01-26 23:29:00.0
2015-01-26 00:00:00.0
2015-01-26 00:05:00.0
2015-01-26 00:10:00.0
2015-01-26 00:15:00.0
2015-01-26 00:20:00.0
2015-01-26 00:25:00.0
2015-01-26 00:30:00.0
2015-01-26 00:35:00.0
2015-01-26 00:40:00.0
2015-01-26 00:45:00.0
2015-01-26 00:50:00.0
2015-01-26 00:55:00.0
2015-01-26 01:00:00.0
2015-01-26 01:05:00.0
2015-01-26 01:10:00.0
2015-01-26 01:15:00.0
2015-01-26 01:20:00.0
2015-01-26 01:25:00.0
2015-01-26 01:30:00.0
2015-01-26 01:35:00.0
2015-01-26 01:40:00.0
2015-01-26 01:45:00.0
2015-01-26 01:50:00.0
2015-01-26 01:54:59
=====================================
2015-01-26 21:09:00 7fed78686700 INNODB MONITOR OUTPUT
=====================================
Per second averages calculated from the last 0 seconds

BACKGROUND THREAD
----
srv_master_thread loops: 23153 srv_active, 0 srv_shutdown, 2193 srv_idle
srv_master_thread log flush and writes: 25346

SEMAPHORES

OS WAIT ARRAY INFO: reservation count 31030
OS WAIT ARRAY INFO: signal count 138269
Mutex spin waits 115187, rounds 709583, OS waits 13476
RW-shared spins 41884, rounds 366536, OS waits 11681
RW-excl spins 15199, rounds 332182, OS waits 4368
Spin rounds per wait: 6.16 mutex, 8.75 RW-shared, 21.86 RW-excl
----
LATEST DETECTED DEADLOCK

2015-01-26 21:08:00 7fed4ac79700
*** (1) TRANSACTION:
TRANSACTION 250146766, ACTIVE 0 sec inserting
mysql tables in use 1, locked 1
LOCK WAIT 6 lock struct(s), heap size 1248, 7 row lock(s), undo log entries 3
MySQL thread id 573, OS thread handle 0x7fed4a4d0700, query id 27815015 localhost 127.0.0.1 mysql update
INSERT IGNORE INTO hash_processlist (hid, value, logtime)
    VALUES (iHid, pValue, lLogtime)
*** (1) WAITING FOR THIS LOCK TO BE GRANTED:
RECORD LOCKS space id 3231 page no 5 n bits 264 index `PRIMARY` of table `exem`.`hash_processlist` /* Partition `p20150126` */ trx id 250146766 lock mode S locks rec but not gap
Record lock, heap no 191 PHYSICAL RECORD: n_fields 5; compact format; info bits 0
 0: len 8; hex 8c29e4597d3b9536; asc   # Y}; 6;;
 1: len 8; hex 0000125391fa2760; asc   S ' `;;
 2: len 6; hex 00000ee8efcd; asc   ;;
 3: len 7; hex cb0000bc710084; asc   q ;;
 4: len 30; hex 706f737467726573716c20617374657220643330203139322e3136382e3132; asc postgres: aster d30 192.168.12; (total 47 bytes);

*** (2) TRANSACTION:
TRANSACTION 250146765, ACTIVE 0 sec inserting
mysql tables in use 1, locked 1
5 lock struct(s), heap size 1248, 4 row lock(s), undo log entries 2
MySQL thread id 524, OS thread handle 0x7fed4ac79700, query id 27815087 localhost 127.0.0.1 mysql update
INSERT IGNORE INTO hash_processlist (hid, value, logtime)

To find out more about MaxGauge or If you have interesting about this product, contact MaxGauge.

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ABOUT US

MaxGauge, INC is a solution based technology company that has been providing database optimization and tuning services since 2001 with our software solution. We have served 450 clients across a wide range of industries including finance, manufacturing, government, healthcare, telecommunication, etc.