



MAXGAUGE REALTIME MONITOR

Instance Name Business Name

OVERALL

ORA102

JAPAN

CHINA

MAXGAUGE for MySQL on AWS

PRODUCT DOCUMENTATION



- **MAXGAUGE**

- OVERVIEW
 - ARCHITECTURE
 - FEATURE

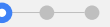
- **FEATURE**

- REAL-TIME MONITOR
 - ADMIN
 - PERFORMANCE ANALYZER

- **PERFORMANCE ANALYZER**

- EXEM DASHBOARD





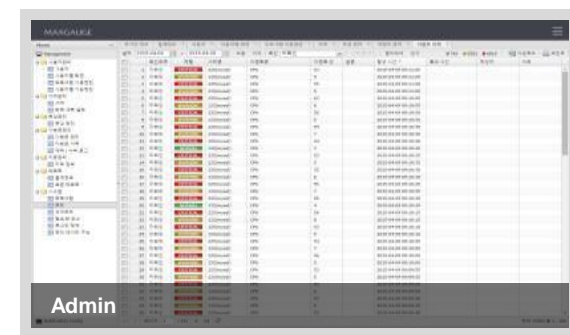
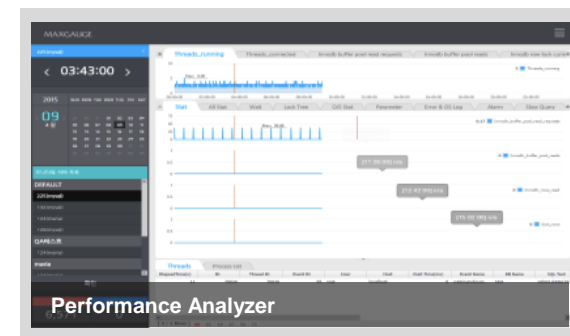
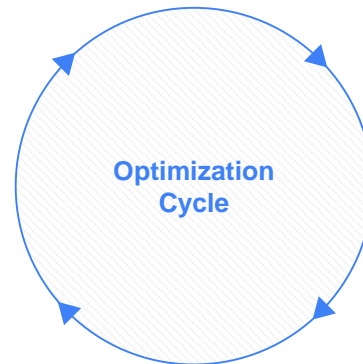
MAXGAUGE for MySQL on AWS

- OVERVIEW
- ARCHITECTURE
- FEATURE



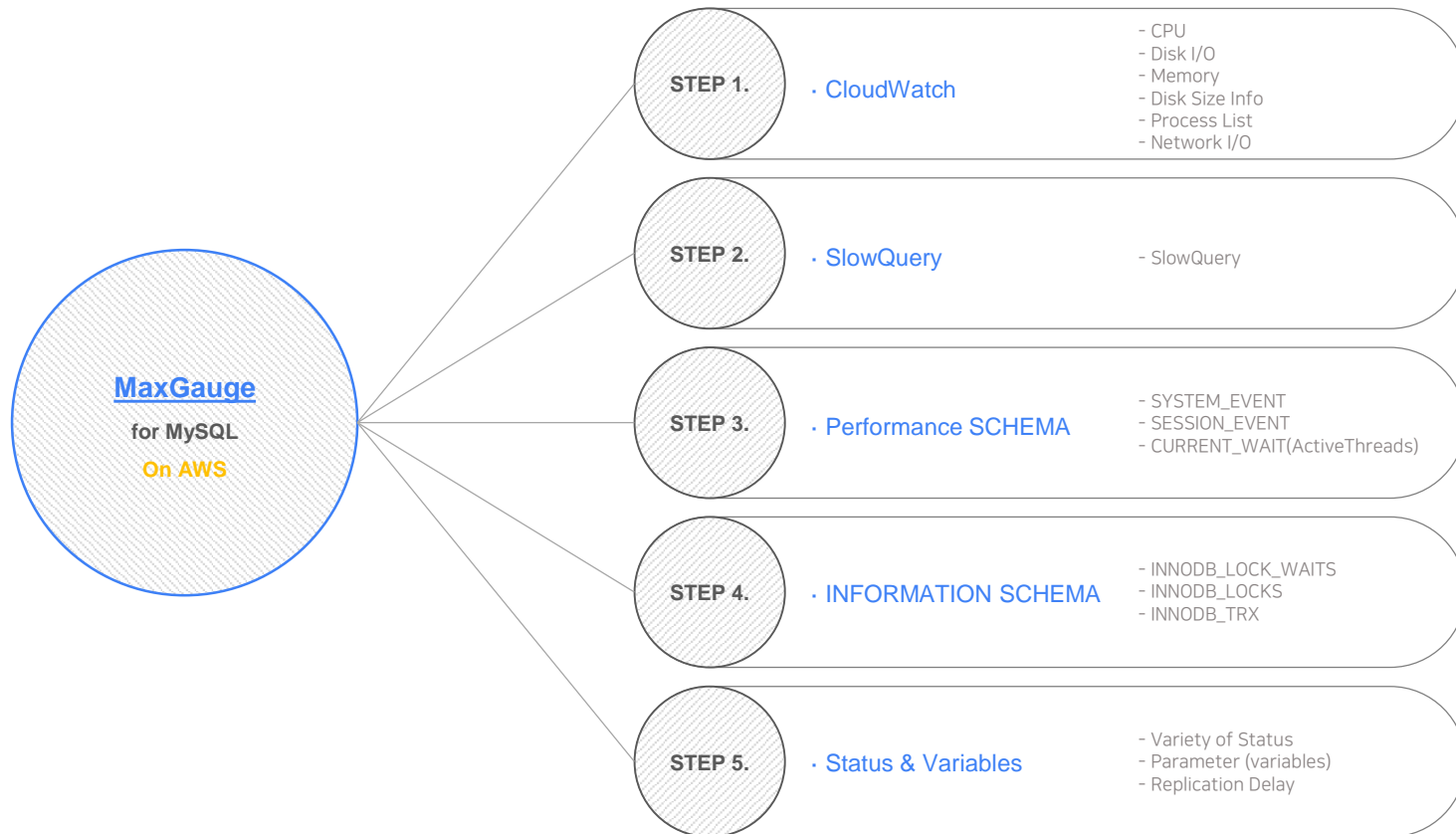
Professional software solution for database performance optimization

MaxGauge on AWS is a professional software solution for database performance management. It provides various functions such as real-time monitoring and collecting of operation information, precise diagnosis and analysis, and SQL tuning to efficiently manage the availability and performance of the database system. Pro-active monitoring techniques are provided to quickly identify problem situations, effectively analyze application bottlenecks, and store a variety of performance data to provide clear insights into the impact of investments.





Performance collection data types





FEATURE

REAL-TIME MONITOR
ADMIN
PERFORMANCE ANALYZER



Intuitive and easy user interface

View by Service Group

Multi Node Performance Indicator Integrated Monitoring Area

Real-time Event History

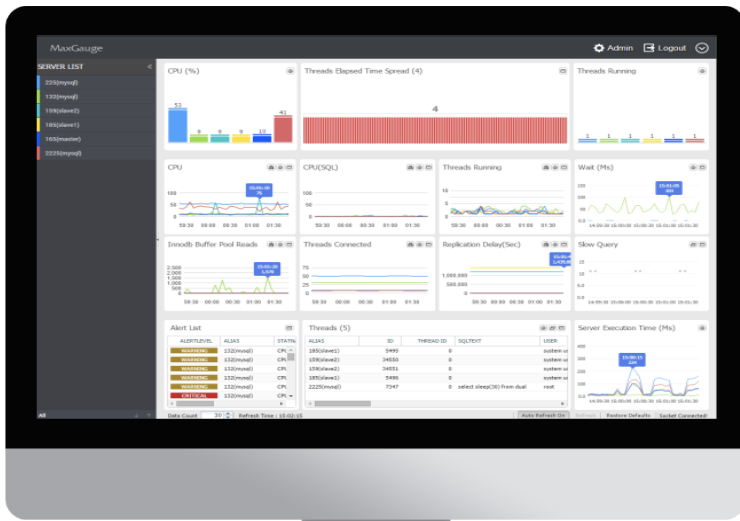
Visualization section of Thread

Wait Monitoring Area

Replication Monitoring Area

Active Thread and Performance Query Information

Database Monitoring with Easy TOP-DOWN Approach



Threads (22)

ALIAS	ID	THREAD ID	SQLTEXT	USER	HOST	DB	ELAPSE
132(mysql)	226331	226350	delete from lock_test	root	localhost	test	
132(mysql)	226330	226349	select sleep(30) from dual	root	localhost	test	
132(mysql)	226331	226350	delete from lock_test	root	localhost	test	
132(mysql)	226330	226349	select sleep(30) from dual	root	localhost	test	
124(maria)	2940	0	SELECT '2015-03-10 14:48:...	root	192.168.123.12...	exem	



Thread Detail (132(mysql)Session ID: 226409 Thread ID: 226428) - 132(mysql) - Chrome

192.168.123.132:8070/realtime/thread_detail/index.html?&server_no=1&session_id=226409&thread_id=226428&alias=132(mysql)

[ID = 226409] - 132(mysql) (update time : 15:05:02)

OS Stat

cpu : 5
user cpu : 1.53
used memory(%) : 97.17
used swap(%) : 0.73

Delta Info

Name	Value/Sec	Diff Value	Sigma Val
WAIT/IO/FILE/SQ/QUERY LOG	0	0	0
WAIT/SYNCH/COND/SQ/TC LOG MMAP::COND POOL	0	0	0
WAIT/SYNCH/MUTEX/SQ/LOCK OPEN	0	0	0
WAIT/SYNCH/MUTEX/MYSAHMRG/MYRG INFO::MUTEX	0	0	0
WAIT/SYNCH/MUTEX/SQ/PAGE::LOCK	0	0	0
WAIT/SYNCH/MUTEX/SQ/LOCK TABLE SHARE	0	0	0
WAIT/SYNCH/RWLOCK/SQ/MDL CONTEXT::LOCK WAITIN...	0	0	0
WAIT/IO/FILE/SQ/INIT	0	0	0
WAIT/SYNCH/MUTEX/SQ/CVERSION LOCK	0	0	0
WAIT/SYNCH/COND/SQ/DELAYED INSERT::COND CLIENT	0	0	0
WAIT/SYNCH/MUTEX/SQ/RELAY LOG INFO::LOG SPACE L...	0	0	0
WAIT/SYNCH/MUTEX/SQ/TC LOG MMAP::LOCK SYNC	0	0	0

Name Value

USER root
HOST localhost
DB test
ELAPSED TIME(S) 30
COMMAND Query
STATE updating
SQLTEXT delete from lock_test
EVENT NAME
SOURCE
WAIT TIME(S)
SPINS
OBJECT NAME

SQL Used

```
delete from lock_test
```

For a long-running query,
Link to Thread Detail screen by double clicking

Provide Current waiting events, DB indicators and
SQL information that you are currently performing

Alarm history check function according to threshold setting

Provide Alarm Log History

Date	Check ?	Level	Server ID	Event Name	Event Descrip	Log Time	Recovery Time	Writer	Reason
2016-07-18	1 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:50.0			
2016-07-18	2 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:45.0			
2016-07-18	3 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:40.0			
2016-07-18	4 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:35.0			
2016-07-18	5 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:30.0			
2016-07-18	6 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:25.0			
2016-07-18	7 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:20.0			
2016-07-18	8 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:15.0			
2016-07-18	9 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:10.0			
2016-07-18	10 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:05.0			
2016-07-18	11 NO Check	CRITICAL	testEC2	CPUUtiliz...	87	2016-07-18 11:07:00.0			
2016-07-18	12 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:07:00.0			
2016-07-18	13 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:55.0			
2016-07-18	14 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:50.0			
2016-07-18	15 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:45.0			
2016-07-18	16 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:40.0			
2016-07-18	17 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:35.0			
2016-07-18	18 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:30.0			
2016-07-18	19 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:25.0			
2016-07-18	20 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:20.0			
2016-07-18	21 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:15.0			
2016-07-18	22 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:10.0			
2016-07-18	23 NO Check	WARNING	testEC2	Threads...	22	2016-07-18 11:06:05.0			
2016-07-18	24 NO Check	CRITICAL	testEC2	CPUUtiliz...	88	2016-07-18 11:06:00.0			

Alarm setting in Admin page (Provide Alert Log, Error & OS Log)

Link Lock / Session / Parameter information of **specific instances through Tools**

The diagram illustrates the process of accessing detailed information for specific MySQL instances through a monitoring tool. It starts with a 'SERVER LIST' on a tablet, where a right-click action is performed on a specific instance (226(mysql)). This action leads to three different tool views on a desktop monitor:

- Lock Tree View:** Provides Holder/Waiter information when a lock occurs. It displays a table with columns: HOLDER TRX_ID, ID, THRFAID, LOCK TRX_ID, LOCK MODE, LOCK TYPE, LOCK TABLE, LOCK PAGE, LOCK REC, USER, DB, ELAPSED TIME, and SQL TEXT.
- Threads Manager View:** Provides session group monitoring through search conditions. It includes search filters for Host Name, Thread ID, User Name, Database Name, and SQL Text, along with a table showing thread details like ID, THREAD ID, USER, HOST, DB, ELAPSED TIME, WAIT TIME, and EVENT ID.
- Parameter List View:** Provides Parameter List for related instance. It displays a list of system variables with their names and values.

Easy MaxGauge management with **Admin function**

MAXGAUGE

Management | Sign In Info | Server

+ Add Save X Delete Test Connect System Info Clear Filters Download

(Restart a service when a server data is changed.)

Server ID	Server Alias	Type	IP Address	Port	DB Login ID	DB Password	Symon Port	Symon Encoding	SQL-Test Length	Description	Instance Name	Gather No	Use ?
1	158(solais)	MYSQL	192.168.123.158	3306	root	*****	9729	eu-kr	FULL LENGTH		instance01	0	Y
2	255(maria)	MARIADB	192.168.123.151	3306	root	*****	9729	eu-kr	FULL LENGTH		instance01	0	N
3	124(maria)	MARIADB	192.168.123.124	3306	root	*****	9729	eu-kr	FULL LENGTH		instance01	0	Y
4	132(mysql)	MYSQL	192.168.123.132	3306	root	*****	9729	eu-kr	FULL LENGTH		instance01	0	Y
5	225(mysql)	MYSQL	192.168.123.225	3306	root	*****	9729	eu-kr	FULL LENGTH		instance01	0	Y

Easy server registration & Test Connection

MAXGAUGE

Management | Sign In Info | User | User View Setting | Program Permissions

+ Add Save X Delete Copy Permission Clear Filters

User ID	Program	Insert permission	Update permission	Delete permission
1	Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Administrator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Administrator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Admin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Administrator	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Administrator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Administrator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Adding and Granting User Accounts

MAXGAUGE

Management | Sign In Info | Server | Event History | Event Setting

+ Add Save X Delete Clear Filters Copy Event Config Config User Event Event Setting History Download Print

Server ID	Stat Name	Comparison	Warning	Critical
Please select...				
1	225(mysql) Threads_running	>=	0	0
2	225(mysql) CPU	>=	10	15
3	132(mysql) Threads_running	>=	50	70
4	132(mysql) CPU	>=	10	15
5	124(maria) CPU	>=	50	70
6	124(maria) Threads_running	>=	10	15
7	151(maria) Threads_running	>=	10	15
8	151(maria) CPU	>=	50	70
9	158(solais) Threads_running	>=	10	15
10	158(solais) CPU	>=	50	70

Easy threshold setting

Admin Group Management **by instances**

Set ID	Count
1 copyview	2
2 DEFAULT	5
3 maria	2
4 mysql	2
5 QA테스트	2
6 test	2
7 영업	2

Server ID	Server
1	132(mysql)
2	225(mysql)

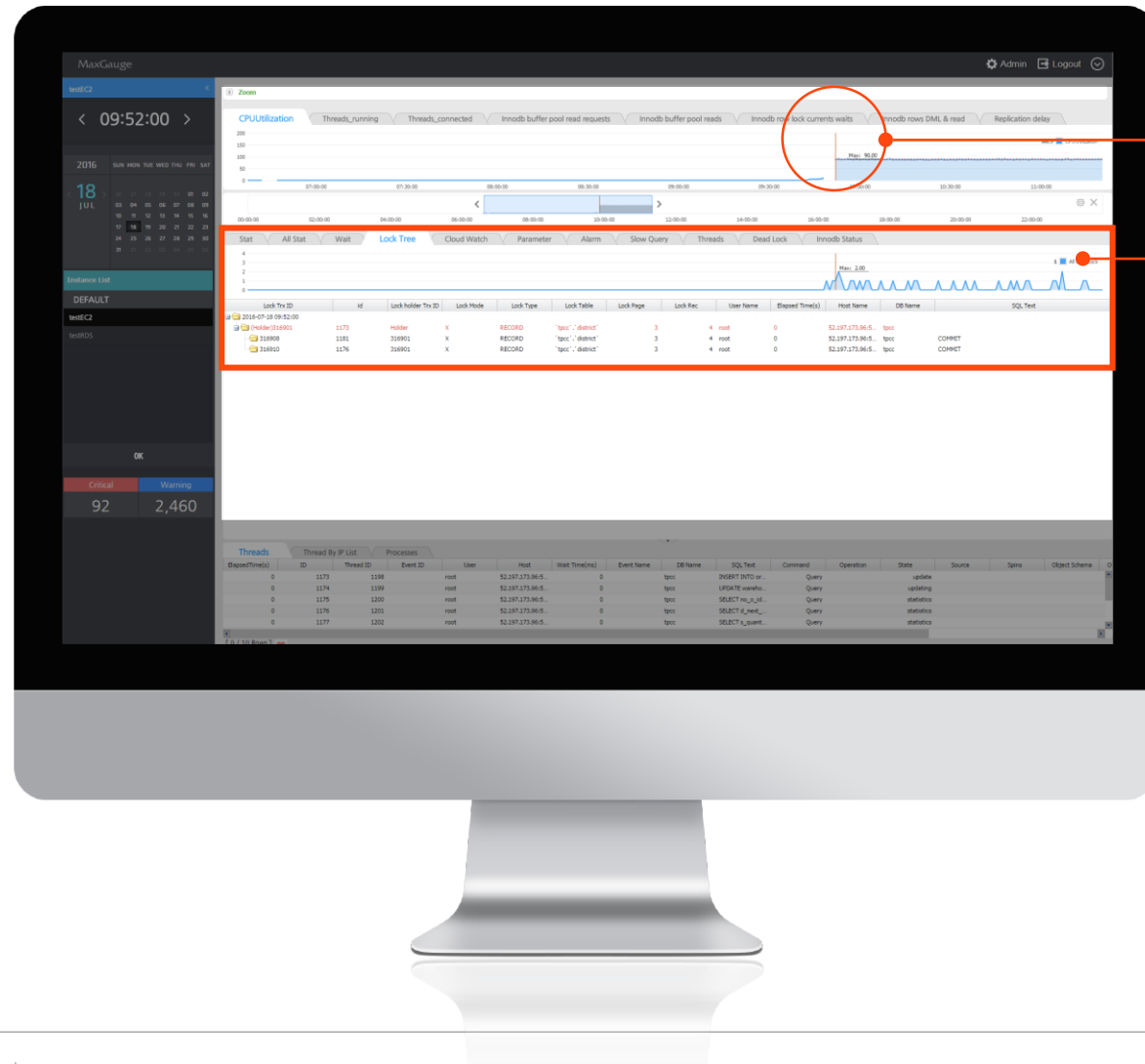
Grouping function by instances in View Setting Tap

Specific Group Multi View

Performance Analyzer for analyzing data **stored in the repository**

The screenshot displays the MaxGauge Performance Analyzer interface. On the left, a sidebar contains a calendar for selecting a log date (July 18, 2016) and a list of log instances (DEFAULT, testC2, testD5). Below this, a 'Log Alarm Count' section shows 'Critical' at 92 and 'Warning' at 2,460. The main area features several performance graphs: 'CPU Utilization' (0-200), 'Threads_running' (0-2000), 'Threads_connected' (0-10000), 'InnoDB buffer pool read requests' (0-10000), 'InnoDB buffer pool reads' (0-10000), 'InnoDB row lock currents waits' (0-50000), 'InnoDB rows DML & read' (0-10000), and 'Replication delay' (0-100). A 'Threads' table is visible at the bottom with columns: Thread By IP List, ID, Thread ID, Event ID, User, Host, Wait Time(s), Event Name, DB Name, SQL Text, Command, Operation, State, Source, Spine, Object Schema. Callouts point to: 'Select Log Date' (calendar), 'Select Log Instance' (instance list), 'Log Alarm Count' (alarm counts), 'Active Thread Information' (Threads table), 'Key indicators Log graph' (CPU Utilization graph), and 'Detailed Indicator Log Graph' (InnoDB buffer pool reads graph).

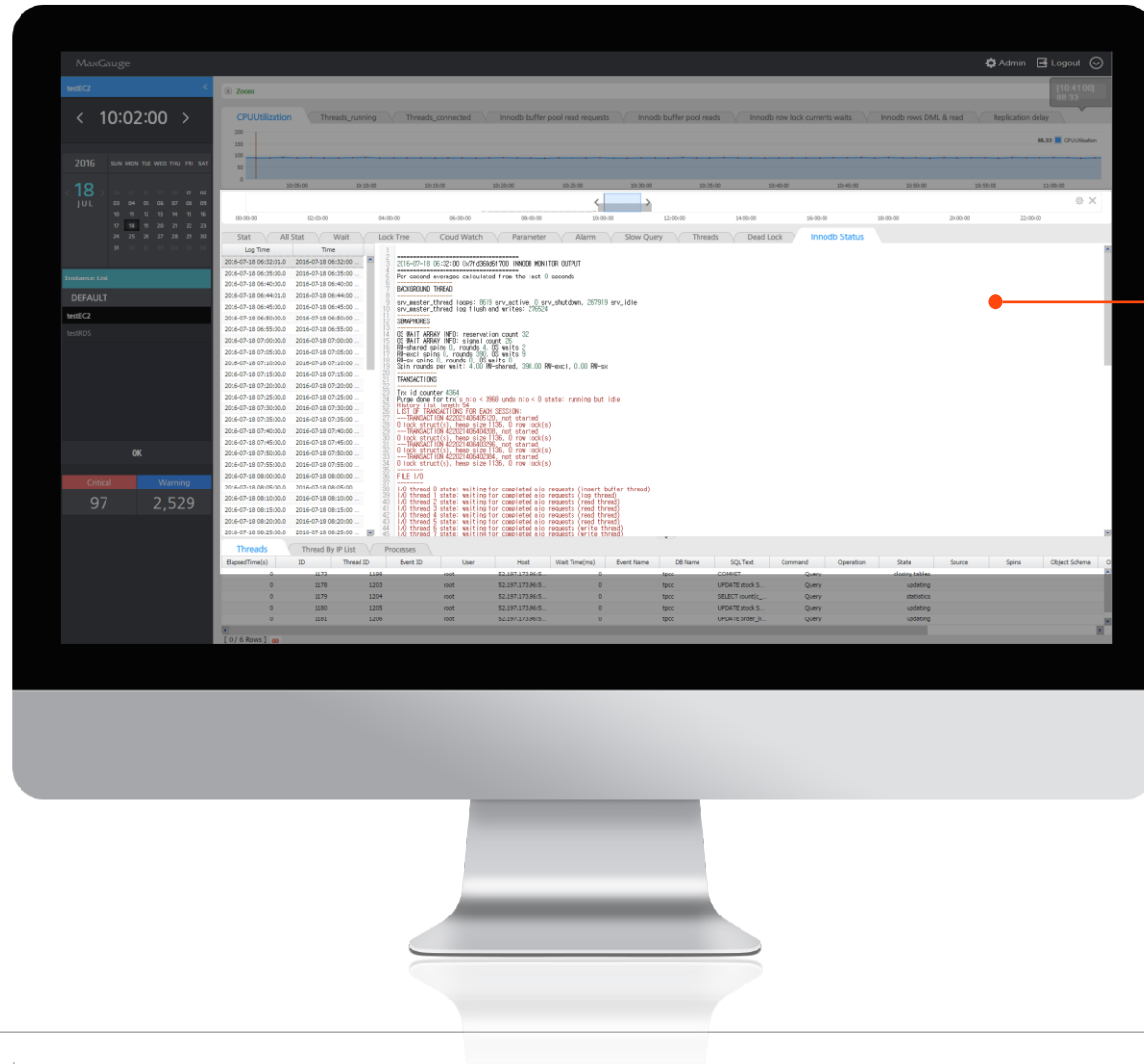
Provide the history of LOCK occurrence at certain point in a tree structure



Provide detailed analysis of certain times with a simple selection

Provide Lock Tree Occurrence of certain times

Provide real-time **InnoDB Status** information



Store InnoDB Status Every 5 minutes

TOP-DOWN approach analysis of **SLOW QUERIES**

① Select a certain time and check the Slow Query in detail.

Stat All Stat Wait Lock Tree O/S Stat Parameter Error & OS Log Alarm **Slow Query** Threads Dead Lock Innodb Status Database

X-view **Detail View**

Start Time 15:01:11 To 15:01:25 Server ID Query Time 1 ~ (between) 22 Rows Examined >=

User Host % SQL Text % OK

LogTime	Start Time	User Host	Query Time	Lock Time	Rows Sent	Rows Examined	Server ID	SQL Text
2015-03-09 15:03:45	2015-03-09 15:01:14	root[root] @ [192.168.123.128]	00:00:13	00:00:00	1	0	0	SELECT 2015-03-09 15:03:36.695', sleep(13.486022661797664);
2015-03-09 15:03:49	2015-03-09 15:01:16	root[root] @ [192.168.123.128]	00:00:15	00:00:00	1	0	0	SELECT 2015-03-09 15:03:38.085', sleep(15.90885282501153);
2015-03-09 15:03:51	2015-03-09 15:01:20	root[root] @ [192.168.123.128]	00:00:12	00:00:00	1	0	0	SELECT 2015-03-09 15:03:42.826', sleep(12.867570291411136);
2015-03-09 15:03:55	2015-03-09 15:01:23	root[root] @ [192.168.123.128]	00:00:14	00:00:00	1	0	0	SELECT 2015-03-09 15:03:45.504', sleep(14.845645566104276);

② Double click any Slow Query, you can check the related Query.

Plan View - Chrome

192.168.123.132:8070/sqlm/planView.html

Plan Refresh | Format SQL

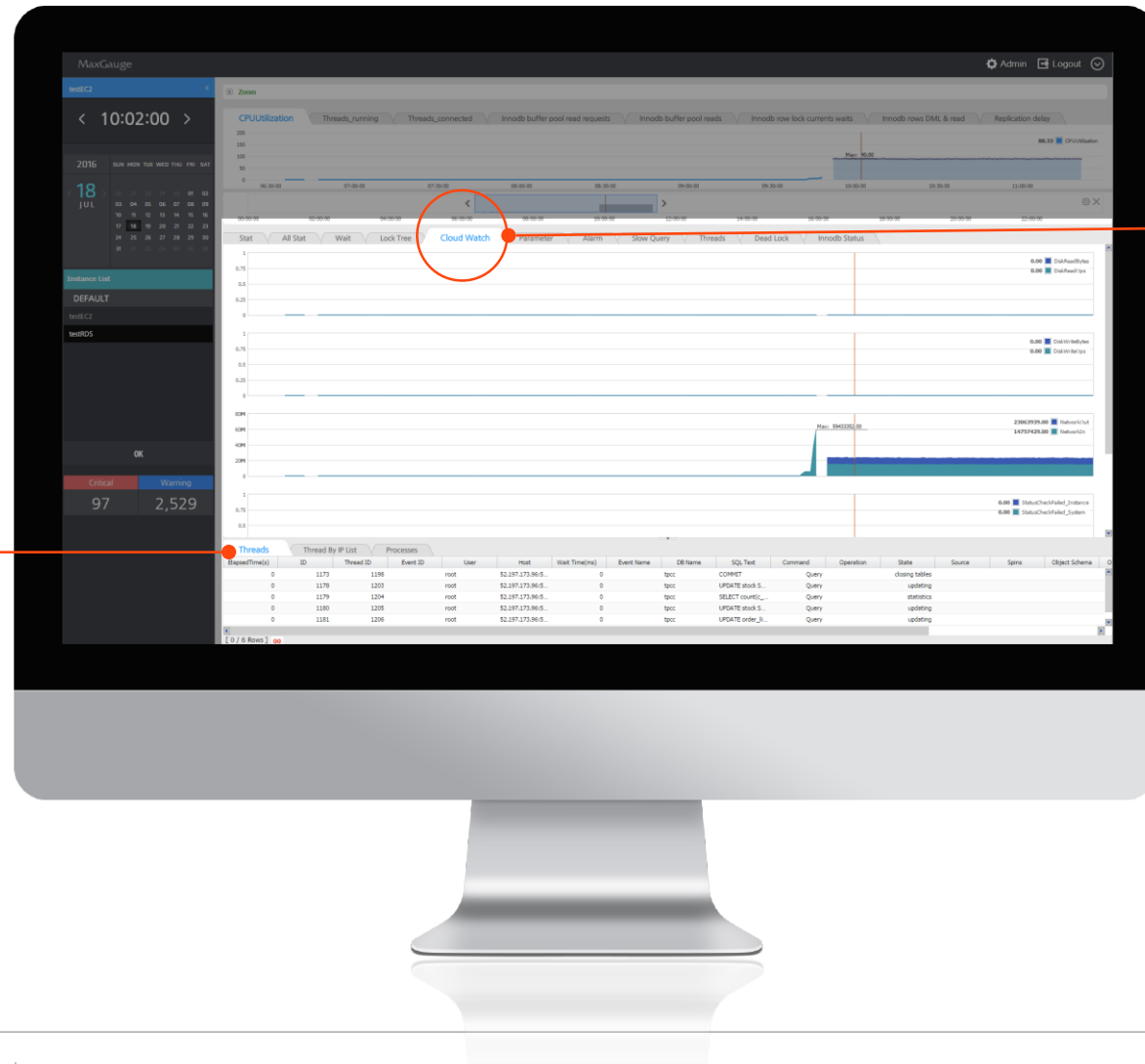
```

SELECT
  '2015-03-09 15:03:36.695'
, sleep(13.486022661797664);
    
```

identifier	select_type	table	type	possible_keys	key	key_len	ref	rows	filtered
1	SIMPLE								



Cloud Watch log collection and DB session linkage analysis



Collect and Check Cloud Watch Log

Analysis information is provided when error occurs through connection of Cloud Watch information and DB Session History

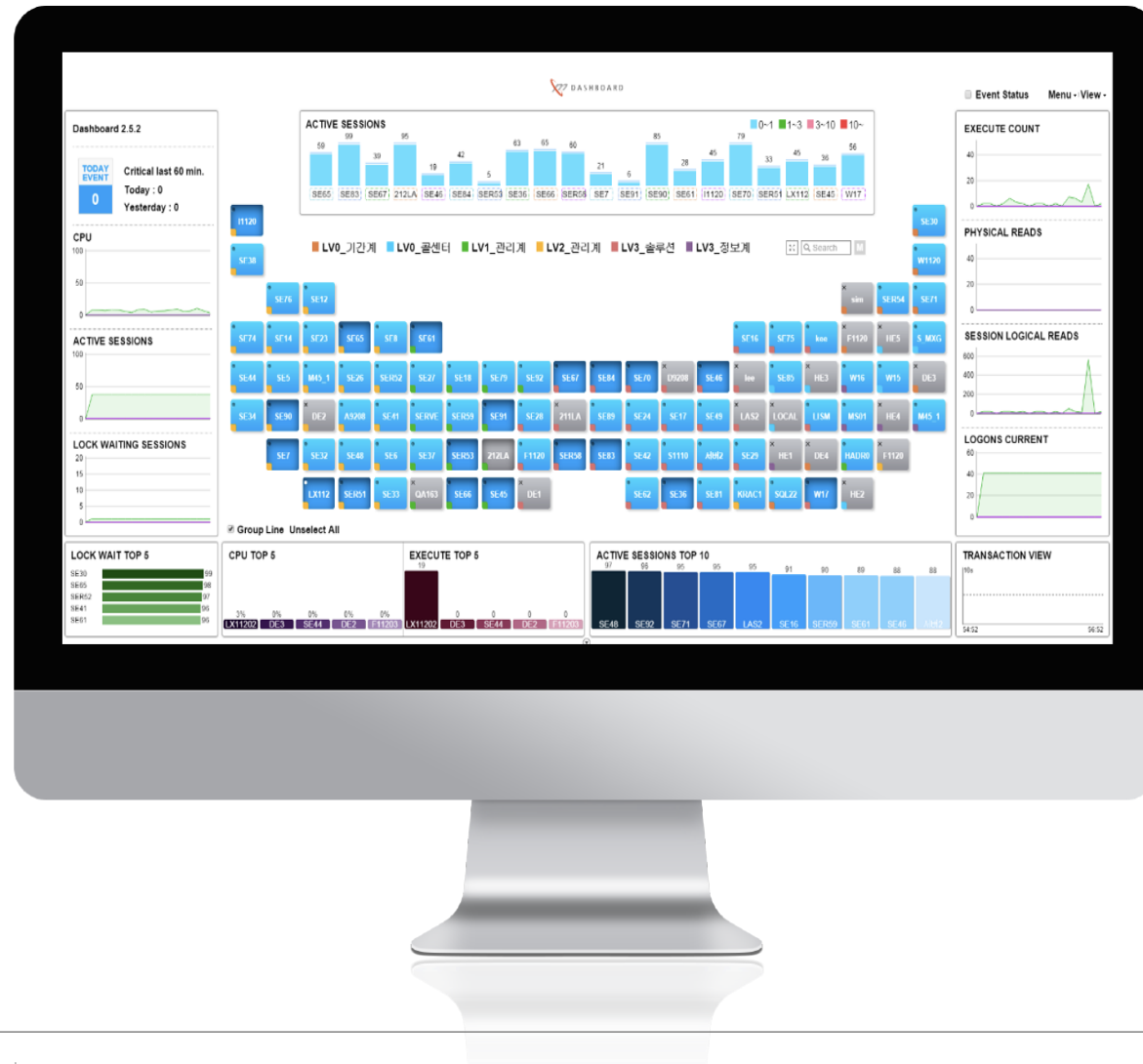
Enterprise Management System

EXEM DASHBOARD



Health Check of multiple instances at a glance with MaxGauge Dashboard

MaxGauge Dashboard 3.0 allows you to configure up to 140 Instances in real-time on one screen. It can monitor errors with real-time indicators.



Provides powerful linkage to Real-Time Monitor / Performance Analyzer

You can move to the Real-Time Monitor or Performance Analyzer for a specific instance by right-clicking on the Dashboard.

The image illustrates the workflow from a dashboard to detailed monitoring tools. On the left, a computer monitor displays the 'EXEM DASHBOARD' with various metrics like 'ACTIVE SESSIONS', 'CPU', and 'LOCK WAITING SESSIONS'. A red dashed circle highlights a session ID '132(mysql)' in the 'ACTIVE SESSIONS' list. A red arrow points from this session to a context menu that includes 'Realtime' and 'PA' options. To the right, two overlapping windows are shown: 'REAL-TIME MONITOR' (MaxGauge for MySQL) and 'PERFORMANCE ANALYZER' (MAXGAUGE). The Real-Time Monitor window displays multiple graphs for CPU, ACTIVE MEMORY, THREAD ELAPSED TIME SPREAD, and THREADS RUNNING. The Performance Analyzer window shows a detailed view of a specific thread with various performance metrics and a 'Thread List' table.



Thank you

