



MAXGAUGE REALTIME MONITOR

Instance Name Business Name

OVERALL

ORA102

JAPAN

CHINA

# MAXGAUGE for MySQL

## PRODUCT DOCUMENTATION

- **MAXGAUGE**

- OVERVIEW
  - ARCHITECTURE
  - FEATURE

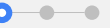
- **FEATURE**

- REAL-TIME MONITOR
  - ADMIN
  - PERFORMANCE ANALYZER

- **PERFORMANCE ANALYZER**

- ALERT & MONITORING
  - EXEM DASHBOARD





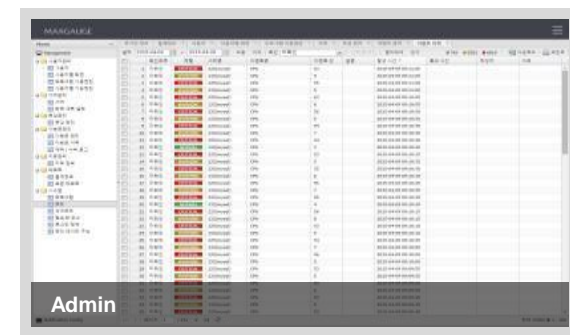
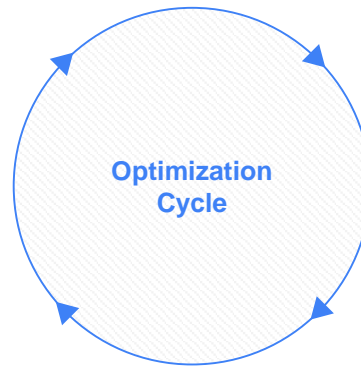
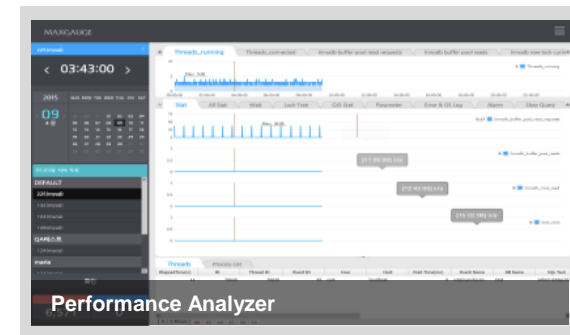
# MAXGAUGE for MySQL

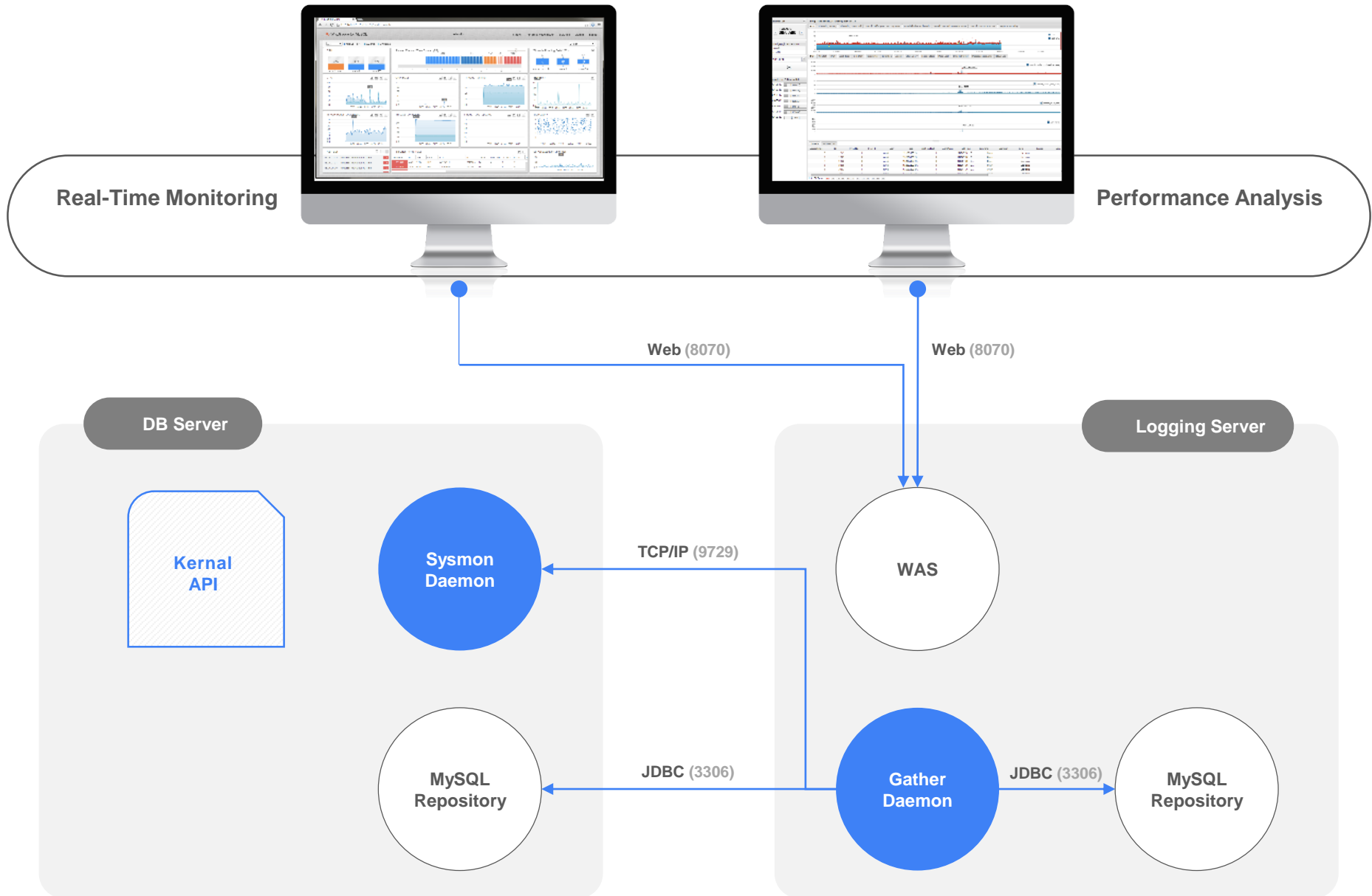
OVERVIEW  
ARCHITECTURE  
FEATURE



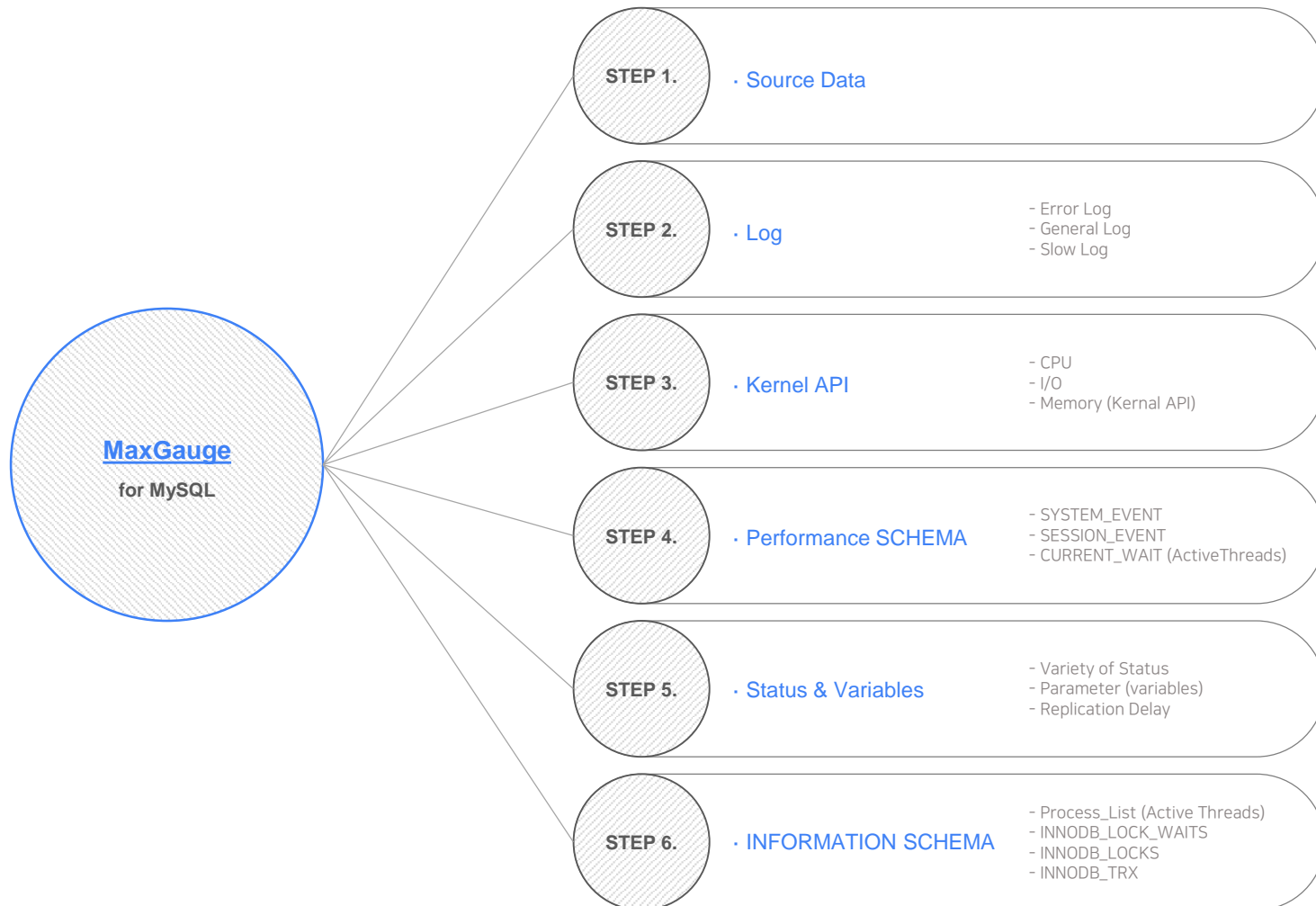
# SW solution for database performance optimization

MaxGauge is a software solution to manage the database performance providing real-time monitoring and operation data collection/diagnosis/analysis, SQL tuning, etc., to effectively manage the system's availability and performance. With its Pro-Active monitoring technique, MaxGauge also provides concrete analysis data on the effect of investments by instantly identifying problems, effectively analyzing the bottleneck effect of applications, and storing diverse performance data.





# Performance collection data types





# FEATURE

REAL-TIME MONITOR  
ADMIN  
PERFORMANCE ANALYZER



# Easy and intuitive user interface

View by service group

Visualization of OS and Thread index

Integrated monitoring of multimode performance index

Wait monitoring

Slow Query monitoring

Real-time event recording

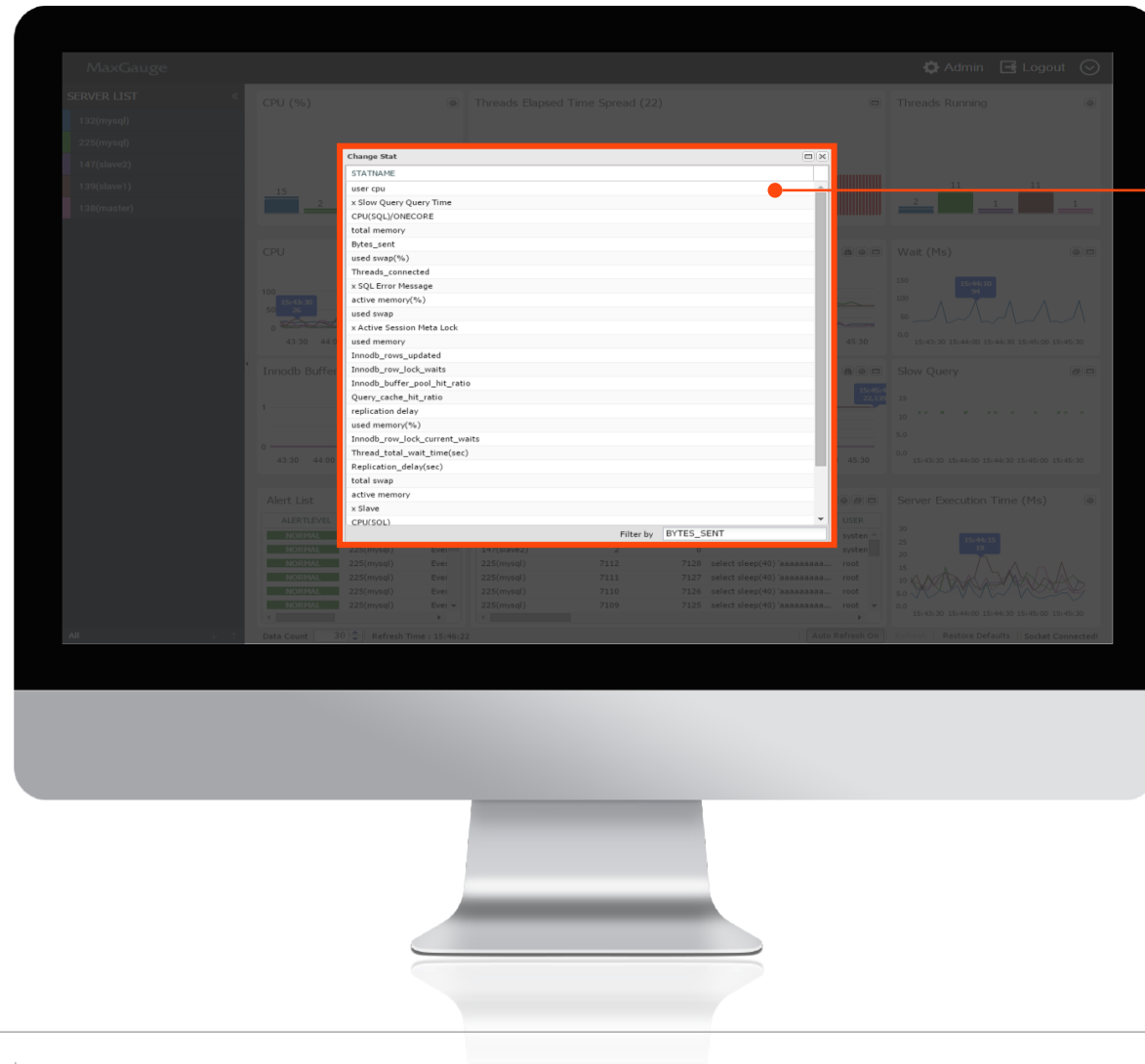
Active Thread and query data

ALERTLEVEL	ALIAS	STATM
NORMAL	225(mysql)	Ever
NORMAL	225(mysql)	CPU
WARNING	225(mysql)	CPU
NORMAL	225(mysql)	DB
CRITICAL	225(mysql)	DB
NORMAL	225(mysql)	Ever

ALIAS	ID	THREAD ID	SQLTEXT	USER
139(slave1)	2	0		system
147(slave2)	2	0		system
225(mysql)	6857	6873	select sleep(40) aaaaaaaaaa...	root
225(mysql)	6856	6872	select sleep(40) aaaaaaaaaa...	root
225(mysql)	6855	6871	select sleep(40) aaaaaaaaaa...	root
225(mysql)	6854	6870	select sleep(40) aaaaaaaaaa...	root

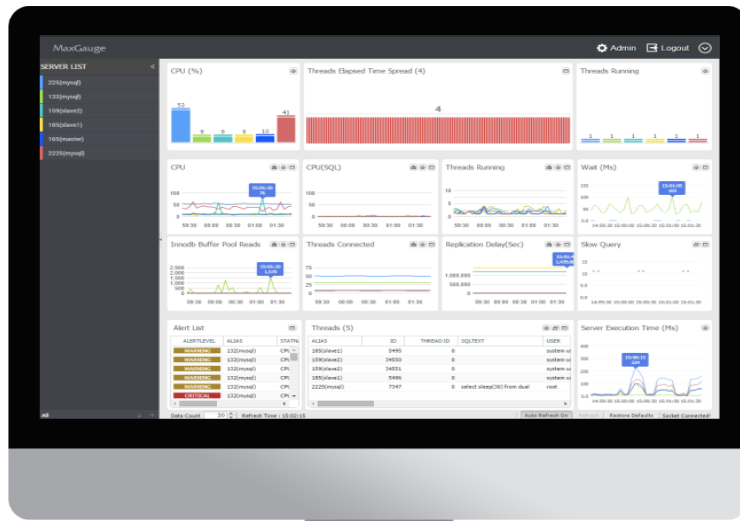


# Easy arrangement of performance index according to operating conditions



Changeable monitoring performance index

# DB monitoring through an 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**

**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	

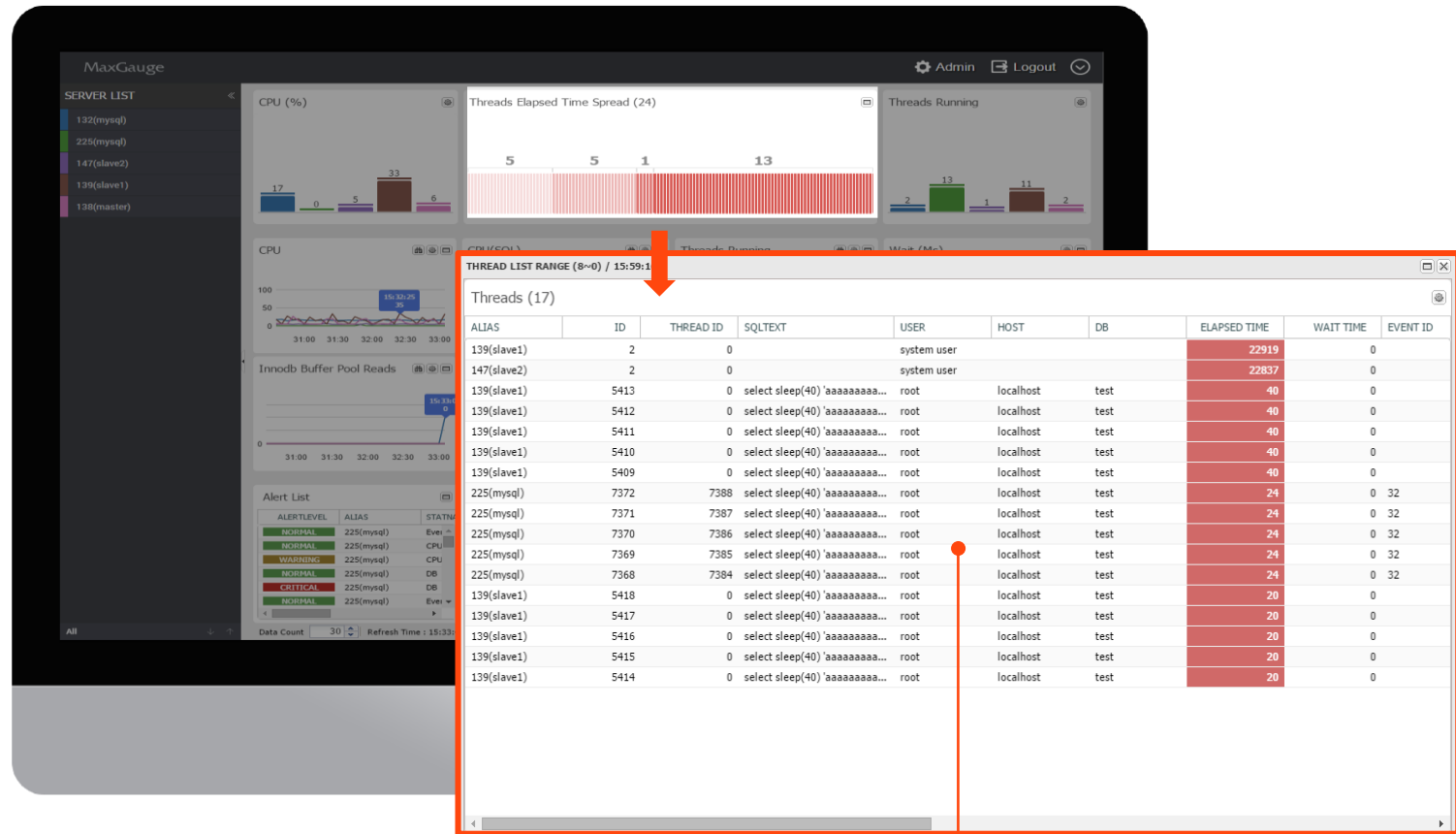
**SQL Used**

```
delete from lock_test
```

Linkage to the Thread Detail screen by double-clicking for the thread performing query for a long time

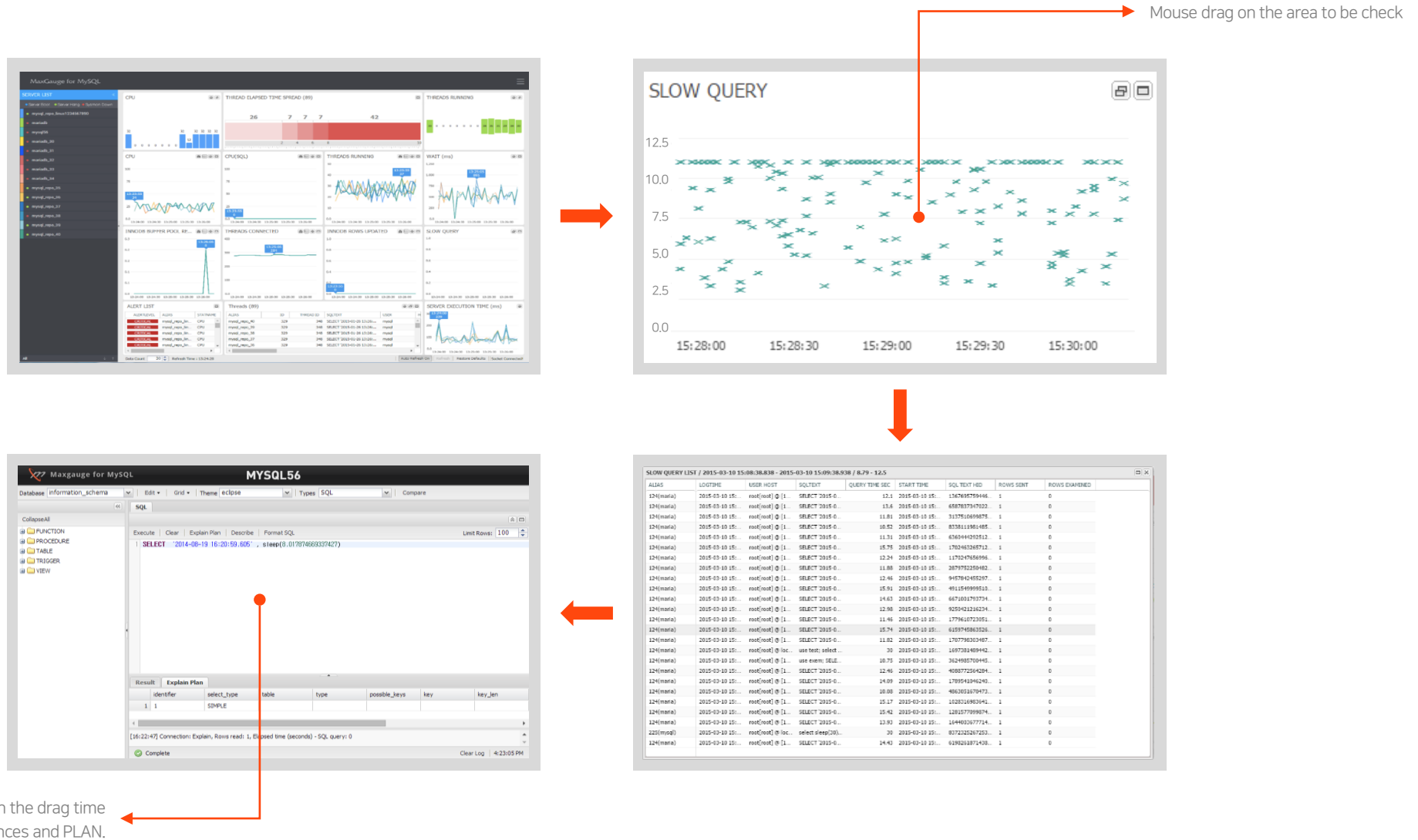
Data on current standby events, OS index, and ongoing SQL

# Identification of the number of active threads according to the respond time



Presentation of the number of active threads of respond time

# SLOW QUERY analysis through Xview, real-time monitor



# Alarm history is provided based on the threshold setting

The screenshot displays the MaxGauge monitoring dashboard. On the left, a 'SERVER LIST' shows several MySQL servers. The main area contains various performance graphs for CPU, Threads, and Memory. Two red boxes highlight specific sections:

- Alert Log:** A table showing critical alerts for MySQL servers. The table has columns for Date, Type, Confirmation Status, Level, Server Name, Event ID, Occurrence Count, Occurrence Time, Recovery Time, and Reason.
- Error & OS Log:** A table showing error and OS events. The table has columns for Date, Type, Confirmation Status, Alias, Event Type, Severity, Server Name, Event Description, Occurrence Time, Recovery Time, and Reason.

Red arrows point from the text labels 'Alarm Log history' and 'Alarm setting (providing Alert Log and Error & OS Log)' to their respective sections in the interface.

# Lock/Session/Parameter data linkage of **certain instances through tools**

Right-click mouse

Holder/waiter data at lock

Session group monitoring through conditional searching

Parameter List on the appropriate instance

# Simple MaxGauge management through **Admin functions**

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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 and Test connection

MAXGAUGE

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 - Manager - User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Administrator - Manager - User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Admin - Manager - User by Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Administrator - Manager - User by Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Admin - Manager - User View Setting	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Administrator - Manager - User View Setting	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Admin - Manager - Program Permissions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Administrator - Manager - Program Permissions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Admin - Manager - Control Permissions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Administrator - Manager - Control Permissions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Admin - Server(s) - Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

User account addition and authorization

MAXGAUGE

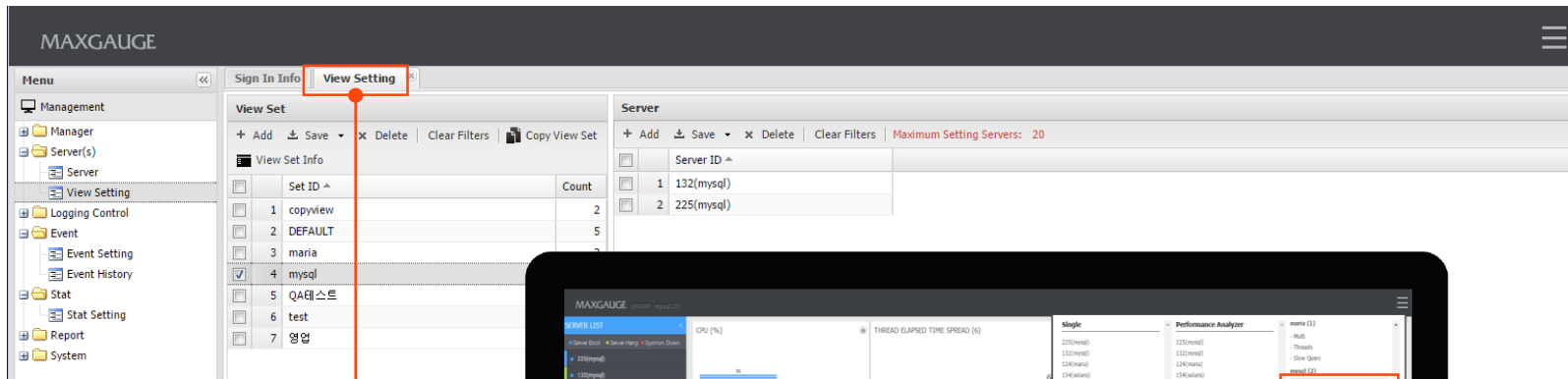
Sign In Info Server Event History Event Setting

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

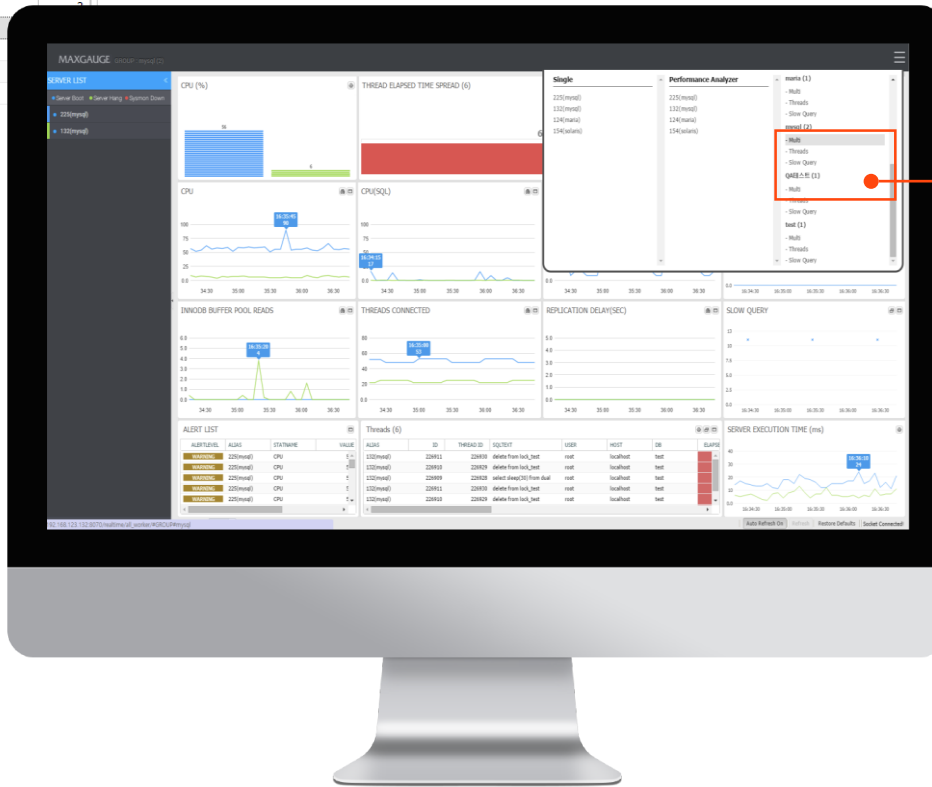
Server ID	Stat Name	Comparison	Warning	Critical
Please select...				
1	225(mysql) - Threads_running	>=	10	15
2	225(mysql) - CPU	>=	50	70
3	132(mysql) - Threads_running	>=	10	15
4	132(mysql) - CPU	>=	50	70
5	124(maria) - CPU	>=	50	70
6	124(maria) - Threads_running	>=	10	15
7	151(maria) - Threads_running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



Grouping by operation instance on the View Setting tap



Multi View check of certain groups



# Performance Analyzer to analyze the data **stored in the repository**

Log date selection

Log instance selection

Log alarm number

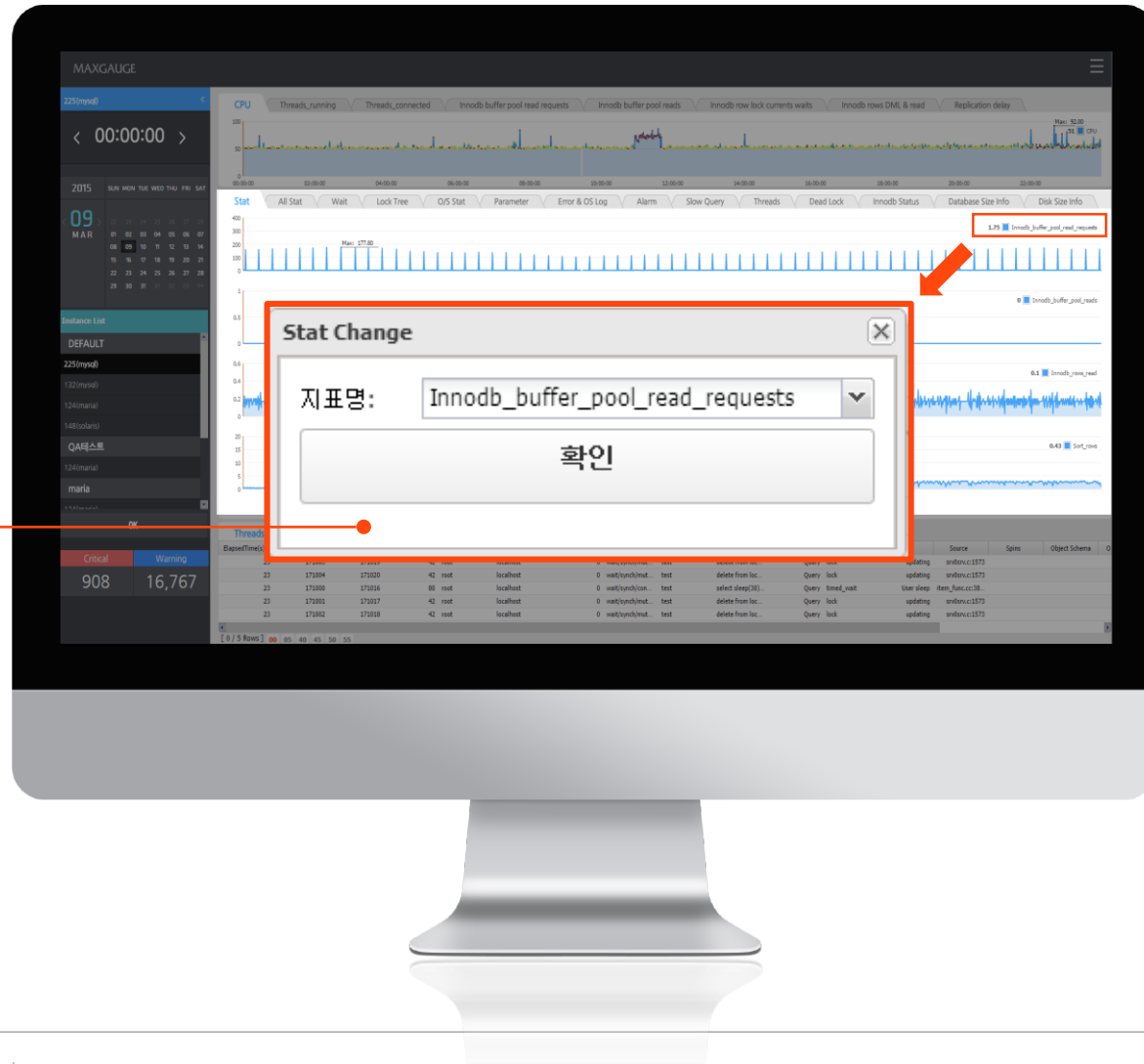
Active Thread 정보

Major index log graph

Detailed index log graph

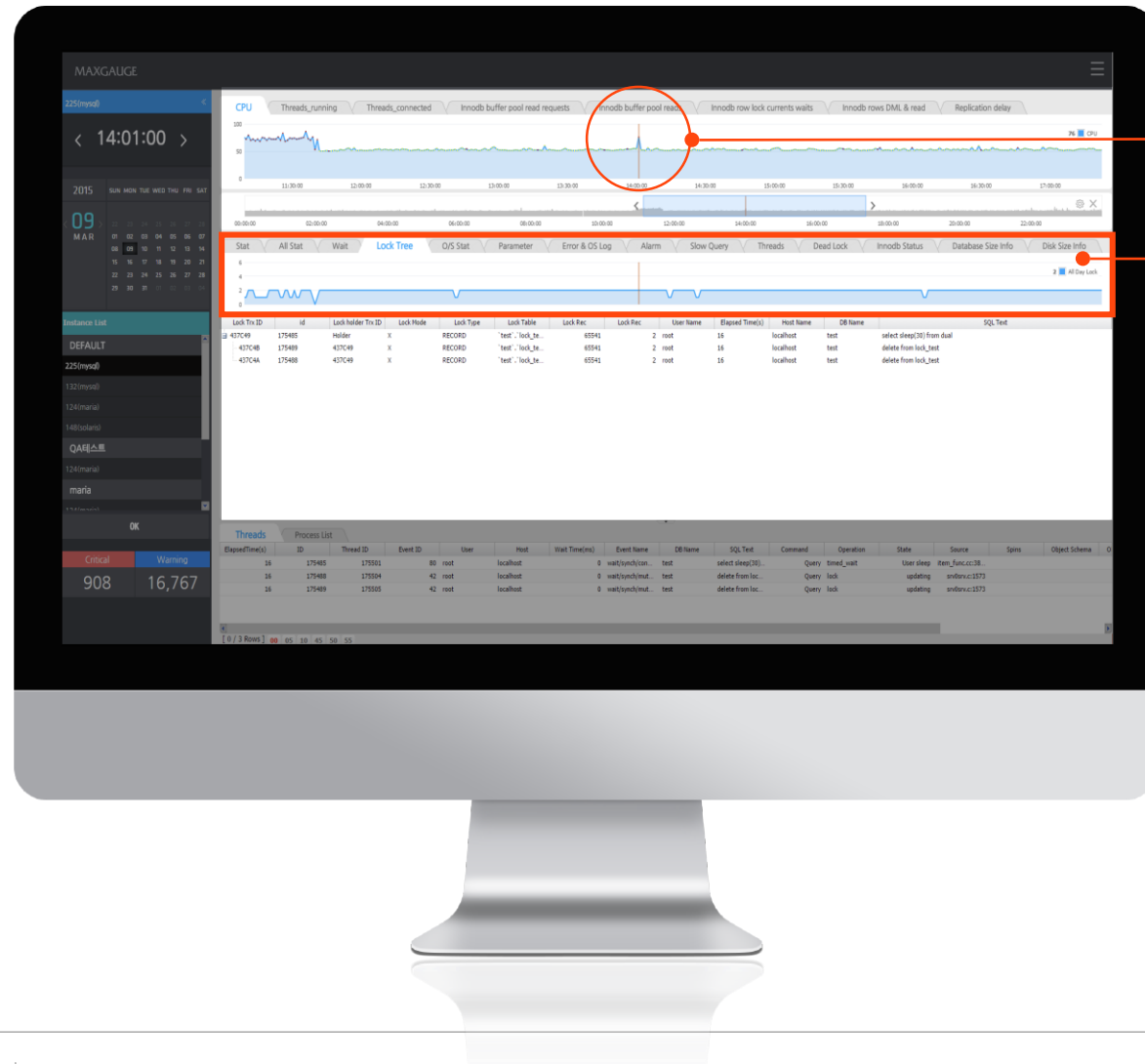
Process List	Event ID	User	Host	Wait Time(s)	Event Name	DB Name	SQL Text	Command	Operation	State	Source	Spins	Object Schema
23 171803 171819	42	root	localhost	0	wait/synch/innodb	test	delete from loc	Query lock	updating	updating	snrdrv.c:1573		
23 171804 171820	42	root	localhost	0	wait/synch/innodb	test	delete from loc	Query lock	updating	updating	snrdrv.c:1573		
23 171805 171816	88	root	localhost	0	wait/synch/innodb	test	select sleep(30)	Query sleep_wait	User sleep	sleep	item_func.c:58		
23 171806 171817	42	root	localhost	0	wait/synch/innodb	test	delete from loc	Query lock	updating	updating	snrdrv.c:1573		
23 171807 171818	42	root	localhost	0	wait/synch/innodb	test	delete from loc	Query lock	updating	updating	snrdrv.c:1573		

# Provision of all indexes **provided by MySQL**



Graph can be changed to the index that user wants

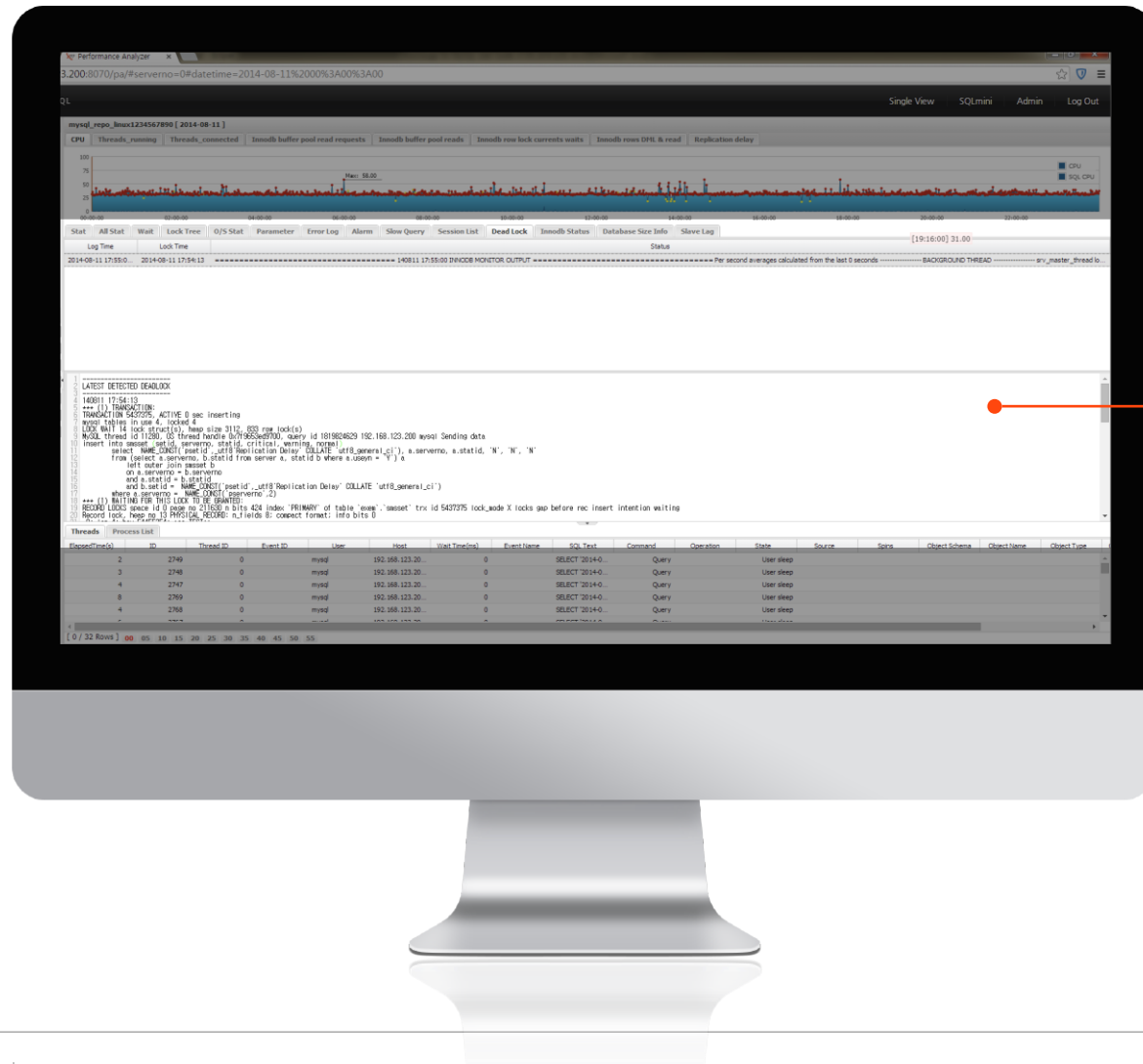
# LOCK history at a certain time is provided in a tree structure



Detailed analysis through a drag at a certain time

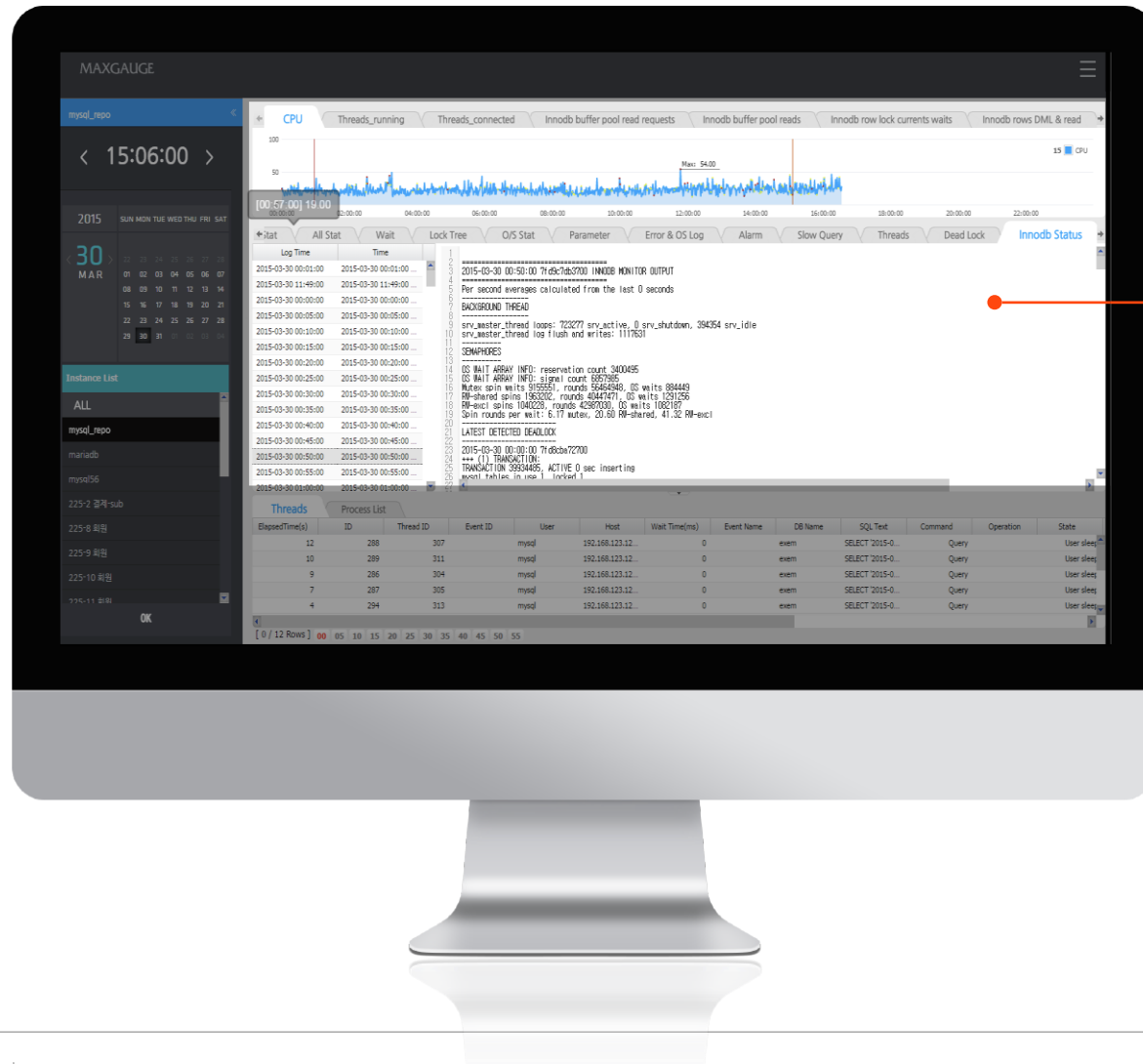
Lock Tree at a certain time can be checked

# Dead Lock analyzes real-time LOCK waiting relations



Dead Lock history

# Real-time provision of InnoDB Status data



InnoDB Status is recorded every 5 seconds

# TOP-DOWN analysis of **SLOW QUERY** at a certain time

① Slow Query at a certain time can be checked by dragging the period

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(15.90885208250153);
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(12.86757029141136);
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 of the Slow Query to be checked



Plan View - Chrome

192.168.123.132:8070/sqlm/planView.html

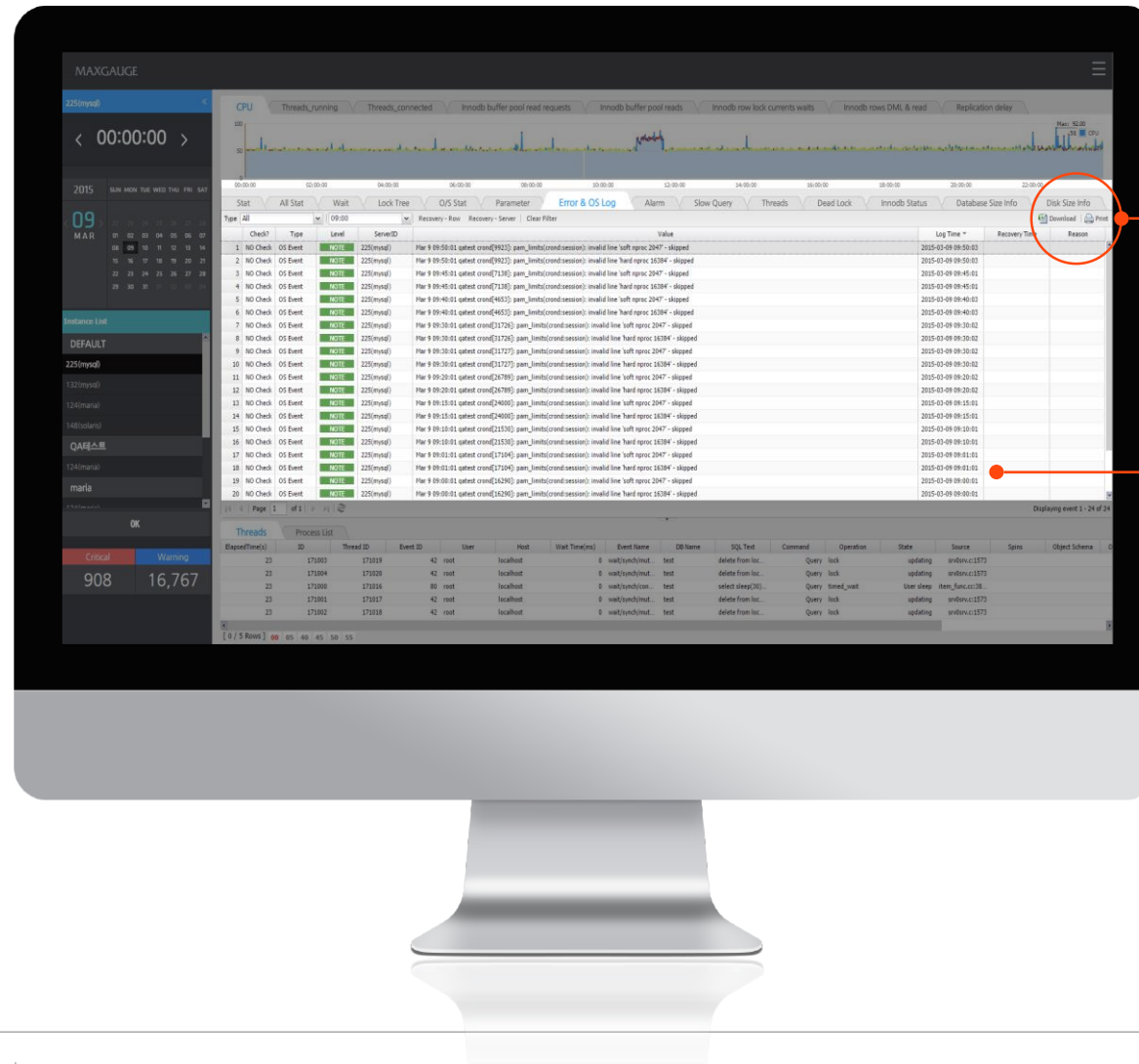
Plan Refresh | Format SQL

```

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

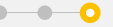
identifier	select_type	table	type	possible_keys	key	key_len	ref	rows	filtered
1	SIMPLE								

# Easy collection and search of the ERROR/EVENT log which can be exported in Excel



Download or print as an Excel file

Collection and search of the Error/Event log



# Enterprise Management System

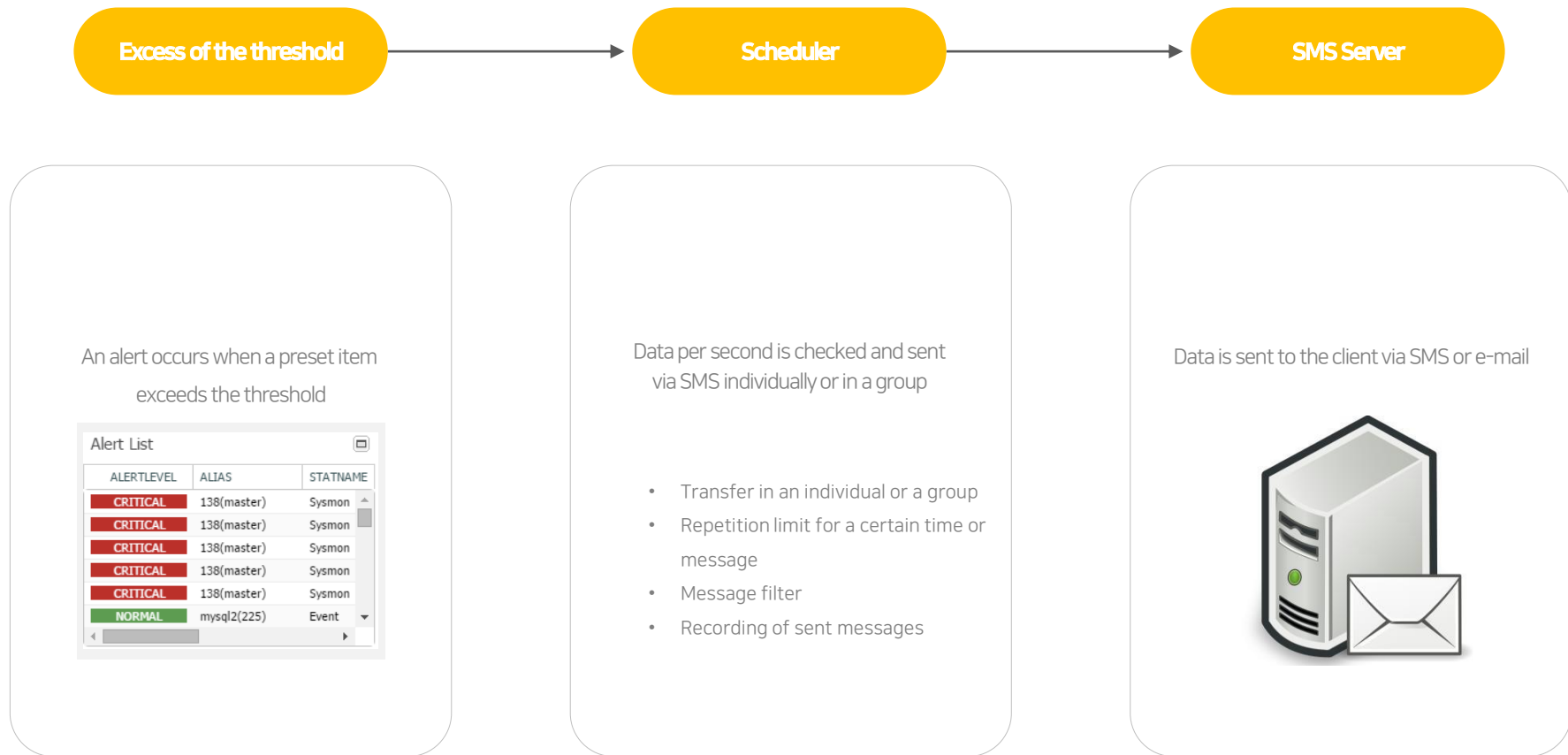
ALERT & MONITORING  
EXEM DASHBOARD





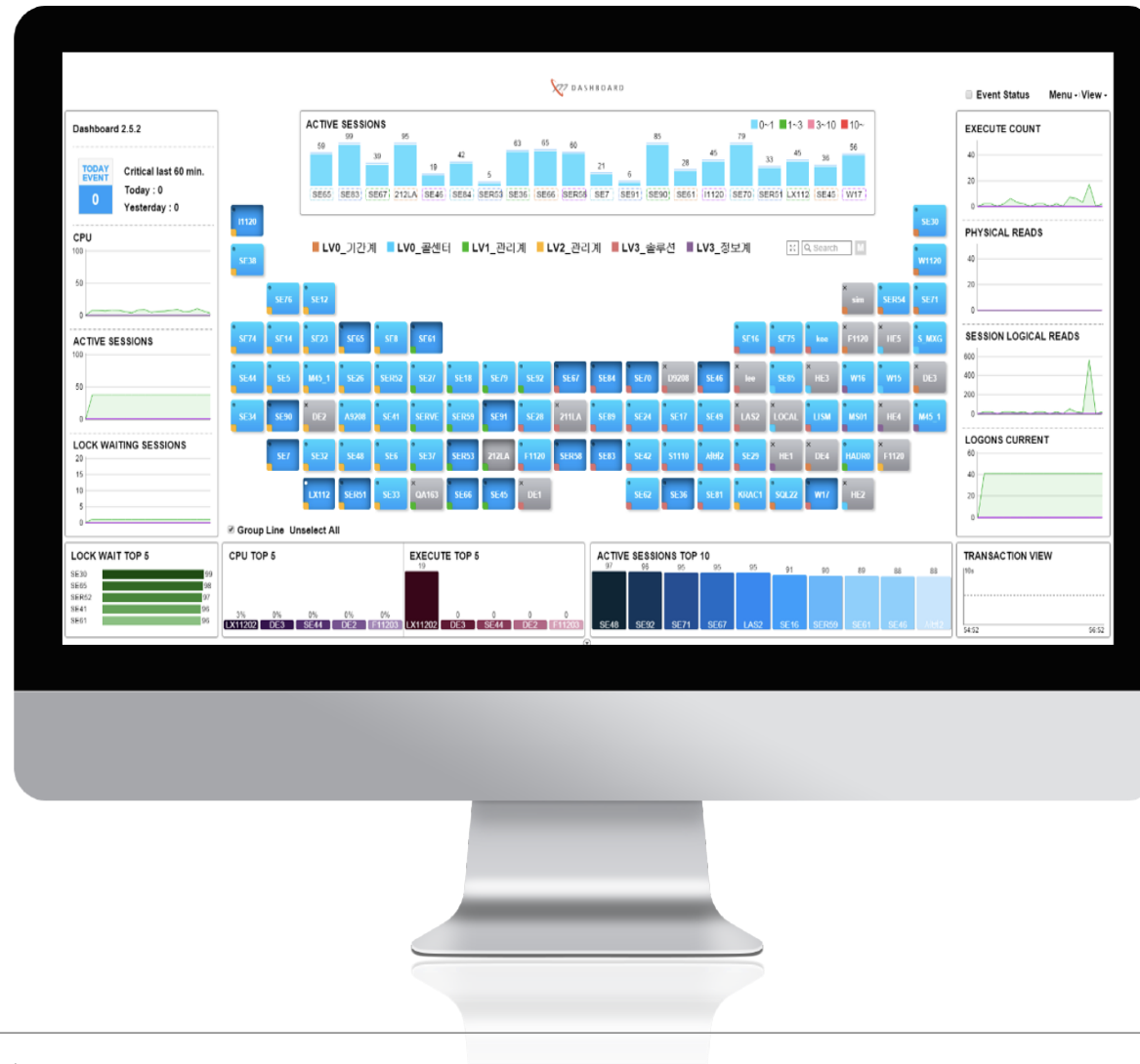
# Swift response to **any alert by sending messages**

Alert can be set for all stats and events provided by MySQL, ensuring fast and accurate detection.



# Health Check of several instances through the EXEM Dashboard!

EXEM Dashboard 3.0 is a monitoring screen that shows up to 140 instances in real time at once, enabling real-time



# Strong connection of the **Real-Time Monitor and PA**

The instance can be linked to the Real-time Monitor or the Performance Analyzer by right-clicking on the dashboard.



# Provision of the history and stats of **all instances** registered in the Dashboard

The event history and stats of all registered instances can be checked.

The screenshot displays the EXEM Dashboard interface. On the left, a sidebar contains a 'Management menu'. The main area features a table with columns for instance ID, instance name, IP address, instance type, instance status, and event details. A 'Server list' is visible on the right side of the table. Below the table, a 'Current event history list' is shown, with a red box highlighting a specific event entry. Red arrows from external labels point to these key UI components.



Thank you

