



MAXGAUGE REALTIME MONITOR

Instance Name Business Name

OVERALL

ORA102
JAPAN
CHINA
...

MAXGAUGE for Amazon Aurora **On AWS**

PRODUCT DOCUMENTATION



- **MAXGAUGE**

OVERVIEW
ARCHITECTURE
FEATURE

- **FEATURE**

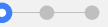
REAL-TIME MONITOR
ADMIN
PERFORMANCE ANALYZER

- **PERFORMANCE ANALYZER**

ALERT & MONITORING
EXEM DASHBOARD



* The product image may be different depending on product version.



MAXGAUGE

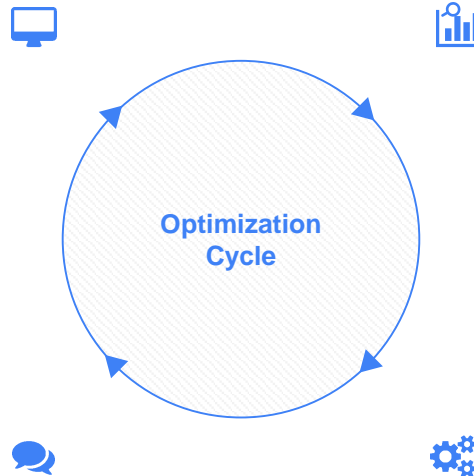
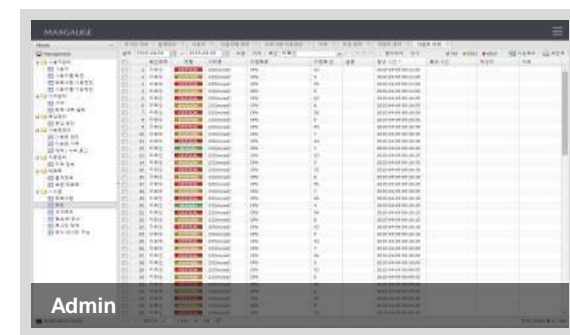
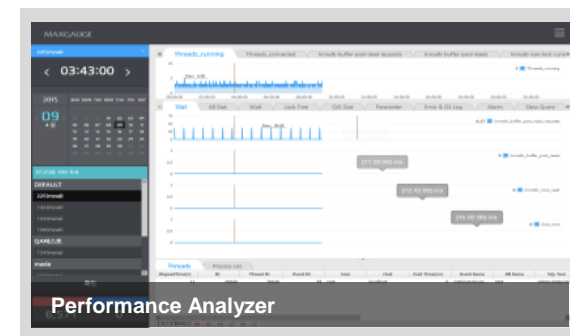
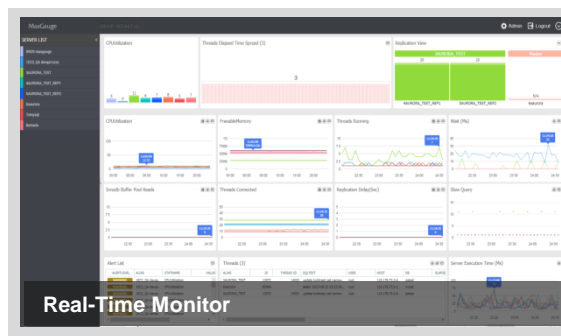
for Amazon Aurora **on AWS**

OVERVIEW
ARCHITECTURE
FEATURES



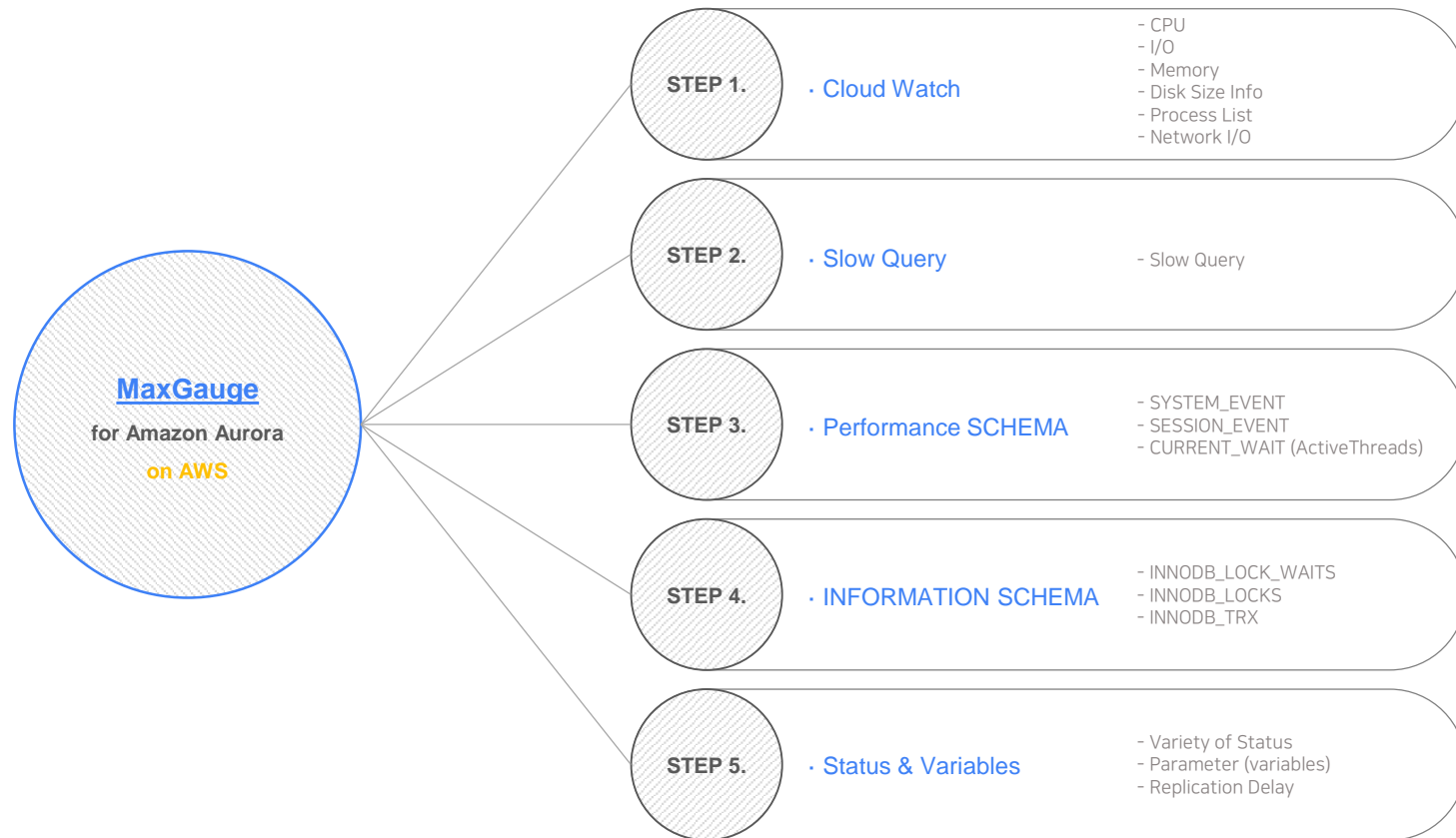
Professional software solution for database performance optimization

MaxGauge 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



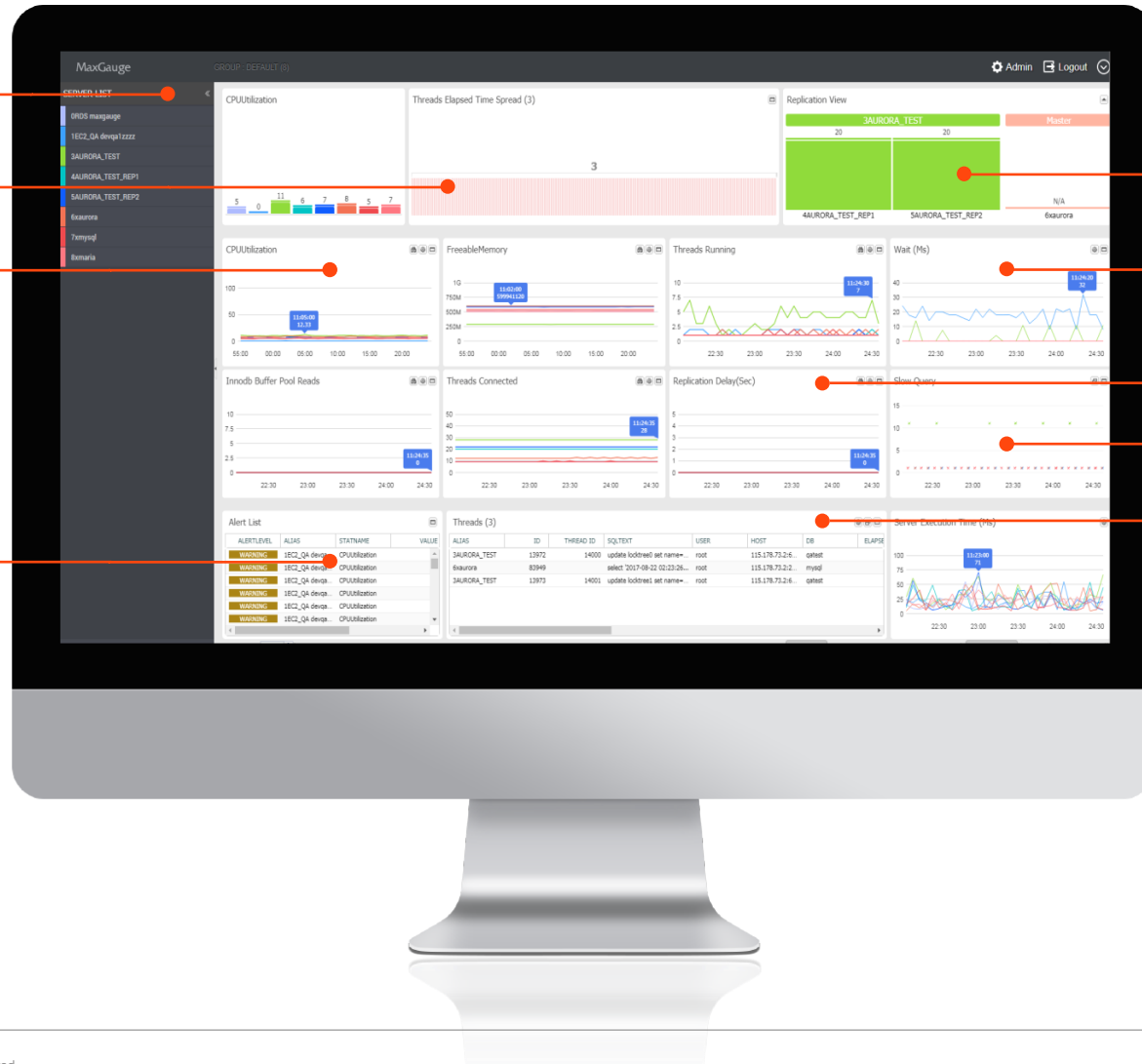


FEATURE

REAL-TIME MONITOR
ADMIN
PERFORMANCE ANALYZER



Intuitive and easy user interface



View by Service Group

Thread Indicator Visualization Area

Multi Node Performance Indicator
Integrated Monitoring Area

Real-time Event History

Replication View

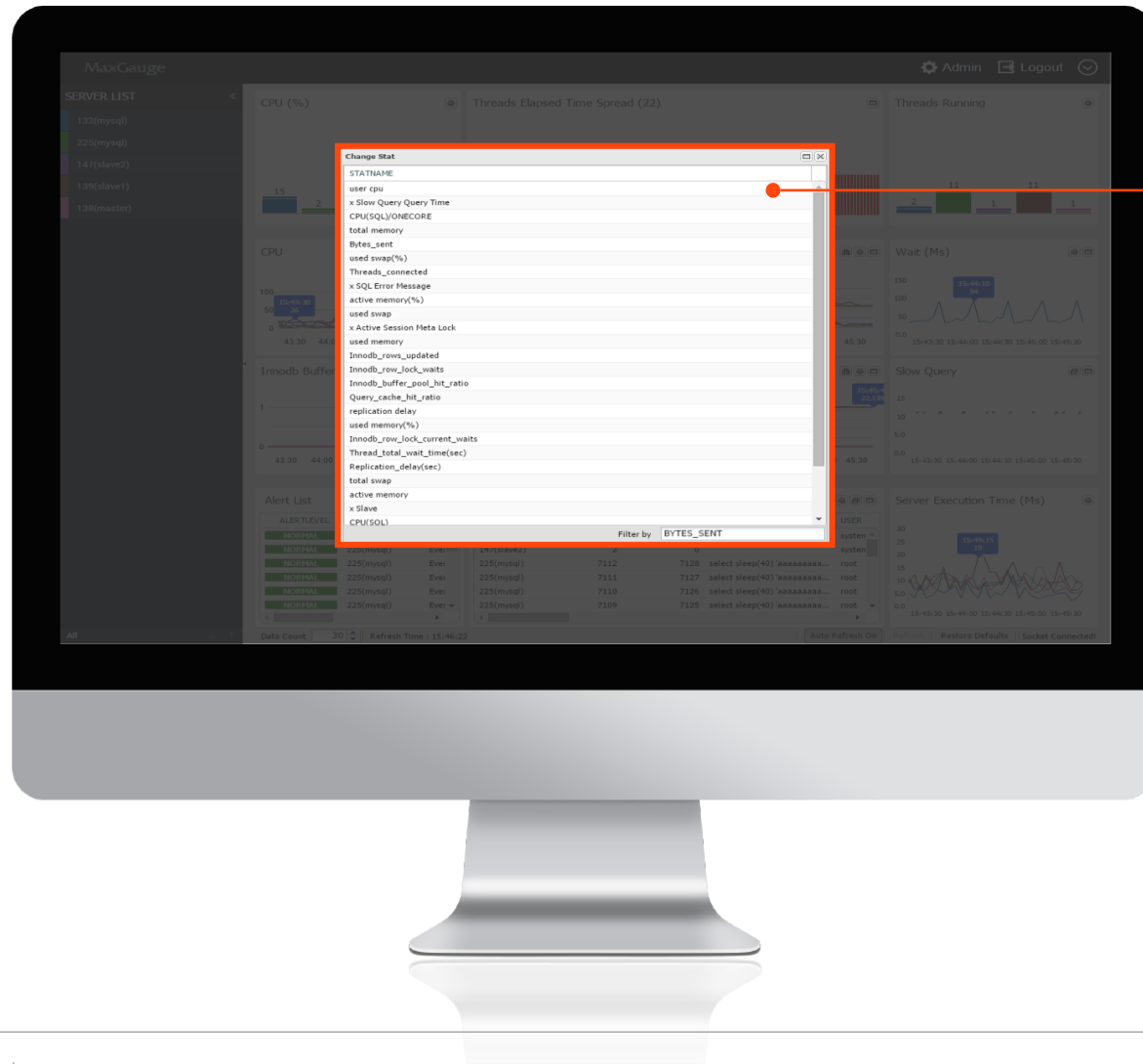
Wait Monitoring Area

Replication Monitoring Area

Slow Query Monitoring Area

Active Thread and Performance
Query Information

Easy-to-use performance metrics array



Users can easily change monitoring performance indicators

Database Monitoring with Easy **TOP-DOWN** Approach



Threads (18)

ALIAS	ID	THREAD ID	SQLTEXT	USER	HOST	DB	ELAPSE
testRDS	128	147	UPDATE warehouse SET w_y...	awsuser	ec2-52-197-173...	tpcc	
testEC2	1180	1205	COMMIT	root	52.197.173.96:5...	tpcc	
testRDS	130	149	CALL PAYMENT(1,2,1,2,@p_c...	awsuser	ec2-52-197-173...	tpcc	
testRDS	129	148	COMMIT	awsuser	ec2-52-197-173...	tpcc	
testRDS	127	146	COMMIT	awsuser	ec2-52-197-173...	tpcc	
testRDS	126	145	UPDATE warehouse SET w_y...	awsuser	ec2-52-197-173...	tpcc	

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

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
```

Delta Info

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

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	Descrj	Log Time	Recovery Time	Writer	Reason
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:50.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:45.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:40.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:35.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:30.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:25.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:20.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:15.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:10.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:05.0			
2016-07-18	NO Check	CRITICAL	testEC2	CPUUtiliz...	87		2016-07-18 11:07:00.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:07:00.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:55.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:50.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:45.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:40.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:35.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:30.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:25.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:20.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:15.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:10.0			
2016-07-18	NO Check	WARNING	testEC2	Threads...	22		2016-07-18 11:06:05.0			
2016-07-18	NO Check	CRITICAL	testEC2	CPUUtiliz...	88		2016-07-18 11:06:00.0			

Alarm setting in Admin page (Provide Alert Log)

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

Right Click

Provide session monitoring function through search of threads

Provide Holder/Waiter information when a lock occurs

Provide Parameter List for related instance

ID	THREAD ID	USER	HOST	DB	ELAPSED TIME	WAIT TIME	EVENT ID	EVENT NAME	SQLTEXT
1	5	root	localhost		0	0			INSERT INTO

THREAD ID	ID	LOCK MODE	LOCK TYPE	LOCK TABLE	LOCK PAGE	LOCK SEC	USER	DB	ELAPSED TIME	SQL TEXT
There are no data to show in this view.										

NAME	VALUE
aria_block_size	8192
aria_checkpoint_interval	30
aria_checkpoint_log_expiry	1548576
aria_force_aria_after_aria_recovery_fulves	0
aria_group_commit	none
aria_group_commit_interval	0
aria_log_file_size	107374824
aria_log_flush_type	immediate
aria_max_sort_file_size	6223720368372732
aria_page_checksum	ON
aria_page_checksum	ON
aria_pagecache_age_threshold	300
aria_pagecache_buffer_size	134217728
aria_pagecache_buffer_size	300
aria_pagecache_division_limit	512
aria_pagecache_file_test_size	107374824
aria_recovery	NORMAL
aria_repair_threads	1
aria_sort_buffer_size	38804412
aria_sync_method	mutex_mutex
aria_sync_log_dir	NEWFILE
aria_wait_for_temp_rollback	ON
aria_zookeeper_instrument	1
aria_zookeeper_offset	1
autocommit	ON
autocommit_sp_privileges	ON
back_log	64
basedir	/data/mysql/
binlog_binlog	OFF
binlog_expire_logs_seconds	OFF
binlog_cache_size	32768
binlog_checksum	NONE

Easy MaxGauge management with **Admin function**

MAXGAUGE

Menu: 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

Menu: 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"/>

Adding and Granting User Accounts

MAXGAUGE

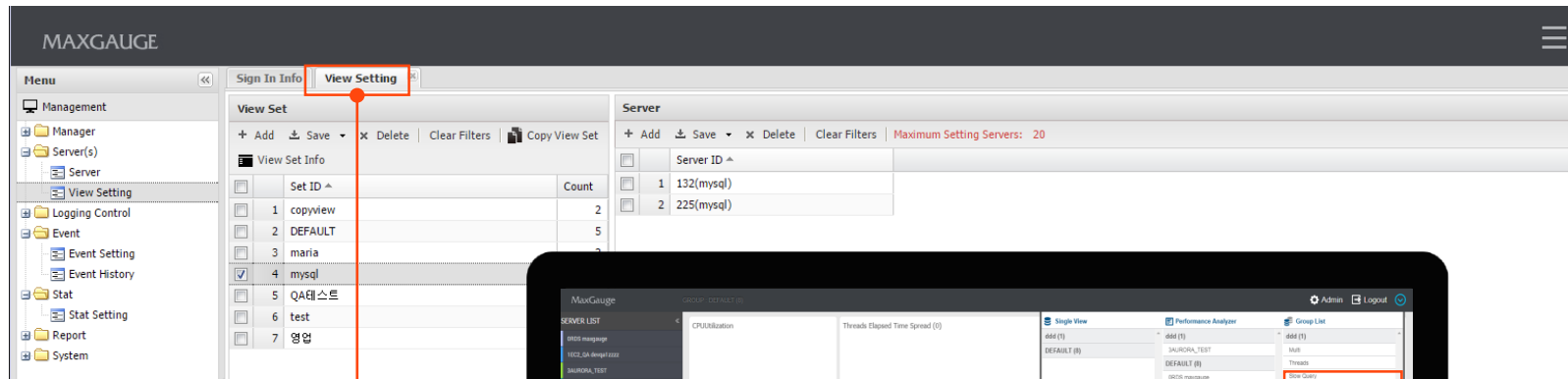
Menu: Sign In Info | Server | Event History | Event Setting

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

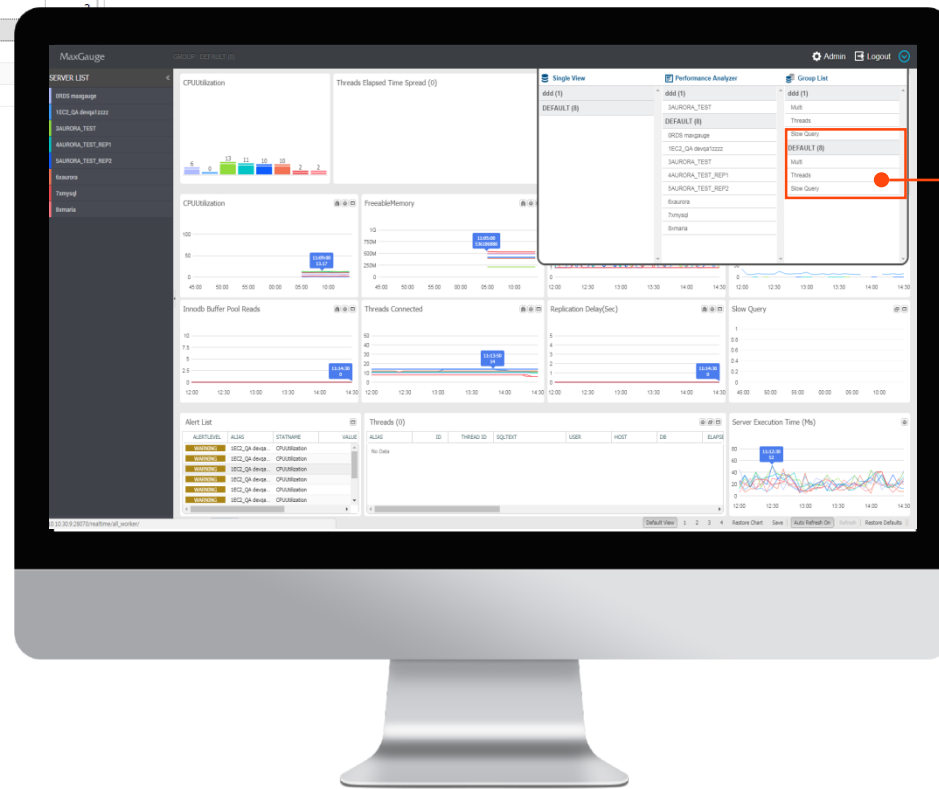
Server ID	Stat Name	Comparison	Warning	Critical
Please select...				
1	225(mysql) Threads_running	>=	0	0
2	225(mysql) CPU	>=	10	15
3	132(mysql) Threads_running	>=	50	70
4	132(mysql) CPU	>=	10	15
5	124(maria) CPU	>=	50	70
6	124(maria) Threads_running	>=	10	15
7	151(maria) Threads_running	>=	10	15
8	151(maria)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

Easy threshold setting

Admin Group Management **by instances**



Grouping function by instances in View Setting Tap



Specific Group Multi View

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

The screenshot shows the MaxGatage Performance Analyzer interface. On the left, there is a sidebar with a calendar for selecting a log date (04/01/2018) and a list of log instances including 'SAURORA_TEST'. Below the sidebar, there are 'Critical' and 'Warning' alarm counts, both showing '0'. The main area displays several performance graphs for 'Threads_connected', 'InnoDB buffer pool read requests', 'InnoDB row lock currents waits', and 'InnoDB row DML & read'. A table at the bottom shows 'Active Thread Information' with columns for Thread ID, Event ID, User, Host, Wait Time, Event Name, DB Name, SQL Text, Command, Operation, State, Source, Spins, and Object Schema.

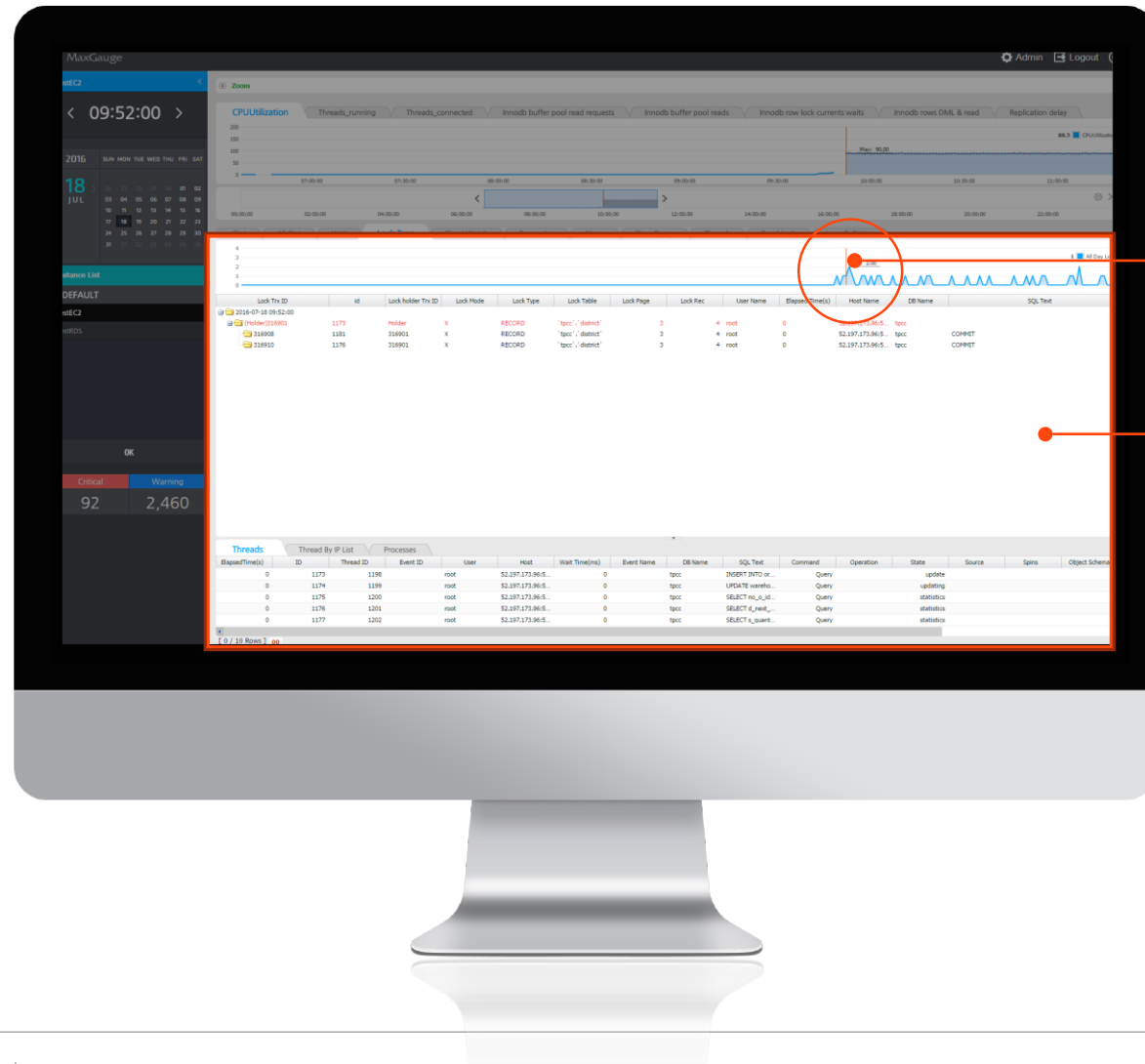
Callouts from the left side of the image point to the following features:

- Select Log Date
- Select Log Instance
- Log Alarm Count
- Active Thread Information

Callouts from the right side of the image point to the following features:

- Key indicators Log graph
- Detailed Indicator Log Graph

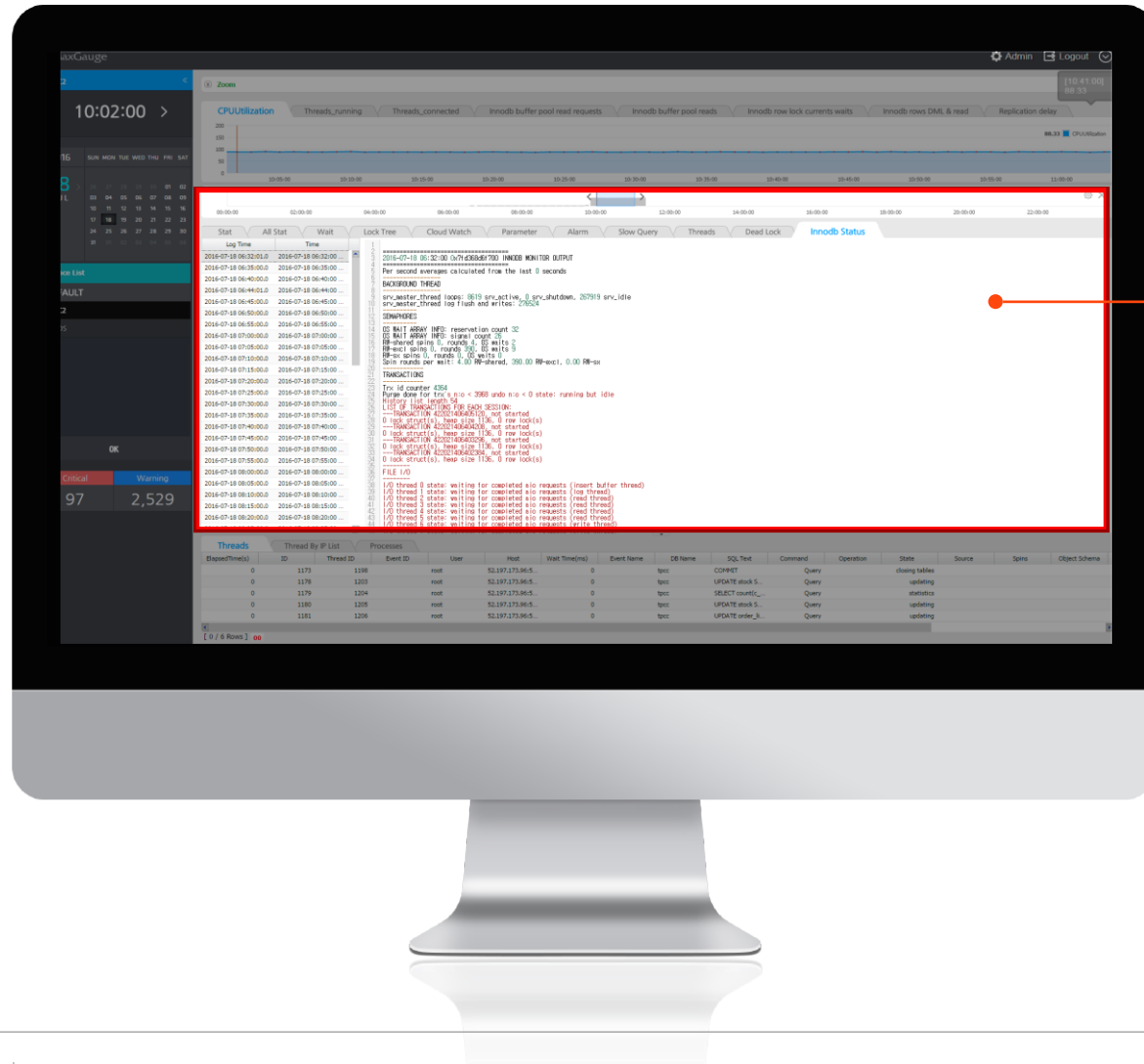
Provide the history of LOCK occurrence at certain point in a tree structure



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(15.90885282501353);
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(12.86757029411136);
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(14.845645566184276);

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

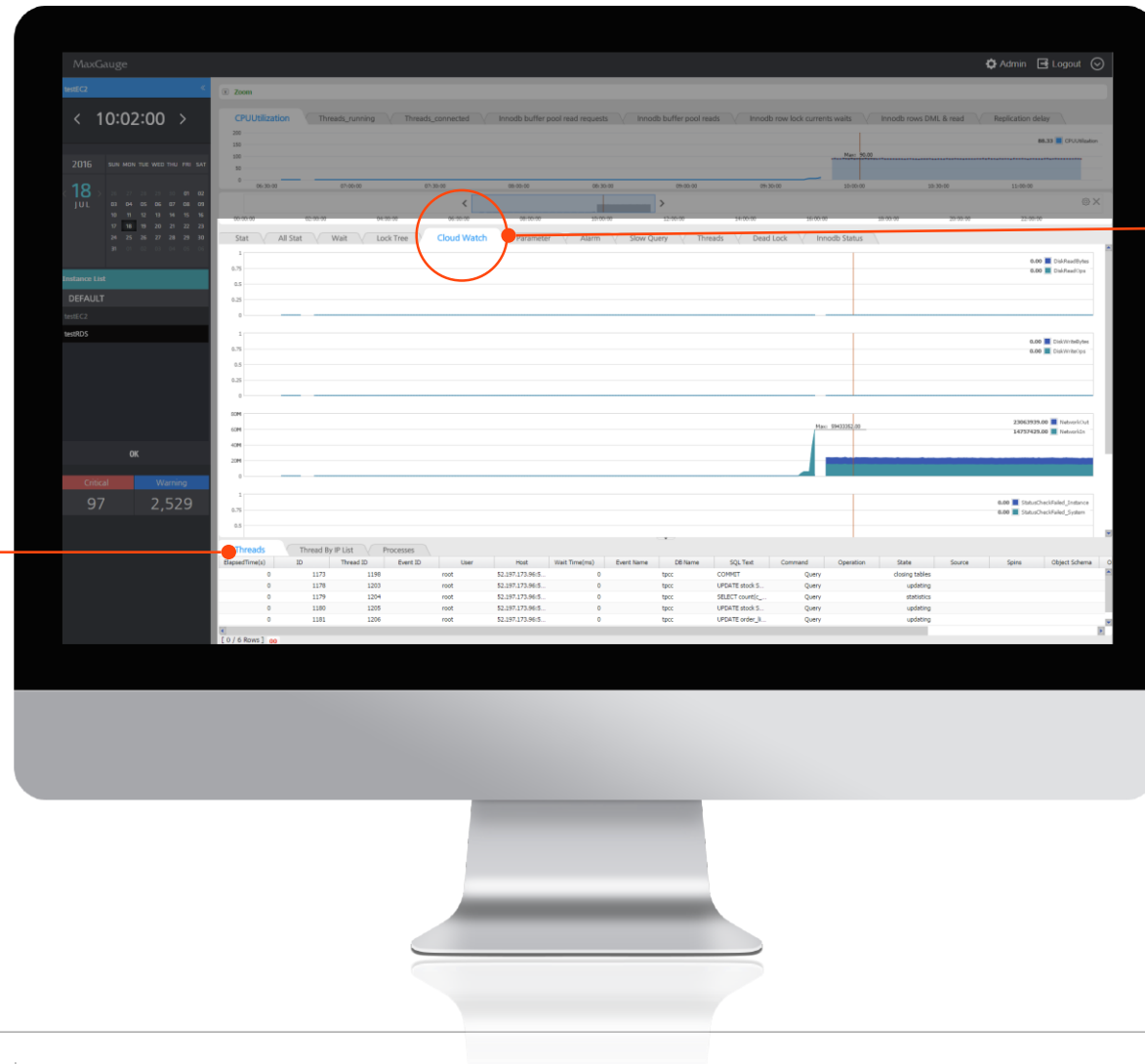
```

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								

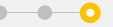


Cloud Watch log collection and DB session linkage analysis



Collect and Check Cloud Watch Log

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



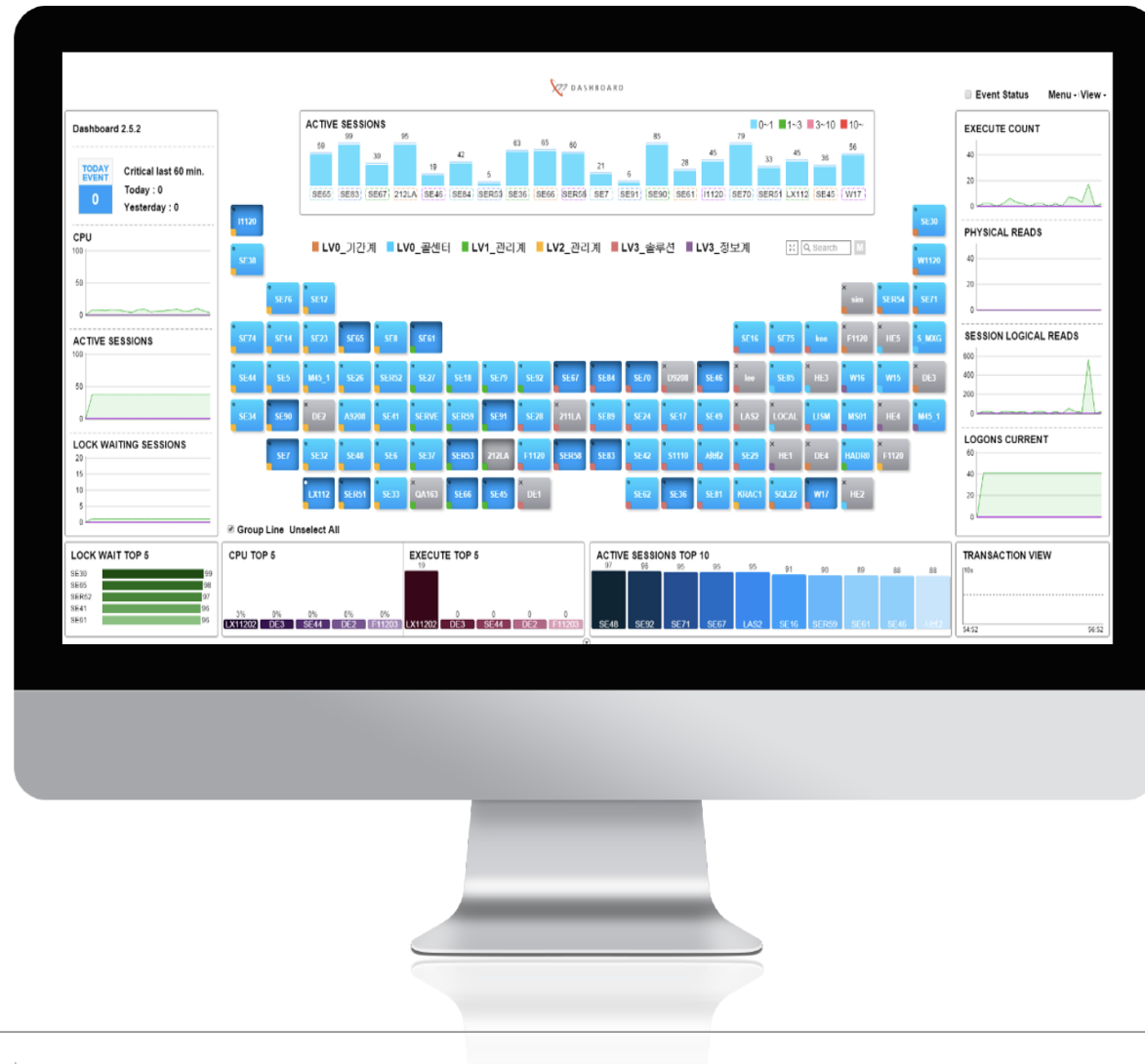
Enterprise Management System

ALERT & MONITORING
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.





Thank you

