IDERA® | MySQL Solution Brief

HOW TO MONITOR THE PERFORMANCE OF GALERA CLUSTERS

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OVERVIEW

SQL Diagnostic Manager for MySQL is an Idera, Inc. tool to monitor MySQL and MariaDB databases. It is a low-overhead, low-maintenance tool that is easy to install and easy to use. It is powerful and flexible and helps pinpoint the instances, databases, tables, and other activity in the environment that needs attention. Idera, Inc. has customers that are monitoring up to 1,200 instances with SQL Diagnostic Manager for MySQL.

SQL Diagnostic Manager for MySQL monitors and reports on activity is agentless, works on-premises, is up and running in 2 minutes, and monitors on-premises and cloud instances.

SUPPORTED DATABASES

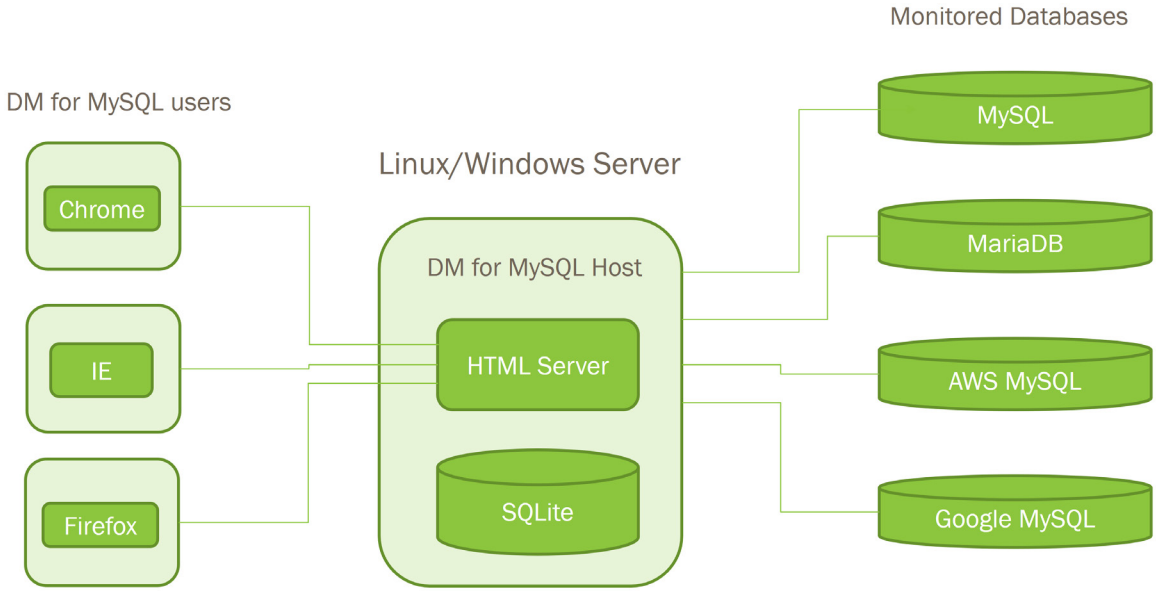
SQL Diagnostic Manager for MySQL supports Oracle MySQL Enterprise, MySQL Community Server, MariaDB, Percona Server for MySQL. SQL Diagnostic Manager for MySQL also supports Galera Cluster for MySQL and MariaDB Galera Cluster. It also supports the managed cloud databases (database-as-a-service or DBaaS) Amazon RDS for MySQL, Amazon RDS for MariaDB, Amazon RDS for Amazon Aurora, Google Cloud SQL for MySQL, and Oracle MySQL Cloud Service.

ARCHITECTURE

SQL Diagnostic Manager for MySQL is a Linux or Windows application that runs on a server. It is self-contained and does not require any client agents, web servers, or any other software installed. It connects to MySQL instances across the network. SQL Diagnostic Manager for MySQL uses low-overhead and well-documented commands to gather information about the sessions, activity, and SQL statements that MySQL is executing, and server configuration and various logs.

SQL Diagnostic Manager for MySQL stores the gathered information in an internal SQLite database. SQLite is a low-maintenance database that can grow to approximately 3 to 5 GB of size per instance monitored. The growth depends on the amount of activity in the monitored server. The developers documented the schema for SQL Diagnostic Manager for MySQL. Both web-based and command-line utilities are available for SQLite to access the data.

Most users, however, show screens, graphs, and other information through the web-based component of SQL Diagnostic Manager for MySQL. Users can connect to the SQL Diagnostic Manager for MySQL host via any standard browser.



INSTALLING SQL DIAGNOSTIC MANAGER FOR MYSQL

INSTALLING SQL DIAGNOSTIC MANAGER FOR MYSQL ON WINDOWS

The installation process in Microsoft Windows is straightforward, and should take less than two minutes. A series of wizard screens drive through the installation process. SQL Diagnostic Manager for MySQL installs as a service in the Windows operating system.

INSTALLING SQL DIAGNOSTIC MANAGER FOR MYSQL ON LINUX

SQL Diagnostic Manager for MySQL can also run on a Linux client. Installation is done as a package or as a tar-ball. The Linux installation process is also simple. And the developers documented the process on the Idera, Inc. website page for SQL Diagnostic Manager for MySQL.

SQL Diagnostic Manager for MySQL installs as Red Hat Package Manager (RPM) package on Linux via Dandified YUM (DNF), Yellowdog Updater Modified (YUM), and Yet Another Setup Tool (YaST). SQL Diagnostic Manager for MySQL installs as a tar-ball on non-RPM Linux. Find detailed instructions at 'http://wiki.idera.com/display/SQLDMYSQL/Linux'.

MONITORING GALERA CLUSTER WITH SQL DIAGNOSTIC MANAGER FOR MYSQL

There are several are several ways to deploy and maintain a Galera Cluster for the MySQL environment. SQL Diagnostic Manager for MySQL can help with each of.

Three main areas for using SQL Diagnostic Manager for MySQL to monitor Galera Cluster are (1) Preparation for deployment, (2) monitoring an active cluster, and (3) problem resolution.

1) PREPARATION FOR DEPLOYMENT

Take several steps to ensure that the deployment goes smoothly.

1) Apply a cluster tag to each node in SQL Diagnostic Manager for MySQL.

2) Check the configuration of each node.

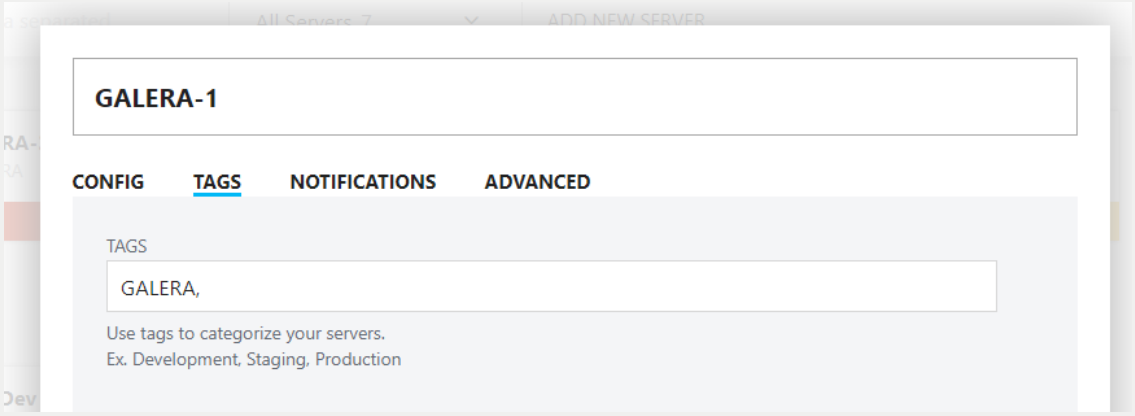
3) Ensure using InnoDB for all tables.

4) Ensure that all tables have unique or primary keys.

1) Apply tags to each node

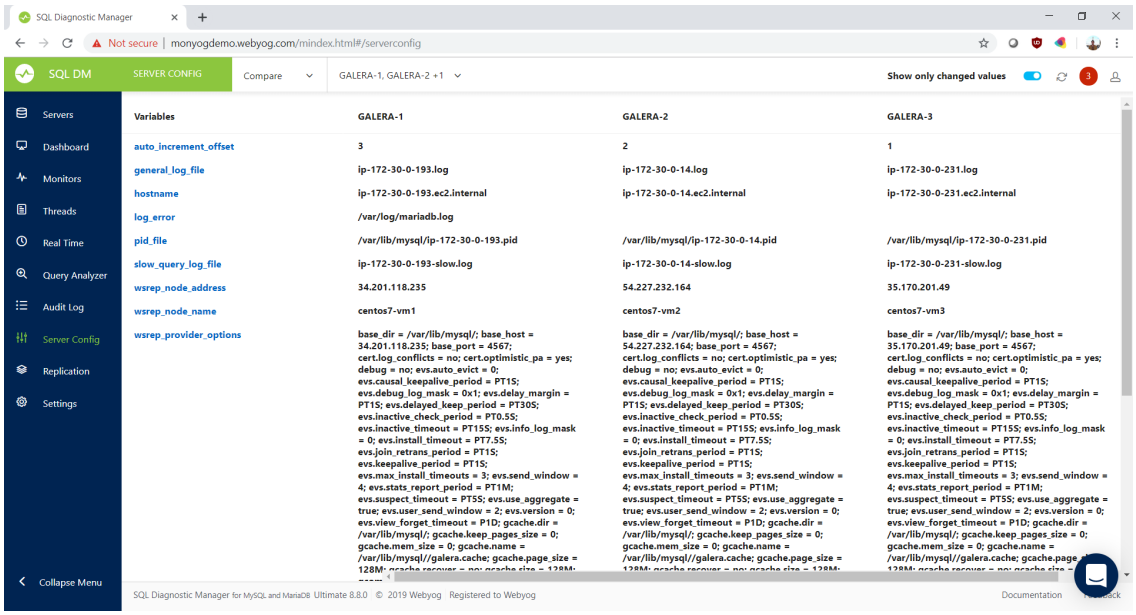
To make grouping the servers within SQL Diagnostic Manager for MySQL easier, apply the cluster name as a tag on each node in the cluster.

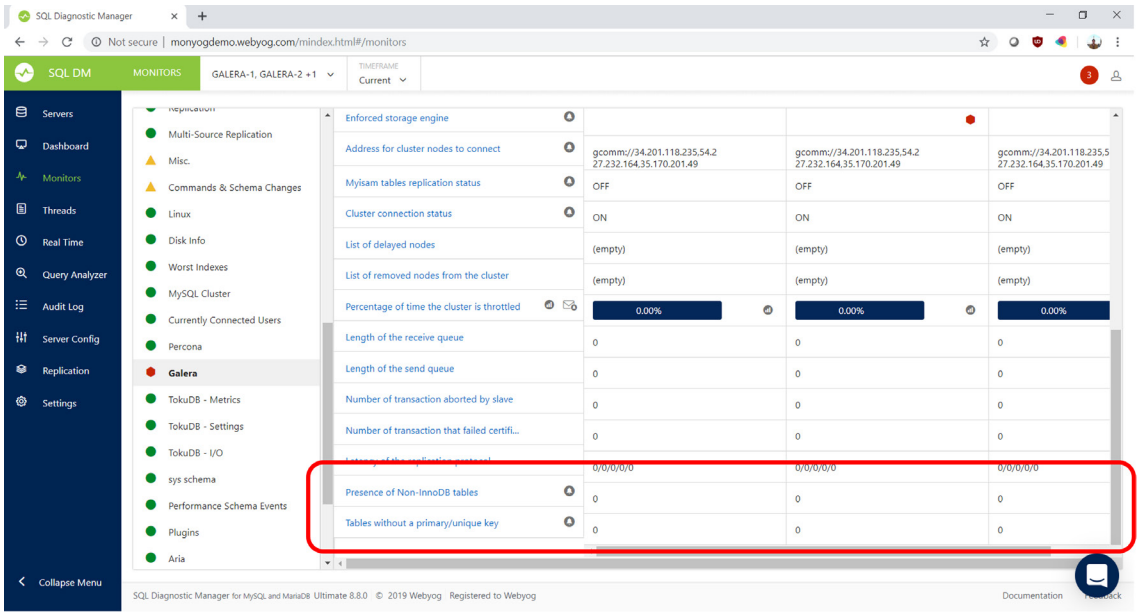
When defining servers, it is possible to apply free-form labels to each server.



2) Check server configuration

Because of the certification and replication, the cluster is only as fast as its slowest node. Configure the nodes identically, including hardware and configuration settings. The 'Server Config' tab in SQL Diagnostic Manager for MySQL shows where the configuration differs between the nodes. There will be differences (such as in host names and other unique identifiers), but review and understand what all the differences are.





2) MONITORING AN ACTIVE CLUSTER

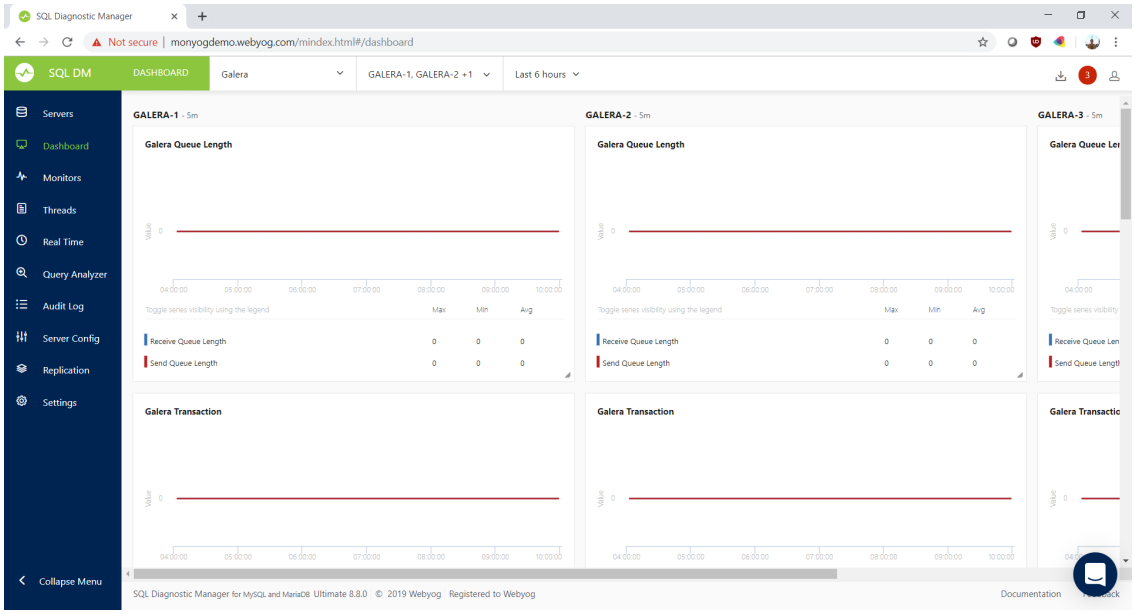
Besides the Galera dashboard page, several out-of-the-box monitors can notify if the cluster environment experiences problems. These monitors include the number of nodes in the cluster, the cluster status, the cluster connection status, the percentage of time that the system throttles the cluster, and the number of transactions that failed certification.

Galera dashboard page

An out-of-the-box page on the Dashboard tab that shows the current statistics on the Galera Cluster. These statistics include queue length, throttle time, replication status, cluster status, and others.

As with all dashboard pages, select the time frame for the over-time graphs, and customize the page by adding or removing individual charts.

The page will auto-refresh and can be used on a monitor over a work area to give a quick and visual status of the health of the cluster.

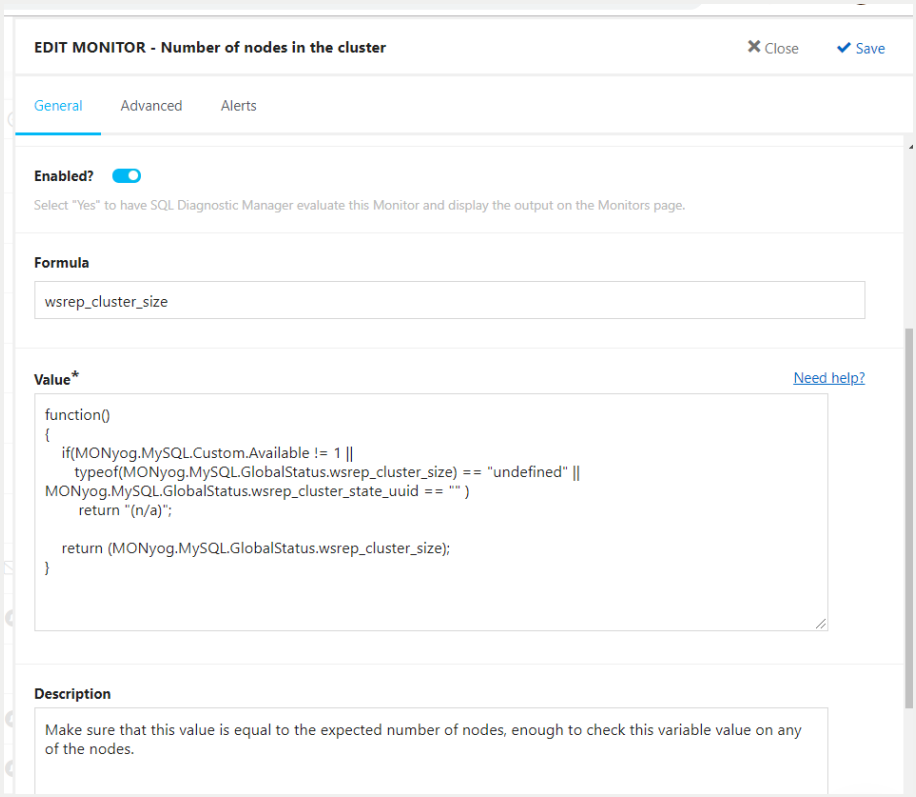


SQL Diagnostic Manager for MySQL contains 600 out-of-the-box monitors, including many for Galera Cluster. Each monitor has a current status for the selected nodes; here, the three nodes in the Galera Cluster. Moving the mouse cursor over the monitor shows a description of what that monitor is measuring.

Each of the monitors has a description and a current metric.

Edit a monitor to change the exposed JavaScript code (the ‘Value’ function) the change what each monitor is reporting, or to create custom monitors.

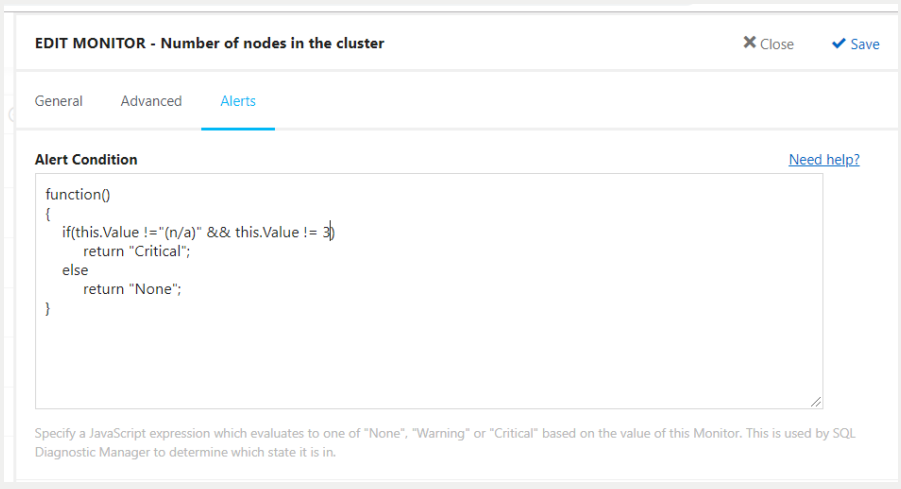
Exposed JavaScript code performs the measurement for each monitor. The exposed code allows for customization or creating of new monitors.



The 'Alert Condition' JavaScript function allows customizing the code that determines the status of each monitor. It will be alright, near-critical, or critical.

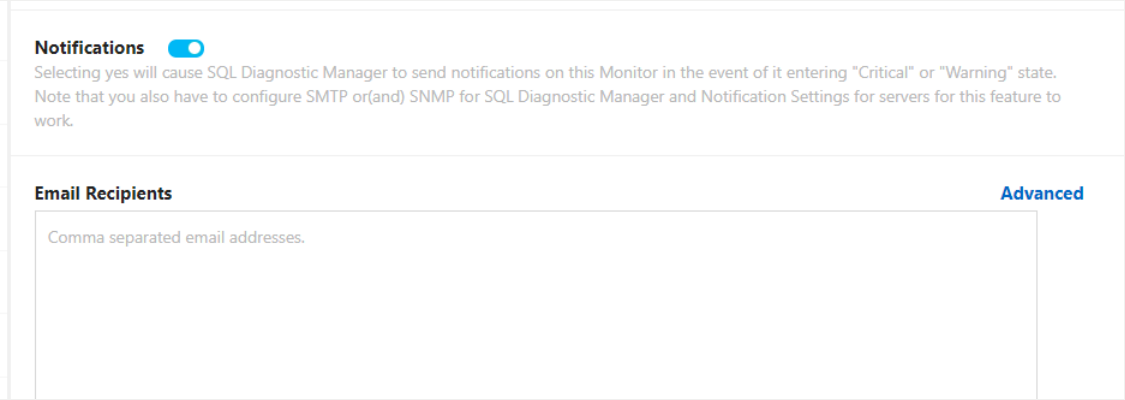
The 'Alert Condition' JavaScript function determines whether the status of this monitor is green, yellow, or red.

Here, the monitor returns a 'Critical' status if the number of nodes in the cluster is less than three.



There are several notification methods when a monitor goes yellow or red. These methods include email, Slack, PagerDuty, and Simple Network Management Protocol (SNMP) traps.

SQL Diagnostic Manager for MySQL provides email notifications should a monitor go yellow or red. Create separate email distribution lists for each alert and each alert status. Also, get notifications through Slack, PagerDuty, and SNMP traps.

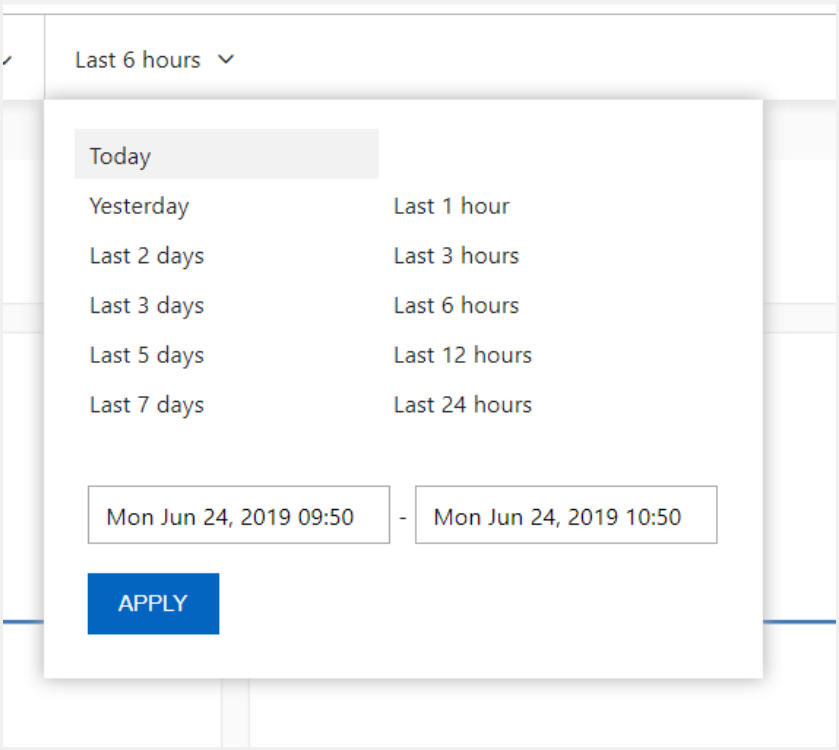


3) PROBLEM RESOLUTION

There are dashboard charts and monitors that allow identifying slow nodes, slowest nodes, throttled nodes, removed nodes, and most advanced node.

SQL Diagnostic Manager for MySQL keeps information in the historical repository for seven days, by default. Configure the repository by instance.

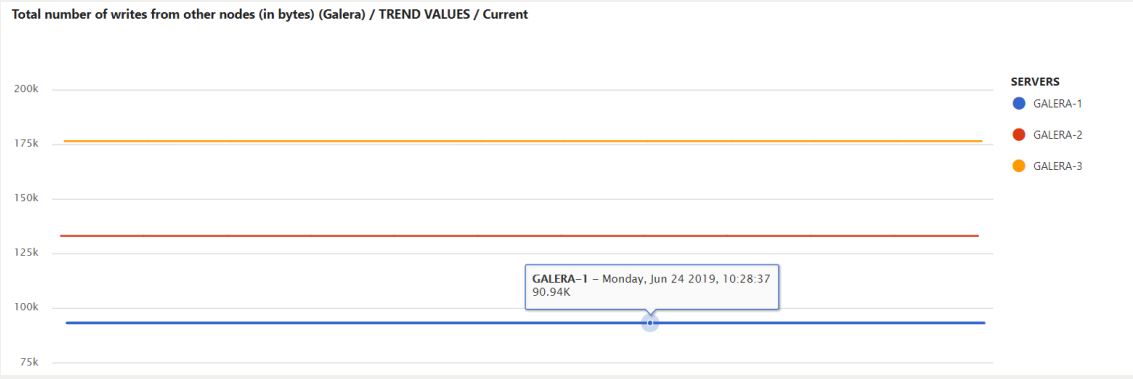
Both dashboard charts and monitors allow viewing data over an arbitrary period.



Monitors

SQL Diagnostic Manager for MySQL has a historical repository of collected statistics and information. The repository can help identify whether there is a particular node that is problematic, and whether a particular node is related to a time of day, concurrent jobs, and other factors.

With monitors and dashboard charts, view various counters and statistics as they change.



SQL DIAGNOSTIC MANAGER FOR MYSQL

With SQL Diagnostic Manager for MySQL, monitor MySQL and MariaDB performance in real-time. This powerful tool helps database administrators pinpoint the cause of MySQL performance problems in physical, virtual, and cloud environments.

Proactively find and fix MySQL performance problems:

- Improve performance by optimizing bad SQL queries.
- Gain visibility into overall health and performance.
- Alert proactively on potential performance problems.
- Take action before MySQL powered systems run out of resources.
- Get a high ROI with increased DBA productivity and server performance.

Unlike its competition, SQL Diagnostic Manager for MySQL provides:

- Agentless monitoring with no additional load on servers
- Over 600 monitors and advisors
- Custom dashboards, charts, and monitors
- Real-time tracking of locked and long-running SQL queries
- Display of top 10 problematic SQL queries across servers
- Monitoring and comparison of configuration changes
- File-based log monitoring for Amazon RDS for MySQL

Start for FREE

ABOUT THE AUTHOR

Patrick O'Halloran is a Senior Sales Engineer at IDERA, specializing in the Precise solution set. He has been a technical specialist and Information Technology consultant for over 30 years. Patrick worked as a programmer in a variety of languages, product manager, and independent consultant. He has expertise in a broad range of technologies that deliver web-based content, from JavaScript and HyperText Markup Language (HTML) to Java and Microsoft .NET framework, to Relational Database Management System (RDBMS) tuning. The one shared line in Patrick's varied job descriptions has been 'Other duties as assigned.'