Monitoring MySQL

A quick overview of available tools

Presented by,
MySQL & O'Reilly Media, Inc.

Monitoring

- Monitoring your database is as important as benchmarking
- You want to view trends over time
- See how hardware application and schema changes affect performance
- Get alerts when something goes wrong

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Monitor tool basics

- show full processlist
- Show global status
- Show global variables

All the monitoring of MySQL relies in some way on this framework provided by the server. There are sometimes methods of getting additional information and linking system information to the MySQL data but both of these tools are part of most monitoring solutions, wether the end user is aware of it or not

Show global status

- MySQL keeps status counters on each of the various operations it has performed.

  Run a select statement... increment ***com_select***

  Run a delete increment ***com_delete***

  Open a table increment ***tables_opened***

  Accept a connection increment ***Threads_connected***

SHOW GLOBAL VARIABLES

- Many of MySQL configuration options are dynamic. We set them in a config file but a user with appropriate permissions can change them on a running server.
- SHOW GLOBAL VARIABLES allows us to see the current configuration.
- Comparing the settings and cache sizes shown in the variables with the operations shown in status allows us to get a view of our servers configuration and performance

Show full processlist

- Shows you who is connected and what they are doing.

Basic tools

- mysqladmin is provided with the server, allthough I call it basic it is also very powerful. Some examples.

  mysqladmin -i 10 extended status

  In this example mysqladmin will connect to the server run “show global status” and then sleep for ten seconds and run the same command again.

  “Pipe that through your grep and smoke it” (bad pun.. groan)

mysqladmin

- Final thoughts..

  Do not dismiss mysqladmin because it seems simple and unsophisticated. No it does not make pretty graphs or email you when your server crashes.. but by using the sleep function, running a process against the server and watching you can frequently get some useful information.

MySQL administrator

- Our administrator GUI provides a view of server status, server variables, processlist, and a collection of graphs.
- Easy to use
- Good first introduction to the variables and activity that you want to monitor
- Take a look at the health graphs, edit them, add your own and get a feel for how they work.

Cacti

- Cacti is a rrdtool based network graphing tool
- PHP apache and MySQL based solution
- Monitors devices on a network
- Modular has been extended to include MySQL monitoring
- URL for cacti http://www.cacti.net/
- MySQL plugin http://faemalia.net/mysqlUtils/

Cacti

- How does CACTI work..

  Modular

  “Poller” gathers the data to be monitored remote hosts are polled using SNMP

  RRDTool stores the data.

  “round Robin database” compact, won't grow to fill your disk.

  Presentation.

  Nice graphs built by RRDtool presented in a browser.

Cacti

Cacti

- PROS

  Cacti is fairly easy to configure. Apache PHP and a crontab managed “poller” so it is a bit more difficult on windows

  Cacti is fairly commonly used so you have a large community of users
- CONS

  Nothing major

Munin

- Similar to cacti

  Seemed to be easier to configure the data collector in munin and it seemed to therefore be less flexible in terms of polling interval.

  Google cacti vs munin and make your own decision, to similar to go into the details.

Munin

- URL

  http://munin.projects.linpro.no/

Zenoss

- Open source network monitoring tool

  I did not have enough time to give Zenoss a good going over. So it is time for an audience poll

  Who uses it ?

  Who likes it ? Why ?

  Who tried it and discarded it ? Why

Zenoss

- Regardless of what the “audience poll” had to say I think Zenoss shows great promise and I intend to check it out.
- Cons..

  I hate to be negative but why do we need a plugin to google maps ? If you do not know where your servers are then you need more than monitoring tools.

  Seems like the AJAX designers went too far there ?

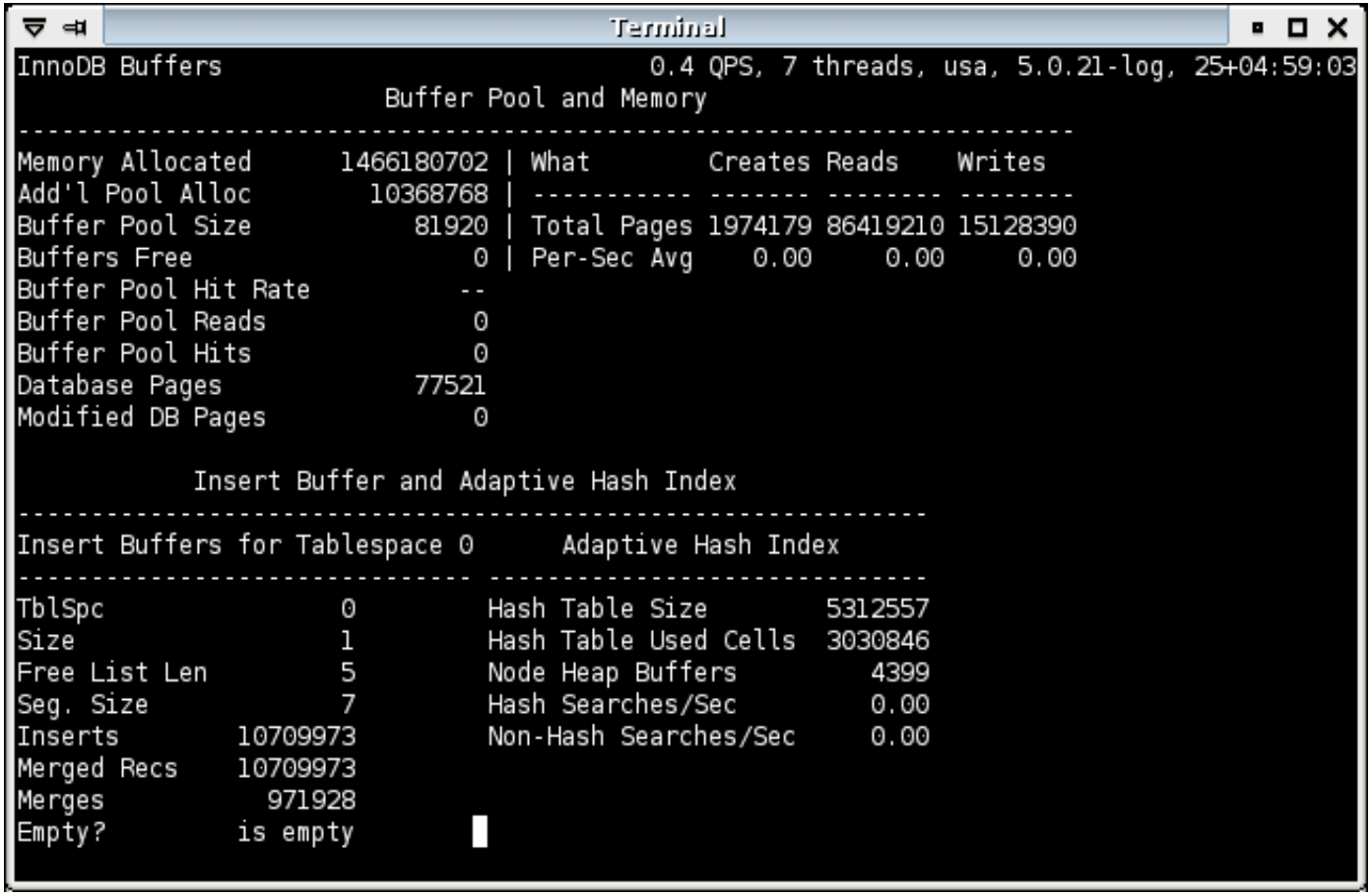
A few more text based tools

- innotop
- mytop
- mtstat-mysql

innotop

- Monitoring innodb can be a little more complex
- Show engine innodb status... complex output
- innotop organizes the innodb information and presents it in user friendly but text based form.
- URL http://www.xaprb.com/blog/2006/07/02/innotop-mysql-innodb-monitor/

innotop


Terminal
InnoDB Buffers 0.4 QPS, 7 threads, usa, 5.0.21-log, 25+04:59:03
Buffer Pool and Memory
Memory Allocated 1466180702 | What Creates Reads Writes
Add'l Pool Alloc 10368768 | ---------- ------- -------- --------
Buffer Pool Size 81920 | Total Pages 1974179 86419210 15128390
Buffers Free 0 | Per-Sec Avg 0.00 0.00 0.00
Buffer Pool Hit Rate --
Buffer Pool Reads 0
Buffer Pool Hits 0
Database Pages 77521
Modified DB Pages 0
Insert Buffer and Adaptive Hash Index
Insert Buffers for Tablespace 0 Adaptive Hash Index
TblSpc 0 Hash Table Size 5312557
Size 1 Hash Table Used Cells 3030846
Free List Len 5 Node Heap Buffers 4399
Seg. Size 7 Hash Searches/Sec 0.00
Inserts 10709973 Non-Hash Searches/Sec 0.00
Merged Recs 10709973
Merges 971928
Empty? is empty

Innotop

- Developed by “community member of the year” Baron Schwartz

mytop

- Provides MySQL information similar to the linux utility “top”

  Some summary information at the top, similar to the output of the “status” command in the client.

  List of threads connected, similar to the output of “show full processlist”

mytop

- Cool features

  Filter connections based on database/host being used

  Kill connections

  Queries per second mode

mytop

- MyTop makes the process of connecting to the server and running a series of commands much easier and intuitive. Check it out

mtstat-mysql

- Plugin for the system monitoring tool mtstat

  mtstat provides the functionality of vmstat and iostat tools to monitor system activity.

  mtstat-mysql is a collection of plugins that add the ability to monitor mysql performance.

  The combination allows you to see what sort of database requests lead to what sort of system utilization

mtstat-mysql

- URL

  https://launchpad.net/mtstat

- Cool features

  Text based yet feature rich.. color coding, autoupdating.

mtstat-mysql

- Details

  Python based, sparse documentation.

  Mostly intuitive.

  Install mtstat and then mtstat-mysql

Nagios

- URL

  http://www.nagios.org/

- Nagios is more of a notification tool. It is frequently used in combination with CACTI MUNIN or any of the monitoring tools.

  Configure the other tools to gather the information and make graphs of normal behavior, configure nagios to call/email you when something is wrong.

Nagios

- A few tools, zenoss and our dashboard do there own alerting. Centralized alerts are important so plenty of tools can be used in combination with Nagios.

Nagios

- PROS

  Widely used, flexible, configurable, comprehensive

- CONS

  Complex setup, time consuming, strange config file.

MySQL Enterprise Monitor

- URL

  http://www.mysql.com/products/enterprise/monitor.html

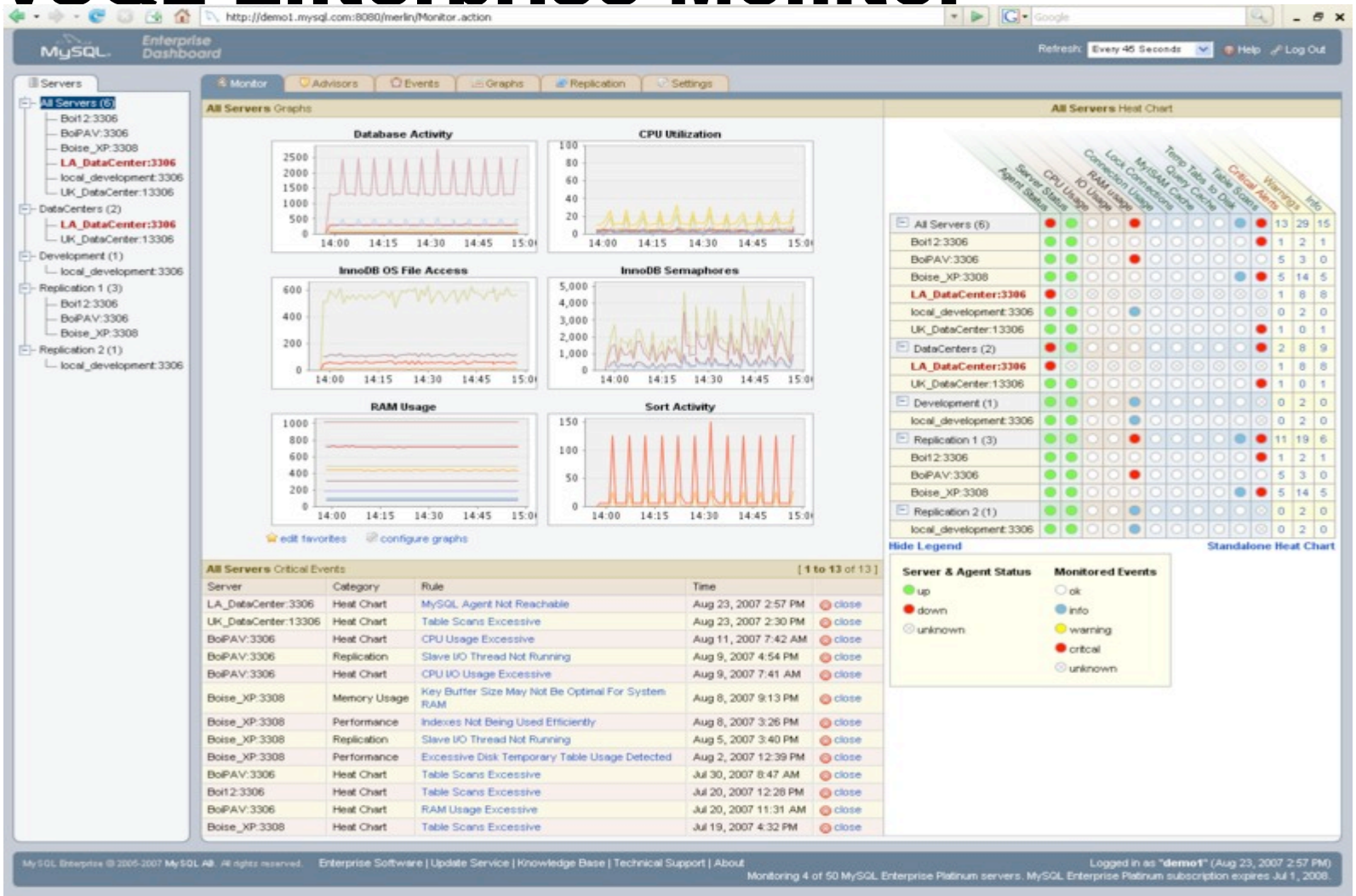
- Cool features

  Monitoring , alerting, graphing, heat chart, advisors for tuning and the like all in one place

MySQL Enterprise Monitor

- Buy the Monitor get free MySQL enterprise subscription and support. Or is it buy MySQL enterprise get the Monitor for free ?
- Regardless of how you look at it the Monitor is not available for free, except for the free thirty day trial. Install it and check it out.

MySQL Enterprise Monitor



Monitor details

- Built by folks who know MySQL well

- Agent based

  Agent installed on server or remotely gathers MySQL data and Server data and the Monitor presents that data in a series of graphs.

- Well organized

  Allows for grouping of servers graphs and heat charts so that I can quickly view a screen and spot any trouble spots for large groups of servers.

Monitor Details

- Replication Aware

  Auto detects your replication setup and monitors accordingly.

- URL that discusses features briefly

  http://www.mysql.com/products/enterprise/benefits.html