TAJO-333

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2013-11-26

Contents

Chapter 1

Root issue TAJO-333

1.1 Summary

Add metric system to Tajo

1.2 Description

Currently, there is no way to measure and observe Tajo's internal operations. As a Hadoop job, Tajo also should measure and record a lot of operational works.

I would like to propose the use of Metrics (http://metrics.codahale.com/). It is well known as a stable and efficient metric library.

1.3 Attachments

1. TAJO-333__2.patch

2. TAJO-333.patch

3. tajo-ganglia-01.png

4. tajo-ganglia-02.png

1.4 Commits

1. Commit **62c49c0** by **Jihoon Son** (2013-12-14): TAJO-333: Add metric system to Tajo. (hyoungjunkim via jihoon)

2. Commit **d2f2703** by **Hyunsik Choi** (2012-01-29): TAJO-333: TableOutput ìŮřìĆřìdŘ ìűT̂êřĂ
   https://dbserver.korea.ac.kr/jira/browse/TAJO-333

1.5 Comments

1. **sirpkt:** I totally agree with you about the need for metric system, and Metrics looks very good for me, too.

   Is there any similar c++ library for the future c++ worker ?

2. **jihoonson:** +1 for this issue.The metric information will be very useful for various purpose such as the query optimization.

3. **hsaputra:** +1 for Metrics (http://metrics.codahale.com/)

4. **hjkim:** This patch is first patch for tajoâĂŹs metric system.

   Tajo metric system has two metrics type.
   h3. system metric
   A system metric which likes daemonâĂŹs JVM status, number of worker is emits metrics data periodically.
   A system metric set properties(reporter class, period) with conf/tajo-metrics.properties file. In the current patch, A system metrics collects minimal information about daemon. If you need more information, please comment.

   h3. basic metric
   The basic metric can be used at any time.
   For example, If there is more query runtime statistics data, A query optimizer generates better query plan.
   Every query can has a metrics object and can emit metrics data periodically or query closing time.

```
1   TajoMetrics tajoMetrics = new TajoMetrics();
2   tajoMetrics.counter(queryId, âĂIJnumScanBytesâĂİ).inc(scanBytes);
3   âĂę
4   tajoMetrics.report(new TajoMetricsReporter() {
5   public void report(SortedMap<String, Gauge> gauges,
6                               SortedMap<String, Counter> counters,
7                               SortedMap<String, Histogram> histograms,
8                               Sorted
9   Map<String, Meter> meters,
10                              SortedMap<String, Timer> timers) {
11      âĂę
12      }
13  });
```

5. **jihoonson:** Great work!
   I'll review the patch.

6. **jihoonson:** In overall, the patch looks good to me.
   But, I have a couple of things to discuss.
   * For the high readability, it will be better to change the names of metrics to be more meaningful. For example, "executedExecutionBlocksNum" looks more meaningful than "runEB". Although the name lengths will increase, but it can increase readability.
   * The default name of metrics file can be better to move from TajoSystemMetrics to TajoConf.ConfVars. Also, it will be better to use TajoConf.getVar() instead of TajoConf.get() in TajoSystemMetrics.constructor().
   * In TajoSystemMetrics, propertyChangeChecker seems to have the same role with FileChangedReloadingStrategy. If this is my misunderstading, please explain to me.
   * Please remove the unused main function from TajoSystemMetrics.
   * In MetricsConsoleReporter, the hostAndPort is fixed as "localhost" and it looks to represent the master address. But, I think that it may be different in some environments. So, how about read the address from QueryMaster?
   * Please remove a debug code at Line 269 in TajoWorker.
   * In tajo-metrics.propertis, there is a typing error at Line 46. (worker-jvm-reporters=cnull => worker-jvm-reporters=null)
   * Please remove unused imports.

And, how about add a metric for the size of intermediate data?
I think that it will be useful.

7. **hjkim:** Jihoon, thanks for your review.
   In this patch- change "runEB" to "executedExecutionBlocksNum"- add METRICS_PROPERTY_FILENAME variable in TajoConf.ConfVars
   - propertyChangeChecker issue In TajoSystemMetrics
   ReloadingStrategy of PropertiesConfiguration class has not thread for checking property file.
   So configurationChanged method fired when getXXX method called.- "localhost" In MetricsConsoleReporter issue
   TajoMetricsReporter does not print host and port when hostAndPort valus is null. - I removed unnecessary debug code and fixed spell in tajo-metrics.properties and removed unused imports.
   - I think that the main purpose of this issue is making metrics system and applying to daemon's metrics. So The adding task for query's metrics like the size of intermediate data which you mentioned is next step.
   - Added ganglia reporter

8. **jihoonson:** Thanks for your detailed comment!
   But, I have a question for the MetricsConsoleReporter issue.My above comment means that the master address can be the private network address such as 192.168.0.xxx.
   In that case, it seems to print the wrong host address.

9. **hjkim:** When a external monitoring system gathers tajo's metrics data from all servers, each metrics item is required a field which has been generated by the server. For this reason, SystemMetrics prints out daemon's address and private network address is fine.

10. **jihoonson:** Thanks for your comment.
    The attached screenshot looks really great!
    I'll test it!

11. **jihoonson:** The Ganglia reporter looks really great!
    But, I have a question for the console reporter.
    I configured logj4.properties as in this patch.

```
log4j.rootLogger=info,stdout,EventCounter
log4j.threshhold=ALL
log4j.appender.stdout=org.apache.log4j.ConsoleAppender
log4j.appender.stdout.layout=org.apache.log4j.PatternLayout
log4j.appender.stdout.layout.ConversionPattern=%d{ISO8601} %-5p %c{2}
(%F:%M(%L)) - %m%n
log4j.logger.org.apache.hadoop=WARN
log4j.logger.org.apache.hadoop.conf=ERROR
log4j.appender.EventCounter=org.apache.tajo.util.metrics.TajoLogEventCounter
```

I run a query of "select count(*) from lineitem" for a 1GB table on a single machine cluster.
The console reports seems to be written to the query master log, but I can't find it anywhere.

Would you tell me how I can see the console report?

12. **jihoonson:** Hyoungjun helped me in face to face.
    There was a mistake in tajo-metrics.propertis.
    I tested the patch, and it works well.

    Here is my +1, and I'll commit this patch if there are any objections.
    Thanks, Hyoungjun.

13. **jihoonson:** I'll wait for others' reviews until tomorrow.

14. **hsaputra:** Looks very good, tried out the patch and pass compilation and base case of Tajo
    working.

    +1

15. **hyunsik:** I'm also reviewing the latest patch.

16. **hyunsik:** +1It's a really great job. Ship it!

17. **jihoonson:** I've just committed the patch.
    Hyoungjun, thanks for your great contribution!

18. **hudson:** FAILURE: Integrated in Tajo-trunk-postcommit #617 (See [https://builds.apache.org/job/Tajo-trunk-postcommit/617/])
    TAJO-333: Add metric system to Tajo. (hyoungjunkim via jihoon) (jihoonson: https://git-wip-us.apache.org/repos/asf?p=incubator-tajo.git&a=commit&h=62c49c05f522158d75d818df49100a0b1fd354bb)
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/master/GlobalEngine.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/NullReporter.java
    * tajo-core/tajo-core-backend/src/test/java/org/apache/tajo/util/metrics/TestSystemMetrics.java
    * tajo-core/tajo-core-backend/src/main/java/log4j.properties
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/MetricsFileScheduledReporte
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/MetricsStreamScheduledRepo
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/TajoSystemMetrics.java
    * tajo-core/tajo-core-backend/src/test/java/org/apache/tajo/util/metrics/TestMetricsFilter.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/master/metrics/WorkerResourceMetricsGaugeSet.ja
    * tajo-common/src/main/java/org/apache/tajo/conf/TajoConf.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/TajoMetrics.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/master/TajoMaster.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/master/querymaster/QueryMasterManagerService.j
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/TajoMetricsReporter.java
    * tajo-core/tajo-core-backend/src/main/resources/tajo-metrics.properties
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/TajoMetricsScheduledReporte
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/worker/TajoWorkerManagerService.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/RegexpMetricsFilter.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/master/metrics/CatalogMetricsGaugeSet.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/MetricsFilterList.java
    * tajo-core/tajo-core-backend/pom.xml
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/LogEventGaugeSet.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/worker/TaskRunner.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/TajoLogEventCounter.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/MetricsConsoleScheduledRep
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/worker/TajoWorker.java
    * CHANGES.txt
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/worker/TaskRunnerManager.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/MetricsConsoleReporter.java
    * tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/GroupNameMetricsFilter.java

* tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/util/metrics/reporter/GangliaReporter.java
* tajo-core/tajo-core-backend/src/main/java/org/apache/tajo/master/querymaster/QueryMasterTask.java

19. **jihoonson:** We need a document for the metric system.Hyoungjun, would you write the document, please?

1.6   Pull requests

No pull requests