以下所有内容均参考hadoop官网，结合我的异常探测和原因分析任务来阐述，并且所有的功能都是基于API完成。

### 历史job信息迅速获取

参考 http://hadoop.apache.org/docs/current/hadoop-mapreduce-client/hadoop-mapreduce-client-hs/HistoryServerRest.html#Jobs\_API

意义：所有历史Job的十分详实的信息都可以高效得到，用于构建历史情况分析

，还可以帮助用户了解异常点附近job的工作状态

#### History Server Information API

（1）

Both of the following URI’s give you the history server information, from an application id identified by the appid value.

\* http://<history server http address:port>/ws/v1/history

\* http://<history server http address:port>/ws/v1/history/info

GET http://<history server http address:port>/ws/v1/history/info

Response Body:

{

"historyInfo" : {

"startedOn":1353512830963,

"hadoopVersionBuiltOn" : "Wed Jan 11 21:18:36 UTC 2012",

"hadoopBuildVersion" : "0.23.1-SNAPSHOT from 1230253 by user1 source checksum bb6e554c6d50b0397d826081017437a7",

"hadoopVersion" : "0.23.1-SNAPSHOT"

}

}

#### MapReduce API’s

The following list of resources apply to MapReduce.

The jobs resource provides a list of the MapReduce jobs that have finished. It does not currently return a full list of parameters

http://<history server http address:port>/ws/v1/history/mapreduce/jobs

##### Query Parameters Supported

Multiple parameters can be specified. The started and finished times have a begin and end parameter to allow you to specify ranges. For example, one could request all jobs that started between 1:00am and 2:00pm on 12/19/2011 with startedTimeBegin=1324256400&startedTimeEnd=1324303200. If the Begin parameter is not specfied, it defaults to 0, and if the End parameter is not specified, it defaults to infinity.

\* user - user name

\* state - the job state

\* queue - queue name

\* limit - total number of app objects to be returned

\* startedTimeBegin - jobs with start time beginning with this time, specified in ms since epoch

\* startedTimeEnd - jobs with start time ending with this time, specified in ms since epoch

\* finishedTimeBegin - jobs with finish time beginning with this time, specified in ms since epoch

\* finishedTimeEnd - jobs with finish time ending with this time, specified in ms since epoch

#### Job API

A Job resource contains information about a particular job identified by jobid.

http://<history server http address:port>/ws/v1/history/mapreduce/jobs/{jobid}

#### Elements of the *job* object

| **Item** | **Data Type** | **Description** |
| --- | --- | --- |
| id | string | The job id |
| name | string | The job name |
| queue | string | The queue the job was submitted to |
| user | string | The user name |
| state | string | the job state - valid values are: NEW, INITED, RUNNING, SUCCEEDED, FAILED, KILL\_WAIT, KILLED, ERROR |
| diagnostics | string | A diagnostic message |
| submitTime | long | The time the job submitted (in ms since epoch) |
| startTime | long | The time the job started (in ms since epoch) |
| finishTime | long | The time the job finished (in ms since epoch) |
| mapsTotal | int | The total number of maps |
| mapsCompleted | int | The number of completed maps |
| reducesTotal | int | The total number of reduces |
| reducesCompleted | int | The number of completed reduces |
| uberized | boolean | Indicates if the job was an uber job - ran completely in the application master |
| avgMapTime | long | The average time of a map task (in ms) |
| avgReduceTime | long | The average time of the reduce (in ms) |
| avgShuffleTime | long | The average time of the shuffle (in ms) |
| avgMergeTime | long | The average time of the merge (in ms) |
| failedReduceAttempts | int | The number of failed reduce attempts |
| killedReduceAttempts | int | The number of killed reduce attempts |
| successfulReduceAttempts | int | The number of successful reduce attempts |
| failedMapAttempts | int | The number of failed map attempts |
| killedMapAttempts | int | The number of killed map attempts |
| successfulMapAttempts | int | The number of successful map attempts |
| acls | array of acls(json)/zero or more acls objects(xml) | A collection of acls objects |

#### Job Counters API

With the job counters API, you can object a collection of resources that represent all the counters for that job.

http://<history server http address:port>/ws/v1/history/mapreduce/jobs/{jobid}/counters

###### Elements of the *jobCounters* object

| **Item** | **Data Type** | **Description** |
| --- | --- | --- |
| id | string | The job id |
| counterGroup | array of counterGroup objects(JSON)/zero or more counterGroup objects(XML) | A collection of counter group objects |

###### Elements of the *counterGroup* objecs

| **Item** | **Data Type** | **Description** |
| --- | --- | --- |
| counterGroupName | string | The name of the counter group |
| counter | array of counter objects(JSON)/zero or more counter objects(XML) | A collection of counter objects |

###### Elements of the *counter* object

| **Item** | **Data Type** | **Description** |
| --- | --- | --- |
| name | string | The name of the counter |
| reduceCounterValue | long | The counter value of reduce tasks |
| mapCounterValue | long | The counter value of map tasks |
| totalCounterValue | long | The counter value of all tasks |

#### Tasks API

With the tasks API, you can obtain a collection of resources that represent a task within a job. When you run a GET operation on this resource, you obtain a collection of Task Objects.

http://<history server http address:port>/ws/v1/history/mapreduce/jobs/{jobid}/tasks

##### Eg:

###### 获取历史全部job信息

cs\_url = 'http://192.168.1.102:19888/ws/v1/history/mapreduce/jobs'

cs\_user = 'dbcluster'

cs\_psw = '1'

r = requests.get(cs\_url, auth=(cs\_user, cs\_psw))

data = r.json()

for key in data:

jobs = key

djobs = data[jobs]

for job in djobs:

djob = djobs[job]

for k in djob:

print k

返回：

{u'finishTime': 1491966519178L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1491966510921L, u'state': u'SUCCEEDED', u'mapsTotal': 0, u'user': u'dbcluster', u'startTime': 1491966514132L, u'id': u'job\_1491918345048\_0009', u'mapsCompleted': 0}

{u'finishTime': 1491973656387L, u'reducesCompleted': 2, u'name': u'word count', u'reducesTotal': 2, u'queue': u'default', u'submitTime': 1491973647239L, u'state': u'SUCCEEDED', u'mapsTotal': 0, u'user': u'dbcluster', u'startTime': 1491973650265L, u'id': u'job\_1491918345048\_0010', u'mapsCompleted': 0}

{u'finishTime': 1491973687981L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1491973679565L, u'state': u'SUCCEEDED', u'mapsTotal': 0, u'user': u'dbcluster', u'startTime': 1491973682941L, u'id': u'job\_1491918345048\_0011', u'mapsCompleted': 0}

{u'finishTime': 1491983554565L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1491983542705L, u'state': u'SUCCEEDED', u'mapsTotal': 1, u'user': u'dbcluster', u'startTime': 1491983546294L, u'id': u'job\_1491982959684\_0004', u'mapsCompleted': 1}

{u'finishTime': 1492051563567L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1492051552756L, u'state': u'SUCCEEDED', u'mapsTotal': 1, u'user': u'dbcluster', u'startTime': 1492051555461L, u'id': u'job\_1491982959684\_0011', u'mapsCompleted': 1}

{u'finishTime': 1494404661115L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1494404565606L, u'state': u'SUCCEEDED', u'mapsTotal': 11, u'user': u'dbcluster', u'startTime': 1494404573523L, u'id': u'job\_1493719642412\_0002', u'mapsCompleted': 11}

###### 获取固定时间（段）的job信息

cs\_url = 'http://192.168.1.102:19888/ws/v1/history/mapreduce/jobs?startedTimeBegin=1491983546294'

cs\_user = 'dbcluster'

cs\_psw = '1'

r = requests.get(cs\_url, auth=(cs\_user, cs\_psw))

data = r.json()

for key in data:

jobs = key

djobs = data[jobs]

for job in djobs:

djob = djobs[job]

for k in djob:

print k

{u'finishTime': 1491983554565L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1491983542705L, u'state': u'SUCCEEDED', u'mapsTotal': 1, u'user': u'dbcluster', u'startTime': 1491983546294L, u'id': u'job\_1491982959684\_0004', u'mapsCompleted': 1}

{u'finishTime': 1492051563567L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1492051552756L, u'state': u'SUCCEEDED', u'mapsTotal': 1, u'user': u'dbcluster', u'startTime': 1492051555461L, u'id': u'job\_1491982959684\_0011', u'mapsCompleted': 1}

{u'finishTime': 1494404661115L, u'reducesCompleted': 1, u'name': u'word count', u'reducesTotal': 1, u'queue': u'default', u'submitTime': 1494404565606L, u'state': u'SUCCEEDED', u'mapsTotal': 11, u'user': u'dbcluster', u'startTime': 1494404573523L, u'id': u'job\_1493719642412\_0002', u'mapsCompleted': 11}

###### 按照jobID（通过之前的步骤可以获得），返回更加详细的信息

cs\_url = 'http://192.168.1.102:19888/ws/v1/history/mapreduce/jobs/job\_1493719642412\_0002'

cs\_user = 'dbcluster'

cs\_psw = '1'

r = requests.get(cs\_url, auth=(cs\_user, cs\_psw))

data = r.json()

print data

{u'job': {u'reducesCompleted': 1, u'avgMapTime': 38885, u'avgMergeTime': 33, u'id': u'job\_1493719642412\_0002', u'successfulReduceAttempts': 1, u'successfulMapAttempts': 11, u'uberized': False, u'reducesTotal': 1, u'state': u'SUCCEEDED', u'failedReduceAttempts': 0, u'mapsCompleted': 11, u'killedMapAttempts': 1, u'diagnostics': u'', u'submitTime': 1494404565606L, u'mapsTotal': 11, u'user': u'dbcluster', u'startTime': 1494404573523L, u'avgReduceTime': 383, u'finishTime': 1494404661115L, u'name': u'word count', u'avgShuffleTime': 36497, u'queue': u'default', u'killedReduceAttempts': 0, u'failedMapAttempts': 0}}

###### 给出某个job的详细信息

cs\_url = 'http://192.168.1.102:19888/ws/v1/history/mapreduce/jobs/job\_1493719642412\_0002/counters'

cs\_user = 'dbcluster'

cs\_psw = '1'

r = requests.get(cs\_url, auth=(cs\_user, cs\_psw))

data = r.json()

print data

{u'jobCounters': {u'counterGroup': [{u'counter': [{u'totalCounterValue': 598215, u'mapCounterValue': 522468, u'name': u'FILE\_BYTES\_READ', u'reduceCounterValue': 75747}, {u'totalCounterValue': 1940724, u'mapCounterValue': 1759469, u'name': u'FILE\_BYTES\_WRITTEN', u'reduceCounterValue': 181255}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'FILE\_READ\_OPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'FILE\_LARGE\_READ\_OPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'FILE\_WRITE\_OPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 1316463595, u'mapCounterValue': 1316463595, u'name': u'HDFS\_BYTES\_READ', u'reduceCounterValue': 0}, {u'totalCounterValue': 8159, u'mapCounterValue': 0, u'name': u'HDFS\_BYTES\_WRITTEN', u'reduceCounterValue': 8159}, {u'totalCounterValue': 36, u'mapCounterValue': 33, u'name': u'HDFS\_READ\_OPS', u'reduceCounterValue': 3}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'HDFS\_LARGE\_READ\_OPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 2, u'mapCounterValue': 0, u'name': u'HDFS\_WRITE\_OPS', u'reduceCounterValue': 2}], u'counterGroupName': u'org.apache.hadoop.mapreduce.FileSystemCounter'}, {u'counter': [{u'totalCounterValue': 1, u'mapCounterValue': 0, u'name': u'NUM\_KILLED\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 12, u'mapCounterValue': 0, u'name': u'TOTAL\_LAUNCHED\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 1, u'mapCounterValue': 0, u'name': u'TOTAL\_LAUNCHED\_REDUCES', u'reduceCounterValue': 0}, {u'totalCounterValue': 12, u'mapCounterValue': 0, u'name': u'DATA\_LOCAL\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 452657, u'mapCounterValue': 0, u'name': u'SLOTS\_MILLIS\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 36913, u'mapCounterValue': 0, u'name': u'SLOTS\_MILLIS\_REDUCES', u'reduceCounterValue': 0}, {u'totalCounterValue': 452657, u'mapCounterValue': 0, u'name': u'MILLIS\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 36913, u'mapCounterValue': 0, u'name': u'MILLIS\_REDUCES', u'reduceCounterValue': 0}, {u'totalCounterValue': 452657, u'mapCounterValue': 0, u'name': u'VCORES\_MILLIS\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 36913, u'mapCounterValue': 0, u'name': u'VCORES\_MILLIS\_REDUCES', u'reduceCounterValue': 0}, {u'totalCounterValue': 463520768, u'mapCounterValue': 0, u'name': u'MB\_MILLIS\_MAPS', u'reduceCounterValue': 0}, {u'totalCounterValue': 37798912, u'mapCounterValue': 0, u'name': u'MB\_MILLIS\_REDUCES', u'reduceCounterValue': 0}], u'counterGroupName': u'org.apache.hadoop.mapreduce.JobCounter'}, {u'counter': [{u'totalCounterValue': 16146012, u'mapCounterValue': 16146012, u'name': u'MAP\_INPUT\_RECORDS', u'reduceCounterValue': 0}, {u'totalCounterValue': 195331511, u'mapCounterValue': 195331511, u'name': u'MAP\_OUTPUT\_RECORDS', u'reduceCounterValue': 0}, {u'totalCounterValue': 2077042566, u'mapCounterValue': 2077042566, u'name': u'MAP\_OUTPUT\_BYTES', u'reduceCounterValue': 0}, {u'totalCounterValue': 75807, u'mapCounterValue': 75807, u'name': u'MAP\_OUTPUT\_MATERIALIZED\_BYTES', u'reduceCounterValue': 0}, {u'totalCounterValue': 1209, u'mapCounterValue': 1209, u'name': u'SPLIT\_RAW\_BYTES', u'reduceCounterValue': 0}, {u'totalCounterValue': 195368702, u'mapCounterValue': 195368702, u'name': u'COMBINE\_INPUT\_RECORDS', u'reduceCounterValue': 0}, {u'totalCounterValue': 42591, u'mapCounterValue': 42591, u'name': u'COMBINE\_OUTPUT\_RECORDS', u'reduceCounterValue': 0}, {u'totalCounterValue': 545, u'mapCounterValue': 0, u'name': u'REDUCE\_INPUT\_GROUPS', u'reduceCounterValue': 545}, {u'totalCounterValue': 75807, u'mapCounterValue': 0, u'name': u'REDUCE\_SHUFFLE\_BYTES', u'reduceCounterValue': 75807}, {u'totalCounterValue': 5400, u'mapCounterValue': 0, u'name': u'REDUCE\_INPUT\_RECORDS', u'reduceCounterValue': 5400}, {u'totalCounterValue': 545, u'mapCounterValue': 0, u'name': u'REDUCE\_OUTPUT\_RECORDS', u'reduceCounterValue': 545}, {u'totalCounterValue': 47991, u'mapCounterValue': 42591, u'name': u'SPILLED\_RECORDS', u'reduceCounterValue': 5400}, {u'totalCounterValue': 11, u'mapCounterValue': 0, u'name': u'SHUFFLED\_MAPS', u'reduceCounterValue': 11}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'FAILED\_SHUFFLE', u'reduceCounterValue': 0}, {u'totalCounterValue': 11, u'mapCounterValue': 0, u'name': u'MERGED\_MAP\_OUTPUTS', u'reduceCounterValue': 11}, {u'totalCounterValue': 9097, u'mapCounterValue': 8858, u'name': u'GC\_TIME\_MILLIS', u'reduceCounterValue': 239}, {u'totalCounterValue': 262620, u'mapCounterValue': 260970, u'name': u'CPU\_MILLISECONDS', u'reduceCounterValue': 1650}, {u'totalCounterValue': 3091738624L, u'mapCounterValue': 2939084800L, u'name': u'PHYSICAL\_MEMORY\_BYTES', u'reduceCounterValue': 152653824}, {u'totalCounterValue': 25303433216L, u'mapCounterValue': 23190396928L, u'name': u'VIRTUAL\_MEMORY\_BYTES', u'reduceCounterValue': 2113036288}, {u'totalCounterValue': 2405433344L, u'mapCounterValue': 2289565696L, u'name': u'COMMITTED\_HEAP\_BYTES', u'reduceCounterValue': 115867648}], u'counterGroupName': u'org.apache.hadoop.mapreduce.TaskCounter'}, {u'counter': [{u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'BAD\_ID', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'CONNECTION', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'IO\_ERROR', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'WRONG\_LENGTH', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'WRONG\_MAP', u'reduceCounterValue': 0}, {u'totalCounterValue': 0, u'mapCounterValue': 0, u'name': u'WRONG\_REDUCE', u'reduceCounterValue': 0}], u'counterGroupName': u'Shuffle Errors'}, {u'counter': [{u'totalCounterValue': 1316462386, u'mapCounterValue': 1316462386, u'name': u'BYTES\_READ', u'reduceCounterValue': 0}], u'counterGroupName': u'org.apache.hadoop.mapreduce.lib.input.FileInputFormatCounter'}, {u'counter': [{u'totalCounterValue': 8159, u'mapCounterValue': 0, u'name': u'BYTES\_WRITTEN', u'reduceCounterValue': 8159}], u'counterGroupName': u'org.apache.hadoop.mapreduce.lib.output.FileOutputFormatCounter'}], u'id': u'job\_1493719642412\_0002'}}

###### 给出job的所有task信息

cs\_url = 'http://192.168.1.102:19888/ws/v1/history/mapreduce/jobs/job\_1493719642412\_0002/tasks'

cs\_user = 'dbcluster'

cs\_psw = '1'

r = requests.get(cs\_url, auth=(cs\_user, cs\_psw))

data = r.json()

print data

{u'tasks': {u'task': [{u'finishTime': 1494404620924L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000004\_0', u'elapsedTime': 45072, u'state': u'SUCCEEDED', u'startTime': 1494404575852L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000004'}, {u'finishTime': 1494404624366L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000005\_0', u'elapsedTime': 48511, u'state': u'SUCCEEDED', u'startTime': 1494404575855L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000005'}, {u'finishTime': 1494404659442L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000006\_0', u'elapsedTime': 36786, u'state': u'SUCCEEDED', u'startTime': 1494404622656L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000006'}, {u'finishTime': 1494404660531L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_r\_000000\_0', u'elapsedTime': 36913, u'state': u'SUCCEEDED', u'startTime': 1494404623618L, u'progress': 100.0, u'type': u'REDUCE', u'id': u'task\_1493719642412\_0002\_r\_000000'}, {u'finishTime': 1494404659683L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000007\_0', u'elapsedTime': 36991, u'state': u'SUCCEEDED', u'startTime': 1494404622692L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000007'}, {u'finishTime': 1494404660067L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000008\_0', u'elapsedTime': 35432, u'state': u'SUCCEEDED', u'startTime': 1494404624635L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000008'}, {u'finishTime': 1494404655235L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000009\_0', u'elapsedTime': 30557, u'state': u'SUCCEEDED', u'startTime': 1494404624678L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000009'}, {u'finishTime': 1494404632282L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000010\_0', u'elapsedTime': 6629, u'state': u'SUCCEEDED', u'startTime': 1494404625653L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000010'}, {u'finishTime': 1494404623200L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000000\_0', u'elapsedTime': 47391, u'state': u'SUCCEEDED', u'startTime': 1494404575809L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000000'}, {u'finishTime': 1494404623653L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000001\_0', u'elapsedTime': 47852, u'state': u'SUCCEEDED', u'startTime': 1494404575801L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000001'}, {u'finishTime': 1494404623066L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000002\_0', u'elapsedTime': 47276, u'state': u'SUCCEEDED', u'startTime': 1494404575790L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000002'}, {u'finishTime': 1494404621054L, u'successfulAttempt': u'attempt\_1493719642412\_0002\_m\_000003\_0', u'elapsedTime': 45242, u'state': u'SUCCEEDED', u'startTime': 1494404575812L, u'progress': 100.0, u'type': u'MAP', u'id': u'task\_1493719642412\_0002\_m\_000003'}]}}

### 异常点瞬时快照

参考：http://hadoop.apache.org/docs/current/hadoop-project-dist/hadoop-common/Metrics.html

意义：精确的记录异常附近系统资源使用情况，和任务排队情况，帮助用户分析

实现方法，依赖于hadoop metrics queuemetrics来度量

#### QueueMetrics

QueueMetrics shows an application queue from the ResourceManager’s perspective. Each metrics record shows the statistics of each queue, and contains tags such as queue name and Hostname as additional information along with metrics.

In running\_*num* metrics such as running\_0, you can set the property yarn.resourcemanager.metrics.runtime.buckets in yarn-site.xml to change the buckets. The default values is 60,300,1440.

| **Name** | **Description** |
| --- | --- |
| running\_0 | Current number of running applications whose elapsed time are less than 60 minutes |
| running\_60 | Current number of running applications whose elapsed time are between 60 and 300 minutes |
| running\_300 | Current number of running applications whose elapsed time are between 300 and 1440 minutes |
| running\_1440 | Current number of running applications elapsed time are more than 1440 minutes |
| AppsSubmitted | Total number of submitted applications |
| AppsRunning | Current number of running applications |
| AppsPending | Current number of applications that have not yet been assigned by any containers |
| AppsCompleted | Total number of completed applications |
| AppsKilled | Total number of killed applications |
| AppsFailed | Total number of failed applications |
| AllocatedMB | Current allocated memory in MB |
| AllocatedVCores | Current allocated CPU in virtual cores |
| AllocatedContainers | Current number of allocated containers |
| AggregateContainersAllocated | Total number of allocated containers |
| aggregateNodeLocalContainersAllocated | Total number of node local containers allocated |
| aggregateRackLocalContainersAllocated | Total number of rack local containers allocated |
| aggregateOffSwitchContainersAllocated | Total number of off switch containers allocated |
| AggregateContainersReleased | Total number of released containers |
| AvailableMB | Current available memory in MB |
| AvailableVCores | Current available CPU in virtual cores |
| PendingMB | Current memory requests in MB that are pending to be fulfilled by the scheduler |
| PendingVCores | Current CPU requests in virtual cores that are pending to be fulfilled by the scheduler |
| PendingContainers | Current number of containers that are pending to be fulfilled by the scheduler |
| ReservedMB | Current reserved memory in MB |
| ReservedVCores | Current reserved CPU in virtual cores |
| ReservedContainers | Current number of reserved containers |
| ActiveUsers | Current number of active users |
| ActiveApplications | Current number of active applications |
| AppAttemptFirstContainerAllocationDelayNumOps | Total number of first container allocated for all attempts |
| AppAttemptFirstContainerAllocationDelayAvgTime | Average time RM spends to allocate the first container for all attempts. For managed AM, the first container is AM container. So, this indicates the time duration to allocate AM container. For unmanaged AM, this is the time duration to allocate the first container asked by unmanaged AM. |
| FairShareMB | (FairScheduler only) Current fair share of memory in MB |
| FairShareVCores | (FairScheduler only) Current fair share of CPU in virtual cores |
| MinShareMB | (FairScheduler only) Minimum share of memory in MB |
| MinShareVCores | (FairScheduler only) Minimum share of CPU in virtual cores |
| MaxShareMB | (FairScheduler only) Maximum share of memory in MB |
| MaxShareVCores | (FairScheduler only) Maximum share of CPU in virtual cores |