2017.09

Hadoop离线大数据分析

MapReduce应用开发

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集群上运行mapreduce

- 作业打包
- 启动作业，观察控制台输出
- Web界面
- 查看日志文件
- Mapreduce工作流

Mapreduce web界面

ip-10-250-110-47 Hadoop Map/Reduce Administration

State: RUNNING
Started: Sat Apr 11 08:11:53 EDT 2009
Version: 0.20.0, r763504
Compiled: Thu Apr 9 05:18:40 UTC 2009 by ndaley
Identifier: 200904110811

Cluster Summary (Heap Size is 53.75 MB/888.94 MB)

Maps	Reduces	Total Submissions	Nodes	Map Task Capacity	Reduce Task Capacity	Avg. Tasks/Node	Blacklisted Nodes
53	30	2	11	88	88	16.00	0

Scheduling Information

Queue Name	Scheduling Information
default	N/A

Filter (Jobid, Priority, User, Name)
Example: 'user:smith 3200' will filter by 'smith' only in the user field and '3200' in all fields

Mapreduce web界面

Scheduling Information

Queue Name	Scheduling Information
default	N/A

Filter (Jobid, Priority, User, Name)

Example: 'user:smith 3200' will filter by 'smith' only in the user field and '3200' in all fields

Running Jobs

Jobid	Priority	User	Name	Map % Complete	Map Total	Maps Completed	Reduce % Complete	Reduce Total	Reduces Completed	Job Scheduling Information
job_200904110811_0002	NORMAL	root	Max temperature	47.52%	101	48	15.25%	30	0	NA

Mapreduce web界面

Completed Jobs

Jobid	Priority	User	Name	Map % Complete	Map Total	Maps Completed	Reduce % Complete	Reduce Total	Reduces Completed	Job Scheduling Information
job_200904110811_0001	NORMAL	gonzo	word count	100.00%	14	14	100.00%	30	30	NA

Failed Jobs

none

Local Logs

Log directory, Job Tracker History

Mapreduce 作业web界面

Hadoop job_200904110811_0002 on ip-10-250-110-47

User: root
Job Name: Max temperature
Job File: hdfs://ip-10-250-110-47.ec2.internal/mnt/hadoop/mapred/system/job_200904110811_0002/job.xml
Job Setup: Successful
Status: Running
Started at: Sat Apr 11 08:15:53 EDT 2009
Running for: 5mins, 38sec
Job Cleanup: Pending

Kind	% Complete	Num Tasks	Pending	Running	Complete	Killed	Failed/Killed Task Attempts
map	100.00%	101	0	0	101	0	0 / 26
reduce	70.74%	30	0	13	17	0	0 / 0

Mapreduce 作业web界面

	Counter	Map	Reduce	Total
Job Counters	Launched reduce tasks	0	0	32
	Rack-local map tasks	0	0	82
	Launched map tasks	0	0	127
	Data-local map tasks	0	0	45

Mapreduce 作业web界面

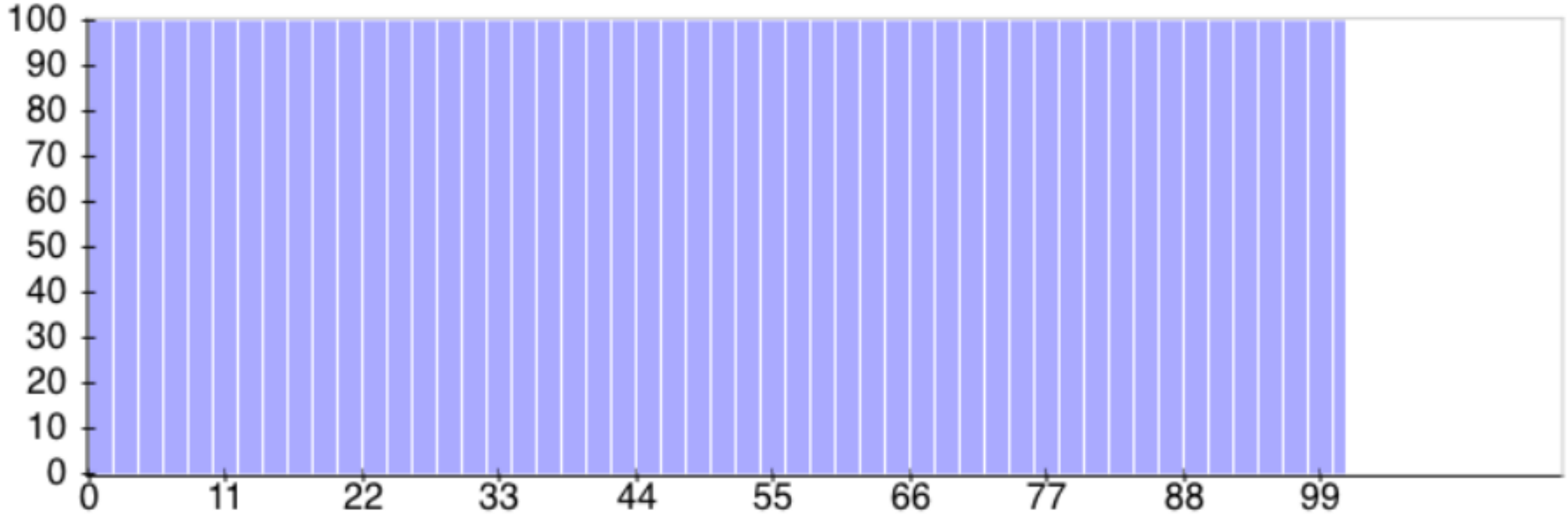
FileSystemCounters	FILE_BYTES_READ	12,665,901	564	12,666,465
	HDFS_BYTES_READ	33,485,841,275	0	33,485,841,275
	FILE_BYTES_WRITTEN	988,084	564	988,648
	HDFS_BYTES_WRITTEN	0	360	360

Mapreduce 作业web界面

Map-Reduce Framework	Reduce input groups	0	40	40
	Combine output records	4,489	0	4,489
	Map input records	1,209,901,509	0	1,209,901,509
	Reduce shuffle bytes	0	18,397	18,397
	Reduce output records	0	40	40
	Spilled Records	9,378	42	9,420
	Map output bytes	10,282,306,995	0	10,282,306,995
	Map input bytes	274,600,205,558	0	274,600,205,558
	Map output records	1,142,478,555	0	1,142,478,555
	Combine input records	1,142,482,941	0	1,142,482,941
	Reduce input records	0	42	42

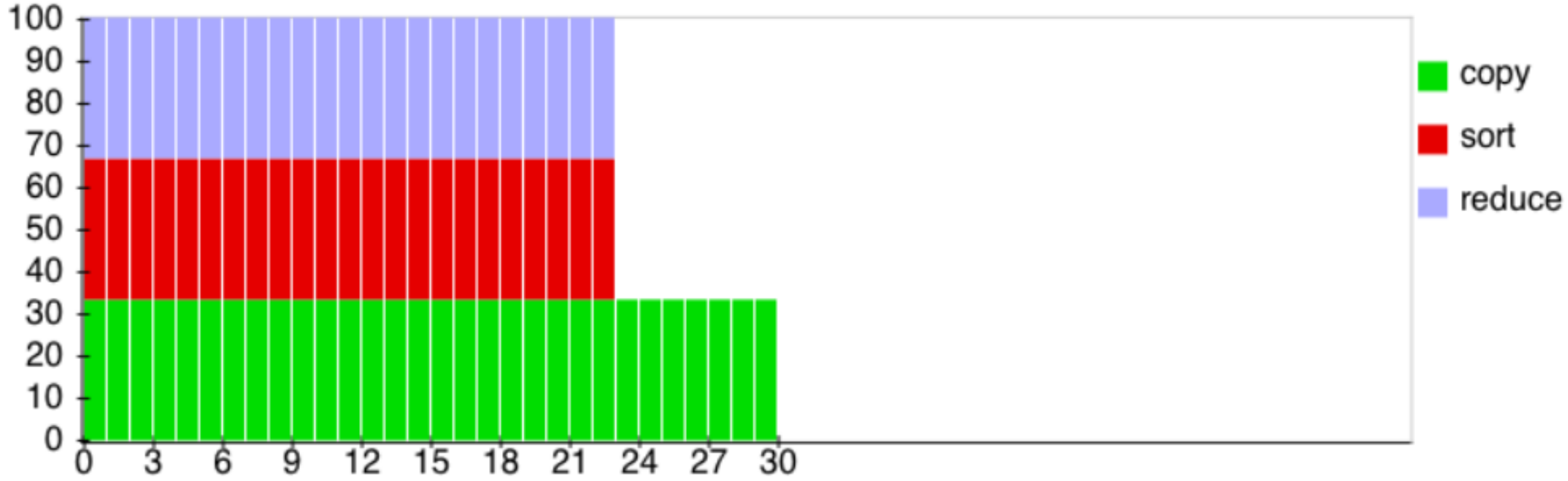
Mapreduce 作业web界面

Map Completion Graph - close



Mapreduce 作业web界面

Reduce Completion Graph - close



Mapreduce 作业调优

Area	Best practice
Number of mappers	How long are your mappers running for? If they are only running for a few seconds on average, then you should see if there's a way to have fewer mappers and make them all run longer, a minute or so, as a rule of thumb. The extent to which this is possible depends on the input format you are using.
Number of reducers	For maximum performance, the number of reducers should be slightly less than the number of reduce slots in the cluster. This allows the reducers to finish in one wave and fully utilizes the cluster during the reduce phase.
Combiners	Can your job take advantage of a combiner to reduce the amount of data in passing through the shuffle?

Mapreduce 作业调优

Intermediate compression	Job execution time can almost always benefit from enabling map output compression.
Custom serialization	If you are using your own custom `Writable` objects, or custom comparators, then make sure you have implemented `RawComparator`.
Shuffle tweaks	The MapReduce shuffle exposes around a dozen tuning parameters for memory management, which may help you eke out the last bit of performance.

2017.08

THE END