



# Add more Metrics to Namenode to capture heap usage

Details

Type:	Improvement	Status:	CLOSED
Priority:	Major	Resolution:	Fixed
Affects Version/s:	None	Fix Version/s:	0.21.0
Component/s:	metrics		
Labels:	None		
Hadoop Flags:	Reviewed		

Description

Recently we had GC issues, where Namenode used more heap than usual. There was no growth indicated by the data in current Metrics to justify the heap usage. Adding more stats such as:

- Counter to track blocks that are pending deletion
- BlocksMap hashmap capacity
- Counter to track excess number of blocks

Attachments

5897.rel20.patch	20 kB	26/Jun/09 17:41
stats.1.patch	21 kB	08/Jun/09 23:56
stats.patch	21 kB	29/May/09 00:23
stats.patch	21 kB	28/May/09 17:45

Activity



Suresh Srinivas created issue - 22/May/09 17:19

Suresh Srinivas added a comment - 28/May/09 17:45

- Moved CorruptBlocks metrics from NameNodeMetrics to FSNamesystemMetrics, where other related metrics are maintained.
- Added the following metrics:
  - PendingDeletionBlocks - tracks the number of block pending deletion
  - ExcessBlocks - blocks that have more replicas than the required replication factor defined for the file
  - BlockCapacity - this is the capacity of the hashmap where the blocks are stored
- Added testcases for testing FSNamesystemMetrics

The new metrics indicates the data structures that can grow to large size and will help in corelating the heap growth indicated in GC logs.

Suresh Srinivas made changes - 28/May/09 17:45

Field	Original Value	New Value
Attachment		stats.patch [ 12409288 ]

Suresh Srinivas added a comment - 29/May/09 00:23


Uploading a newer patch. Previous patch the unit test does not compile.

Suresh Srinivas made changes - 29/May/09 00:23

Attachment	stats.patch [ 12409326 ]
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▼  **Konstantin Shvachko** added a comment - 08/Jun/09 18:41

1. Why do we need to store capacity and loadFactor in BlocksMap?  
These are HashMap parameters and can be retrieved directly from the HashMap.  
Or do I miss something here?
2. Should we make pendingReplicationBlocksCount and other block counts volatile?

▼  **gary murry** added a comment - 08/Jun/09 18:49

I will be out of office June 12.


-Gary

▼  **Suresh Srinivas** added a comment - 08/Jun/09 22:58


These are HashMap parameters and can be retrieved directly from the HashMap.

Unfortunately HashMap access to capacity and loadFactor is package private. Beats me why that was the choice made. The hashmap implementation is closely tied to capacity being multiple of two and the code added that calculates capacity should be future proof.

I will make the other counters volatile.

▼  **Suresh Srinivas** added a comment - 08/Jun/09 23:56

Uploaded patch incorporates changes suggested


 **Suresh Srinivas** made changes - 08/Jun/09 23:56

Attachment

[stats.1.patch](#) [ 12410190 ]

▼  **Konstantin Shvachko** added a comment - 09/Jun/09 18:20


I see, the methods are not accessible in HashMap, so although ugly there is no other way around but to dub them in our code.  
+1

 **Suresh Srinivas** made changes - 10/Jun/09 19:14

Status

Open [ 1 ]

Patch Available [ 10002 ]

▼  **Hadoop QA** added a comment - 13/Jun/09 08:13

-1 overall. Here are the results of testing the latest attachment  
<http://issues.apache.org/jira/secure/attachment/12410190/stats.1.patch>  
against trunk revision 784318.

+1 @author. The patch does not contain any @author tags.

+1 tests included. The patch appears to include 3 new or modified tests.

+1 javadoc. The javadoc tool did not generate any warning messages.

+1 javac. The applied patch does not increase the total number of javac compiler warnings.

+1 findbugs. The patch does not introduce any new Findbugs warnings.

+1 Eclipse classpath. The patch retains Eclipse classpath integrity.


+1 release audit. The applied patch does not increase the total number of release audit warnings.

-1 core tests. The patch failed core unit tests.

-1 contrib tests. The patch failed contrib unit tests.

Test results: <http://hudson.zones.apache.org/hudson/job/Hadoop-Patch-vesta.apache.org/497/testReport/>  
Findbugs warnings: <http://hudson.zones.apache.org/hudson/job/Hadoop-Patch-vesta.apache.org/497/artifact/trunk/build/test/findbugs/newPatchFindbugsWarnings.html>  
Checkstyle results: <http://hudson.zones.apache.org/hudson/job/Hadoop-Patch-vesta.apache.org/497/artifact/trunk/build/test/checkstyle-errors.html>  
Console output: <http://hudson.zones.apache.org/hudson/job/Hadoop-Patch-vesta.apache.org/497/console>

This message is automatically generated.


▼  **Suresh Srinivas** added a comment - 15/Jun/09 17:02

The failed tests are unrelated to this patch:

- TestJobHistory - tracked in [HADOOP-5920](#)
- TestHdfsProxy - tracked in [HADOOP-5837](#)

▼  **Konstantin Shvachko** added a comment - 15/Jun/09 23:32

I just committed this. Thank you Suresh.

 **Konstantin Shvachko** made changes - 15/Jun/09 23:32


Fix Version/s	0.21.0 [ 12313563 ]
Hadoop Flags	[Reviewed]
Resolution	Fixed [ 1 ]
Status	Patch Available [ 10002 ]
	Resolved [ 5 ]

 **Tsz-wo Sze** made changes - 16/Jun/09 23:30


Component/s	dfs [ 12310710 ]
Component/s	metrics [ 12310971 ]

▼  **Hudson** added a comment - 17/Jun/09 19:19


Integrated in Hadoop-trunk #869 (See <http://hudson.zones.apache.org/hudson/job/Hadoop-trunk/869/>)

▼  **Suresh Srinivas** added a comment - 26/Jun/09 17:41

Attaching a back porting patch as this change is required on release 20.

 **Suresh Srinivas** made changes - 26/Jun/09 17:41


Attachment	<a href="#">5897.rel20.patch</a> [ 12411942 ]
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▼  **Suresh Srinivas** added a comment - 26/Jun/09 17:42


Patch passes all the unit tests.

▼  **Konstantin Shvachko** added a comment - 26/Jun/09 22:54


+1  
Committed to branch 0.20.

▼  **Hudson** added a comment - 27/Jun/09 11:09


Integrated in Hadoop-Common-trunk #9 (See <http://hudson.zones.apache.org/hudson/job/Hadoop-Common-trunk/9/>)  
. Promote new name-node metrics to branch 0.20.

 **Owen O'Malley** made changes - 08/Jul/09 16:43

Component/s	dfs [ 12310710 ]
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 **Thomas White** made changes - 24/Aug/10 20:38

Status	Resolved [ 5 ]	Closed [ 6 ]
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Transition		Time In Source Status	Execution Times
 <b>Suresh Srinivas</b> made transition - 10/Jun/09 19:14	OPEN → PATCH AVAILABLE	19d 1h 54m	1
	PATCH AVAILABLE → RESOLVED	5d 4h 18m	1

 Thomas White made transition - 24/Aug/10 20:38

RESOLVED




CLOSED

434d 21h 5m


1

▼ People

Assignee:

 Suresh Srinivas

Reporter:

 Suresh Srinivas

Votes:

1 Vote for this issue

Watchers:

7 Start watching this issue

▼ Dates

Created:

22/May/09 17:19

Updated:

24/Aug/10 20:38

Resolved:

15/Jun/09 23:32