



Hadoop Common / [HADOOP-14831 Über-jira: S3a phase IV: Hadoop 3.1 features](#) / [HADOOP-15267](#)

S3A multipart upload fails when SSE-C encryption is enabled

Details

Type:	Sub-task	Status:	RESOLVED
Priority:	Critical	Resolution:	Fixed
Affects Version/s:	2.9.0, 3.0.0, 3.1.0	Fix Version/s:	3.1.0, 2.10.0, 3.0.3
Component/s:	fs/s3		
Labels:	None		
Environment:	Hadoop 3.1 Snapshot		
Target Version/s:	3.1.0		
Flags:	Patch		

Description

When I enable SSE-C encryption in Hadoop 3.1 and set `fs.s3a.multipart.size` to 5 Mb, storing data in AWS doesn't work anymore. For example, running the following code:

```
>>> df1 = spark.read.json('/home/user/people.json')
>>> df1.write.mode("overwrite").json("s3a://testbucket/people.json")
```

shows the following exception:

```
com.amazonaws.services.s3.model.AmazonS3Exception: The multipart upload initiate requested encryption. Subsequent part requests must include the appropriate encryption parameters.
```

After some investigation, I discovered that `hadoop-aws` doesn't send SSE-C headers in Put Object Part as stated in AWS specification: <https://docs.aws.amazon.com/AmazonS3/latest/API/mpUploadUploadPart.html>

```
If you requested server-side encryption using a customer-provided encryption key in your initiate multipart upload request, you must provide identical encryption information in each part upload using the following headers.
```

You can find a patch attached to this issue for a better clarification of the problem.

Attachments

HADOOP-15267-001.patch	2 kB	05/Mar/18 15:08
HADOOP-15267-002.patch	2 kB	05/Mar/18 23:26
HADOOP-15267-003.patch	5 kB	06/Mar/18 13:14

Activity

- [Harshavardhana](#) added a comment - 27/Feb/18 03:28
- This issue can also be observed with [Minio](#) (AWS S3 compatible server) as well when SSE-C is being used.
- [Steve Loughran](#) added a comment - 28/Feb/18 14:37
- Thanks for finding this —I'll see if I can replicate it.
- regarding your patch
1. It'd be good to follow our naming convention of [HADOOP-1234-001.patch](#); with new patches going up by 1; yetus prefers this
 2. I'd prefer to see this in `WriteOperationsHelper.newUploadPartRequest()`, as that builds up the request...you can make `generateSSECustomerKey()` package private to do this.


We need tests to stop regression.

I propose

- a subclass of `ITestS3AHugeFilesDiskBlocks`, preferably
`org.apache.hadoop.fs.s3a.scale.ITestS3AHugeFilesArrayBlocks.ITestS3AHugeFilesSSECDiskBlocks`.
- whose configuration setup sets SSE-C and the key, as done in `ITestS3AEncryptionSSEC`
- and in `setup*()`, after calling `super.setup()` call
`{{S3ATestUtils.skipIfEncryptionTestsDisabled(getConfiguration())}}`

then if you run the hadoop aws test suite with the scale tests turned on, this should do the test run. If you add the test before adding the fix, that will show the test works, once the fix goes in, we can see the fix takes.

Thanks for starting this...if we can turn this around quickly then it can go into 3.1

▼  [Steve Loughran](#) added a comment - 28/Feb/18 14:39

+[fabbri](#), [ehiggs](#)

▼  [genericqa](#) added a comment - 28/Feb/18 15:53


 **-1 overall**

Vote	Subsystem	Runtime	Comment
0	reexec	16m 1s	Docker mode activated.
Prechecks			
+1	@author	0m 0s	The patch does not contain any @author tags.
-1	test4tests	0m 0s	The patch doesn't appear to include any new or modified tests. Please justify why no new tests are needed for this patch. Also please list what manual steps were performed to verify this patch.
trunk Compile Tests			
+1	mvninstall	24m 52s	trunk passed
+1	compile	0m 45s	trunk passed
+1	checkstyle	0m 24s	trunk passed
+1	mvnsite	0m 50s	trunk passed
+1	shadedclient	12m 34s	branch has no errors when building and testing our client artifacts.
+1	findbugs	0m 58s	trunk passed
+1	javadoc	0m 28s	trunk passed
Patch Compile Tests			
+1	mvninstall	0m 52s	the patch passed
+1	compile	0m 43s	the patch passed
+1	javac	0m 43s	the patch passed
-0	checkstyle	0m 22s	hadoop-tools/hadoop-aws : The patch generated 1 new + 4 unchanged - 0 fixed = 5 total (was 4)
+1	mvnsite	0m 52s	the patch passed
+1	whitespace	0m 0s	The patch has no whitespace issues.
+1	shadedclient	16m 52s	patch has no errors when building and testing our client artifacts.
+1	findbugs	1m 44s	the patch passed
+1	javadoc	0m 42s	the patch passed
Other Tests			
-1	unit	2m 45s	hadoop-aws in the patch failed.
+1	asflicense	0m 46s	The patch does not generate ASF License warnings.
		83m 2s	

Reason	Tests
Failed junit tests	hadoop.fs.s3a.commit.staging.TestStagingCommitter
	hadoop.fs.s3a.commit.staging.TestStagingPartitionedTaskCommit

Subsystem	Report/Notes
Docker	Client=17.05.0-ce Server=17.05.0-ce Image:yetus/hadoop:5b98639
JIRA Issue	HADOOP-15267
JIRA Patch URL	https://issues.apache.org/jira/secure/attachment/12912174/hadoop-fix.patch
Optional Tests	asflicense compile javac javadoc mvninstall mvnsite unit shadedclient findbugs checkstyle
uname	Linux a665ecaf2dd9 3.13.0-135-generic #184-Ubuntu SMP Wed Oct 18 11:55:51 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux
Build tool	maven
Personality	/testptch/patchprocess/precommit/personality/provided.sh
git revision	trunk / edc9f14
maven	version: Apache Maven 3.3.9
Default Java	1.8.0_151
findbugs	v3.1.0-RC1
checkstyle	https://builds.apache.org/job/PreCommit-HADOOP-Build/14229/artifact/out/diff-checkstyle-hadoop-tools_hadoop-aws.txt
unit	https://builds.apache.org/job/PreCommit-HADOOP-Build/14229/artifact/out/patch-unit-hadoop-tools_hadoop-aws.txt
Test Results	https://builds.apache.org/job/PreCommit-HADOOP-Build/14229/testReport/
Max. process+thread count	334 (vs. ulimit of 10000)
modules	C: hadoop-tools/hadoop-aws U: hadoop-tools/hadoop-aws
Console output	https://builds.apache.org/job/PreCommit-HADOOP-Build/14229/console
Powered by	Apache Yetus 0.8.0-SNAPSHOT http://yetus.apache.org

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▼  Steve Loughran added a comment - 05/Mar/18 11:56

Checkstyle is line width == 82; need to look at that to see if the code looks better with it, in which case we can ignore
Test failures are legitimate NPEs in the new code

```
[ERROR] testTaskMultiFileUploadFailure[0](org.apache.hadoop.fs.s3a.commit.staging.TestStagingCommitter) Time elapsed:
0.14 s <<< ERROR!
java.lang.NullPointerException
    at org.apache.hadoop.fs.s3a.S3AFileSystem.setOptionalUploadPartRequestParameters(S3AFileSystem.java:2610)
    at org.apache.hadoop.fs.s3a.S3AFileSystem.uploadPart(S3AFileSystem.java:1567)
    at org.apache.hadoop.fs.s3a.WriteOperationHelper.lambda$uploadPart$8(WriteOperationHelper.java:474)
    at org.apache.hadoop.fs.s3a.Invoker.once(Invoker.java:109)
    at org.apache.hadoop.fs.s3a.Invoker.lambda$retry$3(Invoker.java:260)
    at org.apache.hadoop.fs.s3a.Invoker.retryUntranslated(Invoker.java:314)
    at org.apache.hadoop.fs.s3a.Invoker.retry(Invoker.java:256)
    at org.apache.hadoop.fs.s3a.Invoker.retry(Invoker.java:231)
    at org.apache.hadoop.fs.s3a.WriteOperationHelper.retry(WriteOperationHelper.java:123)
    at org.apache.hadoop.fs.s3a.WriteOperationHelper.uploadPart(WriteOperationHelper.java:471)
    at org.apache.hadoop.fs.s3a.commit.CommitOperations.uploadFileToPendingCommit(CommitOperations.java:477)
    at
    org.apache.hadoop.fs.s3a.commit.staging.StagingCommitter.lambda$commitTaskInternal$4(StagingCommitter.java:698)
    at org.apache.hadoop.fs.s3a.commit.Tasks$Builder.runSingleThreaded(Tasks.java:165)
    at org.apache.hadoop.fs.s3a.commit.Tasks$Builder.run(Tasks.java:150)
    at org.apache.hadoop.fs.s3a.commit.staging.StagingCommitter.commitTaskInternal(StagingCommitter.java:690)
    at org.apache.hadoop.fs.s3a.commit.staging.StagingCommitter.commitTask(StagingCommitter.java:635)
    at
    org.apache.hadoop.fs.s3a.commit.staging.TestStagingCommitter.lambda$testTaskMultiFileUploadFailure$3(TestStagingCommitte
    at org.apache.hadoop.test.TestMultiFileUploadFailure$1.run(TestMultiFileUploadFailure.java:401)
```


vadmeste: I need to draw your attention to the hadoop-aws [patch submission policy](#). Nobodies patches get reviewed until the submitter declares which s3 endpoint they've run all the hadoop-aws integration tests against; Jenkins only runs the unit tests.

Here it's one of the mock tests, so while the patch may work in production, the mock S3FS may need some tweaks to handle the setup, which means `MockS3FileSystem` is going to need some attention.

This is what I suggest


- 1. ignore my recommendation to move the change into `WriteOperationsHelper.newUploadPartRequest()`, as that's running outside the FS...you'd need to add more entry points into `S3FileSystem` and wire up.
- 2. make `setOptionalUploadPartRequestParameters` protected, add javadocs, etc.
- 3. in `MockS3FileSystem`, make it a no-op.
- 4. ...after that the failing tests should work...
- 5. then its time to worry about the integration tests.

This is an important patch, it is ready to go in apart from those tests, but yes, we need the text fixup & something new to verify the problem is not only fixed, but never going to come back.

▼  **Anis Elleuch** added a comment - 05/Mar/18 13:10


Thanks stevel@apache.org,

I am going to do that. Meanwhile, it looks like branch-3.1 currently generates compiling errors when running the tests.. I am going to work against master to go faster and then I'll see what would be the next steps.

▼  **Anis Elleuch** added a comment - 05/Mar/18 15:24

stevel@apache.org: I updated the patch with the correct name and made changes you requested (I hope all of them). It doesn't include the integration tests yet but I just wanted to do a review for this progress first.

I ran hadoop aws tests (`cd hadoop-tools/hadoop-aws; mvn test`) using my AWS S3 bucket `vadmeste-hadoop` in region `us-east-1`.

▼  **genericqa** added a comment - 05/Mar/18 16:00

 **+1 overall**

Vote	Subsystem	Runtime	Comment
0	reexec	0m 23s	Docker mode activated.
			Prechecks
+1	@author	0m 0s	The patch does not contain any @author tags.
+1	test4tests	0m 0s	The patch appears to include 1 new or modified test files.
			trunk Compile Tests
+1	mvninstall	17m 12s	trunk passed
+1	compile	0m 28s	trunk passed
+1	checkstyle	0m 16s	trunk passed
+1	mvnsite	0m 32s	trunk passed
+1	shadedclient	10m 41s	branch has no errors when building and testing our client artifacts.
+1	findbugs	0m 36s	trunk passed
+1	javadoc	0m 20s	trunk passed
			Patch Compile Tests
+1	mvninstall	0m 33s	the patch passed
+1	compile	0m 24s	the patch passed
+1	javac	0m 24s	the patch passed
+1	checkstyle	0m 14s	the patch passed
+1	mvnsite	0m 29s	the patch passed
+1	whitespace	0m 0s	The patch has no whitespace issues.

+1	shadedclient	11m 7s	patch has no errors when building and testing our client artifacts.
+1	findbugs	0m 41s	the patch passed
+1	javadoc	0m 18s	the patch passed
			Other Tests
+1	unit	4m 39s	hadoop-aws in the patch passed.
+1	asflicense	0m 20s	The patch does not generate ASF License warnings.
		49m 18s	

Subsystem	Report/Notes
Docker	Client=17.05.0-ce Server=17.05.0-ce Image:yetus/hadoop:d4cc50f
JIRA Issue	HADOOP-15267
JIRA Patch URL	https://issues.apache.org/jira/secure/attachment/12913062/HADOOP-15267-001.patch
Optional Tests	asflicense compile javac javadoc mvninstall mvnsite unit shadedclient findbugs checkstyle
uname	Linux 65c8a5884b38 3.13.0-135-generic #184-Ubuntu SMP Wed Oct 18 11:55:51 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux
Build tool	maven
Personality	/testptch/patchprocess/precommit/personality/provided.sh
git revision	trunk / 8110d6a
maven	version: Apache Maven 3.3.9
Default Java	1.8.0_151
findbugs	v3.1.0-RC1
Test Results	https://builds.apache.org/job/PreCommit-HADOOP-Build/14255/testReport/
Max. process+thread count	348 (vs. ulimit of 10000)
modules	C: hadoop-tools/hadoop-aws U: hadoop-tools/hadoop-aws
Console output	https://builds.apache.org/job/PreCommit-HADOOP-Build/14255/console
Powered by	Apache Yetus 0.8.0-SNAPSHOT http://yetus.apache.org

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Steve Loughran added a comment - 05/Mar/18 16:48

yes, LGTM. that's the production code & the mock tests, just that integration one....
thanks for doing this

Anis Elleuch added a comment - 05/Mar/18 23:34 - edited

stevel@apache.org, I added a new patch HDOPP-15267-002.patch which contains the integration test.
I tested with a AWS S3 bucket (vadmeste-hadoop, us-east-1) using the following command:
mvn test -Dparallel-tests -Dscale -DtestsThreadCount=8 -Dtest=ITestS3AHugeFilesSSECDiskBlocks
Please take a look.

genericqa added a comment - 06/Mar/18 00:23


+1 overall

Vote	Subsystem	Runtime	Comment
0	reexec	0m 21s	Docker mode activated.
			Prechecks

+1	@author	0m 0s	The patch does not contain any @author tags.
+1	test4tests	0m 0s	The patch appears to include 1 new or modified test files.
			trunk Compile Tests
+1	mvninstall	18m 37s	trunk passed
+1	compile	0m 28s	trunk passed
+1	checkstyle	0m 18s	trunk passed
+1	mvnsite	0m 33s	trunk passed
+1	shadedclient	11m 20s	branch has no errors when building and testing our client artifacts.
+1	findbugs	1m 4s	trunk passed
+1	javadoc	0m 24s	trunk passed
			Patch Compile Tests
+1	mvninstall	0m 36s	the patch passed
+1	compile	0m 28s	the patch passed
+1	javac	0m 28s	the patch passed
-0	checkstyle	0m 17s	hadoop-tools/hadoop-aws: The patch generated 2 new + 0 unchanged - 0 fixed = 2 total (was 0)
+1	mvnsite	0m 34s	the patch passed
+1	whitespace	0m 0s	The patch has no whitespace issues.
+1	shadedclient	11m 45s	patch has no errors when building and testing our client artifacts.
+1	findbugs	0m 49s	the patch passed
+1	javadoc	0m 21s	the patch passed
			Other Tests
+1	unit	4m 43s	hadoop-aws in the patch passed.
+1	asflicense	0m 23s	The patch does not generate ASF License warnings.
		53m 15s	

Subsystem	Report/Notes
Docker	Client=17.05.0-ce Server=17.05.0-ce Image:yetus/hadoop:d4cc50f
JIRA Issue	HADOOP-15267
JIRA Patch URL	https://issues.apache.org/jira/secure/attachment/12913119/HADOOP-15267-002.patch
Optional Tests	asflicense compile javac javadoc mvninstall mvnsite unit shadedclient findbugs checkstyle
uname	Linux 0facaae2c56b 3.13.0-135-generic #184-Ubuntu SMP Wed Oct 18 11:55:51 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux
Build tool	maven
Personality	/testptch/patchprocess/precommit/personality/provided.sh
git revision	trunk / 4971276
maven	version: Apache Maven 3.3.9
Default Java	1.8.0_151
findbugs	v3.1.0-RC1
checkstyle	https://builds.apache.org/job/PreCommit-HADOOP-Build/14259/artifact/out/diff-checkstyle-hadoop-tools_hadoop-aws.txt
Test Results	https://builds.apache.org/job/PreCommit-HADOOP-Build/14259/testReport/
Max. process+thread count	350 (vs. ulimit of 10000)
modules	C: hadoop-tools/hadoop-aws U: hadoop-tools/hadoop-aws
Console output	https://builds.apache.org/job/PreCommit-HADOOP-Build/14259/console
Powered by	Apache Yetus 0.8.0-SNAPSHOT http://yetus.apache.org

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▼  [Steve Loughran](#) added a comment - 06/Mar/18 13:17


- test is declared in wrong package for its path (interesting that checkstyle & findbugs miss this)
- needs to be optional so that third party store tests can run (code in `AbstractTestS3AEncryption`)

We're in a hurry so I just fixed this up...normally I'd have given you the opportunity to get deeper into S3 Integration tests.


Testing: S3 ireland w/ s3guard & auth.

One transient failure of `ITestCommitOperations.testCommitSmallFile` where 3 retries took place, not two. Been seeing this intermittently for a while.


With the test patches I'm happy.

▼  [Anis Elleuch](#) added a comment - 06/Mar/18 13:25

Sure stevel@apache.org, thanks for fixing the missing things. Just ping me for whatever you need.

▼  [Steve Loughran](#) added a comment - 07/Mar/18 14:12

now that I've remembered to hit "submit patch", if yetus is happy it'll go in. After that, the best thing you can do is verify that it works for you

▼  [genericqa](#) added a comment - 07/Mar/18 15:12

 **+1 overall**

Vote	Subsystem	Runtime	Comment
0	reexec	0m 17s	Docker mode activated.
			Prechecks
+1	@author	0m 0s	The patch does not contain any @author tags.
+1	test4tests	0m 0s	The patch appears to include 2 new or modified test files.
			trunk Compile Tests
+1	mvninstall	17m 53s	trunk passed
+1	compile	0m 28s	trunk passed
+1	checkstyle	0m 18s	trunk passed
+1	mvnsite	0m 32s	trunk passed
+1	shadedclient	10m 49s	branch has no errors when building and testing our client artifacts.
+1	findbugs	0m 40s	trunk passed
+1	javadoc	0m 20s	trunk passed
			Patch Compile Tests
+1	mvninstall	0m 39s	the patch passed
+1	compile	0m 31s	the patch passed
+1	javac	0m 31s	the patch passed
+1	checkstyle	0m 17s	the patch passed
+1	mvnsite	0m 35s	the patch passed
+1	whitespace	0m 0s	The patch has no whitespace issues.
+1	shadedclient	12m 4s	patch has no errors when building and testing our client artifacts.
+1	findbugs	0m 42s	the patch passed
+1	javadoc	0m 18s	the patch passed
			Other Tests
+1	unit	4m 41s	hadoop-aws in the patch passed.
+1	asflicense	0m 26s	The patch does not generate ASF License warnings.

		51m 37s	
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Subsystem	Report/Notes
Docker	Client=17.05.0-ce Server=17.05.0-ce Image:yetus/hadoop:d4cc50f
JIRA Issue	HADOOP-15267
JIRA Patch URL	https://issues.apache.org/jira/secure/attachment/12913197/HADOOP-15267-003.patch
Optional Tests	asflicense compile javac javadoc mvninstall mvnsite unit shadedclient findbugs checkstyle
uname	Linux c1d3d7470c71 3.13.0-135-generic #184-Ubuntu SMP Wed Oct 18 11:55:51 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux
Build tool	maven
Personality	/testptch/patchprocess/precommit/personality/provided.sh
git revision	trunk / 58ea2d7
maven	version: Apache Maven 3.3.9
Default Java	1.8.0_151
findbugs	v3.1.0-RC1
Test Results	https://builds.apache.org/job/PreCommit-HADOOP-Build/14271/testReport/
Max. process+thread count	292 (vs. ulimit of 10000)
modules	C: hadoop-tools/hadoop-aws U: hadoop-tools/hadoop-aws
Console output	https://builds.apache.org/job/PreCommit-HADOOP-Build/14271/console
Powered by	Apache Yetus 0.8.0-SNAPSHOT http://yetus.apache.org

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▼ [Steve Loughran](#) added a comment - 07/Mar/18 18:56 - edited

+1

OK its in.

Anis, thank you for finding this!

I'm just seeing how easy this is to backport, as its a major bug

▼ [Hudson](#) added a comment - 07/Mar/18 19:13

SUCCESS: Integrated in Jenkins build Hadoop-trunk-Commit #13787 (See <https://builds.apache.org/job/Hadoop-trunk-Commit/13787/>)

[HADOOP-15267](#). S3A multipart upload fails when SSE-C encryption is (stevel: rev e0307e53e2110cb6b418861a7471e97a013c16e2)

- (edit) hadoop-tools/hadoop-aws/src/test/java/org/apache/hadoop/fs/s3a/MockS3AFileSystem.java
- (edit) hadoop-tools/hadoop-aws/src/main/java/org/apache/hadoop/fs/s3a/S3AFileSystem.java
- (add) hadoop-tools/hadoop-aws/src/test/java/org/apache/hadoop/fs/s3a/scale/ITestS3AHugeFilesSSECDiskBlocks.java

▼ [Steve Loughran](#) added a comment - 07/Mar/18 19:21

backported to 3.0.x; not got time right now to do look at & retest branch-2...the 3.0 commit should be the one to pick up if anyone wants to

▼ [Steve Loughran](#) added a comment - 07/Mar/18 20:09

+fabbri: FYI

▼ [Anis Elleuch](#) added a comment - 07/Mar/18 20:34


Thanks for merging this patch stevel@apache.org.

▼ [Steve Loughran](#) added a comment - 25/Jun/18 16:34


backported to branch-2, for completeness; tested the new test against S3 Ireland

People

Assignee:

 Anis Elleuch

Reporter:

 Anis Elleuch

Votes:

 0 Vote for this issue

Watchers:

 4 Start watching this issue

Dates

Created:

27/Feb/18 01:17

Updated:

25/Jun/18 16:34

Resolved:

07/Mar/18 18:56