**Description**

A crash was observed in one of teuthology runs [1]:

```
2019-06-23T07:57:02.429 INFO:tasks.rbd_mirror.cluster2.client.mirror.2.smithi039.stderr:/build/ceph-15.0.0-2068-g742df4f/src/tools/rbd_mirror/ImageSyncThrottler.cc:61: FAILED ceph_assert(m_queue.empty())
2019-06-23T07:57:02.430 INFO:tasks.rbd_mirror.cluster2.client.mirror.2.smithi039.stderr:/build/ceph-15.0.0-2068-g742df4f/src/tools/rbd_mirror/ImageSyncThrottler.cc:61: FAILED ceph_assert(m_queue.empty())
```

1. teuthology run: 2019-06-23T07:57:02.429
2. `ImageSyncThrottler::start_op` function
3. Crash signature:
   ```
   cephs assertion failed
   ```
4. Crash signature (v2):
   ```
   cephs assertion failed
   ```
5. Reviewer:
   ```
   3 - minor
   ```
6. Affected Versions:
   ```
   ceph-qa-suite:
   ```
7. Pull request ID:
   ```
   28730
   ```
8. Crash signature (v1):
   ```
   Backport:
   ```
9. Regression:
   ```
   No
   ```
10. Source:
    ```
        rbd - Bug #40519
        rbd_mirror/ImageSyncThrottler.cc: 61: FAILED ceph_assert(m_queue.empty())
        06/24/2019 12:43 PM - Mykola Golub
        Status: Resolved
        % Done: 0%
        Spent time: 0.00 hour
        Assignee: Mykola Golub
        Category:
        Target version:
        Source:
        Affected Versions:
        Backport:
        Regression:
        Severity:
        Reviewed:
        Tags:
```
I believe the cause is incorrect duplicate handling in `ImageSyncThrottler::start_op`. We already check here if there is a request with the same id in in-flight ops (started), but does not check if there is such a request in the queue (waiting).


Related issues:
Copied to rbd - Backport #40592: luminous: rbd_mirror/ImageSyncThrottler.cc: ... Resolved
Copied to rbd - Backport #40593: mimic: rbd_mirror/ImageSyncThrottler.cc: 61... Resolved
Copied to rbd - Backport #40594: nautilus: rbd_mirror/ImageSyncThrottler.cc: ... Resolved

History
#1 - 06/24/2019 12:49 PM - Mykola Golub
The test case that reproduces the assertion failure:

```c
TEST_F(TestMockImageSyncThrottler, Duplicate) {
  MockImageSyncThrottler throttler(g_ceph_context);
  throttler.set_max_concurrent_syncs(2);

  C_SaferCond on_start1;
  throttler.start_op("id1", &on_start1); // req (1) in flight (in_flight.size() == 1)
  C_SaferCond on_start2;
  throttler.start_op("id2", &on_start2); // req (2) in flight (in_flight.size() == 2)

  C_SaferCond on_start3;
  throttler.start_op("id3", &on_start3); // req (3) queued (m_queue.size() == 1)
  C_SaferCond on_start4;
  throttler.start_op("id3", &on_start4); // req (4) (dup!) queued (m_queue.size() == 2)
  C_SaferCond on_start5;
  throttler.start_op("id4", &on_start5); // req (5) queued (m_queue.size() == 3)

  throttler.finish_op("id1"); // req (3) in flight (in_flight.size() == 2, m_queue.size() == 2)
  ASSERT_EQ(0, on_start1.wait());

  throttler.finish_op("id2"); // req (4) in flight (in_flight.size() == 1 due to duplicate!, m_queue.size() == 1)
  ASSERT_EQ(0, on_start1.wait());

  C_SaferCond on_start6;
  throttler.start_op("id6", &on_start6); // FAILED ceph_assert(m_queue.empty())

  throttler.finish_op("id3");
  ASSERT_EQ(0, on_start3.wait());
  ASSERT_EQ(-ECANCELED, on_start4.wait());

  throttler.finish_op("id4");
  ASSERT_EQ(0, on_start5.wait());
  throttler.finish_op("id5");
  ASSERT_EQ(0, on_start6.wait());
}
```

And in the logs one can see many duplicates at that moment (e.g. 10c5c813f2d7), which I believe are due to the trasher:

trociny@teuthology:/a/trociny-2019-06-21_06:39:59-rbd-wip-mgolub-testing-distro-basic-smithi/4055998/remote/sm ithi039/log$ zgrep '2019-06-23T07:56:49.284+0000' cluster2-client.mirror.2.smithi039.err 2019-06-23T07:56:49.284+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id="cluster2-client.mirror.2.38780" 2019-06-23T07:56:49.284+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id="cluster2-client.mirror.2.38780"
instance_id=4651, sync_id=1107334ad7fb
2019-06-23T07:56:49.288+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c517ed9396
2019-06-23T07:56:49.288+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c916a6fb2
2019-06-23T07:56:49.288+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=110746577dca
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c939a2aa83
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c517ed9396
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=110746577dca
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c939a2aa83
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c517ed9396
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request:
instance_id=4651, sync_id=10c5c813f2d7
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handleSyncRequest:
instance_id=4651, sync_id=10c939a2aa83
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handleSyncRequest:
instance_id=4651, sync_id=10c517ed9396
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handleSyncRequest:
instance_id=4651, sync_id=10c5c813f2d7
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handleSyncRequest:
instance_id=4651, sync_id=110746577dca
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handleSyncRequest:
instance_id=4651, sync_id=10c939a2aa83
2019-06-23T07:56:49.292+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handleSyncRequest:
instance_id=4651, sync_id=10c517ed9396
2019-06-23T07:56:53.028+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=122bc575f727
2019-06-23T07:56:53.036+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10be13acbc0d
2019-06-23T07:56:53.036+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10c939a2aa83
2019-06-23T07:56:53.452+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10c9b4dfcd59
2019-06-23T07:56:53.464+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=1107334ad7fb
2019-06-23T07:56:53.484+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10c9dab5e0a
2019-06-23T07:56:53.520+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10c916a6fb2
2019-06-23T07:56:53.596+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10c916a6fb2
2019-06-23T07:56:53.596+0000 7f5c1aad7700 10 rbd::mirror::InstanceWatcher: 0x55c7ed562000 handle_sync_request: instance_id=4651, sync_id=10c5c813df2d7

#2 - 06/25/2019 04:49 AM - Mykola Golub
- Status changed from In Progress to Fix Under Review
- Pull request ID set to 28730

#3 - 06/27/2019 05:40 PM - Jason Dillaman
- Status changed from Fix Under Review to Pending Backport
- Backport set to luminous,mimic,nautilus

#4 - 06/30/2019 08:43 AM - Nathan Cutler
- Copied to Backport #40592: luminous: rbd_mirror/ImageSyncThrottler.cc: 61: FAILED ceph_assert(m_queue.empty()) added

#5 - 06/30/2019 08:43 AM - Nathan Cutler
- Copied to Backport #40593: mimic: rbd_mirror/ImageSyncThrottler.cc: 61: FAILED ceph_assert(m_queue.empty()) added

#6 - 06/30/2019 08:43 AM - Nathan Cutler
- Copied to Backport #40594: nautilus: rbd_mirror/ImageSyncThrottler.cc: 61: FAILED ceph_assert(m_queue.empty()) added

#7 - 07/16/2019 03:44 PM - Yuri Weinstein
merged https://github.com/ceph/ceph/pull/28815

#8 - 10/02/2019 01:15 PM - Nathan Cutler
- Status changed from Pending Backport to Resolved

While running with --resolve-parent, the script "backport-create-issue" noticed that all backports of this issue are in status "Resolved".