Ruby master - Bug #17871

TestGCCompact#test_ast_compacts test failing again

05/19/2021 05:46 PM - jaruga (Jun Aruga)

Status: Closed
Priority: Normal
Assignee: 
Target version: 
Backport: 2.6: REQUIRED, 2.7: REQUIRED, 3.0: REQUIRED

description

This issue was found by @mame (Yusuke Endoh) yesterday on our new Power 9 server. I would like to open the ticket.

The test failure was reported and fixed on the #17306 6 months ago. However on the latest master adcbae8d49ec04d365ce13274783b1495c37d0e, Power 9 (ppc64le) Ubuntu focal, I see the TestGCCompact#test_ast_compacts test fails.

```bash
$ lscpu | head -3
Architecture: ppc64le
Byte Order: Little Endian
CPU(s): 8

$ lscpu | grep ^Model
Model: 2.2 (pvr 004e 1202)
Model name: POWER9 (architected), altivec supported

$ uname -m
ppc64le

$ cat /etc/os-release | head -3
NAME="Ubuntu"
VERSION="20.04.2 LTS (Focal Fossa)"
ID=ubuntu

$ gcc --version
gcc (Ubuntu 9.3.0-17ubuntu1~20.04) 9.3.0
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This is free software; see the source for copying conditions. There is NO warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

$ autoconf
$ ./configure \
--prefix=${HOME}/local/ruby-master-adcbae8 \
--enable-shared
$ make
$ make install
$ make check 2>&1 | tee check.log
...
<internal:gc>:213: [BUG] Couldn't unprotect page 0x00000a1b33ba8000
ruby 3.1.0dev (2021-05-19T05:24:01Z master adcbae8d49) [powerpc64le-linux]

-- Control frame information -------------------------------------------------
c:0031 p:0003 s:0174 e:000173 METHOD <internal:gc>:213
c:0030 p:0026 s:0170 e:000169 METHOD /home/jaruga/git/ruby/ruby/test/ruby/test_gc_compact.rb:154 ...
c:0001 p:0000 s:0003 E:001550 (none) [FINISH]
...

-- C level backtrace information ---------------------------------------------
/home/jaruga/git/ruby/ruby/libruby.so.3.1.0(rb_vm_bugreport+0x1b4) [0x7441be9c78f4] vm_dump.c:759
/home/jaruga/git/ruby/ruby/libruby.so.3.1.0(rb_bug_without_die+0x9c) [0x7441be740dec] error.c:777
/home/jaruga/git/ruby/ruby/libruby.so.3.1.0(die+0x0) [0x7441be6807dc] error.c:785
```
$ make test-all TESTOPTS="-n test_compact_count" TESTS=test/ruby/test_gc_compact.rb

# Running tests:

[1/1] TestGCCompact#test_compact_count<internal:gc>:213: [BUG] Couldn't protect page 0x00000f8747228000
ruby 3.1.0.dev (2021-05-19T05:24:01Z master adcb8d49) [powerpc64le-linux]

-- Control frame information
-----------------------------------------------
c:0031 p:0003 s:0174 e:000173 METHOD <internal:gc>:213
<internal:gc>:213: [BUG] Couldn't unprotect page 0x00000f8747234000
ruby 3.1.0.dev (2021-05-19T05:24:01Z master adcb8d49) [powerpc64le-linux]

-- Control frame information
-----------------------------------------------
c:0031 p:0003 s:0174 e:000173 METHOD <internal:gc>:213
<internal:gc>:213: [BUG] Segmentation fault at 0x00000f8747236360
ruby 3.1.0.dev (2021-05-19T05:24:01Z master adcb8d49) [powerpc64le-linux]

-- Control frame information
-----------------------------------------------
c:0031 p:0003 s:0174 e:000173 METHOD <internal:gc>:213
make: *** [uncommon.mk:802: yes-test-all] Segmentation fault (core dumped)

Related issues:
Related to Ruby master - Bug #17306: TestGCCompact#test_ast_compacts test fai...

Associated revisions
Revision fc832fbf - 05/26/2021 12:37 AM - tenderlovemaking (Aaron Patterson)
Disable compaction on platforms that can't support it

Manual compaction also requires a read barrier, so we need to disable
even manual compaction on platforms that don't support mprotect.

[Bug #17871]  

History

#1 - 05/19/2021 06:21 PM - xtkoba (Tee KOBAYASHI)
Some googling told me that the page size defaults to 64k on powerpc64le for some Linux distros. Possibly sysconf(3) does not report the correct page size?

#2 - 05/19/2021 08:09 PM - jaruga (Jun Aruga)
- File check.log added

I had a resistance to upload the full log check.log, because the file size is big. However I would upload the log file now.
$ du -sh check.log
1.2M check.log

$ wc -l check.log
22963 check.log

#3 - 05/20/2021 12:09 AM - mame (Yusuke Endoh)
- Related to Bug #17306: TestGCCompact#test_ast_compacts test failures added

#4 - 05/20/2021 12:15 AM - mame (Yusuke Endoh)
xtkoba (Tee KOBAYASHI) wrote in #note-1:

Possibly sysconf(3) does not report the correct page size?

I think it reports 64k correctly.

$ ruby -re tc Etc.sysconf(Etc::SC_PAGE_SIZE)
65536

The fix for #17306 disabled the auto compaction on a platform whose page size is greater than 4k, like ppc64le. However, TestGCCompact#test_ast_compacts is a test for (not auto) compaction, so it is still executed on ppc64le. I'm unsure why the fix addressed the issue of #17306.

#5 - 05/20/2021 05:51 PM - jaruga (Jun Aruga)

Running the each test in test/ruby/test_gc_compact.rb on the above environment, here is the result. The failed test is not only the test_ast_compacts test.

- test_enable_autocompact : ok
- test_disable_autocompact : ok
- test_major_compacts : ok
- test_implicit_compaction_does_something : ok
- test_gc_compact_stats : error
- test_complex_hash_keys : error
- test_ast_compacts : error
- test_compact_count : error

Here are the the commands I executed.

$ make test-all TESTS="-v -n test_enable_autocompact test/ruby/test_gc_compact.rb"
# => ok
$ make test-all TESTS="-v -n test_disable_autocompact test/ruby/test_gc_compact.rb"
# => ok
$ make test-all TESTS="-v -n test_major_compacts test/ruby/test_gc_compact.rb"
# => ok
$ make test-all TESTS="-v -n test_implicit_compaction_does_something test/ruby/test_gc_compact.rb"
# => ok
$ make test-all TESTS="-v -n test_gc_compact_stats test/ruby/test_gc_compact.rb"
# => error (Segmentation fault)
$ make test-all TESTS="-v -n test_complex_hash_keys test/ruby/test_gc_compact.rb"
# => error (Segmentation fault)
$ make test-all TESTS="-v -n test_ast_compacts test/ruby/test_gc_compact.rb"
# => error (<internal:gc>:213: [BUG] Couldn't unprotect page 0x00000216f95c4000)
$ make test-all TESTS="-v -n test_compact_count test/ruby/test_gc_compact.rb"
# => error (Segmentation fault)

#6 - 05/20/2021 07:06 PM - xtkoba (Tee KOBAYASHI)

mame (Yusuke Endoh) wrote in #note-4:

I'm unsure why the fix addressed the issue of #17306.

This is because after #17306 was fixed the commit 32b7dc6b56a417c1d1c354102351fc1825d653bf changed the behavior of {,un}lock_page_body so that they call mprotect(2) for an explicit compaction, regardless of the page size.

#7 - 05/25/2021 11:10 PM - tenderlovemaking (Aaron Patterson)

xtkoba (Tee KOBAYASHI) wrote in #note-6:

mame (Yusuke Endoh) wrote in #note-4:
I'm unsure why the fix addressed the issue of #17306.

This is because after #17306 was fixed the commit 32b7dcb56a417c1d1c354102351f1825d653bf changed the behavior of {un}lock_page_body so that they call mprotect(2) for an explicit compaction, regardless of the page size.

Ya, that's correct. Even manual compaction requires the mprotect read barrier. Basically we need to disable compaction on platforms that don't support it. I'll make a fix.

#8 - 05/26/2021 12:37 AM - tenderlovemaking (Aaron Patterson)
- Status changed from Open to Closed

Applied in changeset git|fc832ffba5681ff63e4d0dc3f4ec5c8ff39aae6.

Disable compaction on platforms that can't support it

Manual compaction also requires a read barrier, so we need to disable even manual compaction on platforms that don't support mprotect.

[Bug #17871]

#9 - 05/26/2021 09:39 AM - jaruga (Jun Aruga)
@tenderlovemaking (Aaron Patterson) thanks for fixing it! I removed the skipped gc tests on Travis ppc64le at the af4319873bf45d55d91d7f48b197f94dc526967.

#10 - 04/30/2022 09:45 AM - wanabe (wanabe)
Note for the backport maintainer:
The issue seems to be still reproduced in 3.0.
http://rubyci.s3.amazonaws.com/ppc64le/ruby-3.0/log/20220430T053940Z.fail.html.gz

#11 - 04/30/2022 07:01 PM - vo (Vit Ondruch)
wanabe (wanabe) wrote in #note-10:
Note for the backport maintainer:
The issue seems to be still reproduced in 3.0.
http://rubyci.s3.amazonaws.com/ppc64le/ruby-3.0/log/20220430T053940Z.fail.html.gz

I think that this should be covered by #18746 and the related tickets

#12 - 05/09/2022 09:48 AM - jaruga (Jun Aruga)
- Backport changed from 2.6: UNKNOWN, 2.7: UNKNOWN, 3.0: UNKNOWN to 2.6: REQUIRED, 2.7: REQUIRED, 3.0: REQUIRED

Right now the patch is only applied to master and Ruby 3.1. I want to see the backport to old Rubies.
https://github.com/ruby/ruby/commit/fc832ffba5681ff63e4d0dc3f4ec5c8ff39aae6

This issue is related to #18560.

- https://github.com/brianmario/mysql2/issues/1261
- https://github.com/ged/ruby-pg/issues/423

After applying this patch, gems can use GC.compact like this way.

begin
  GC.compact
rescue NotImplementedError
end

Files

<table>
<thead>
<tr>
<th>file</th>
<th>size</th>
<th>date</th>
<th>author</th>
</tr>
</thead>
<tbody>
<tr>
<td>check.log</td>
<td>1.14 MB</td>
<td>05/19/2021</td>
<td>jaruga</td>
</tr>
</tbody>
</table>