

## Arvados - Bug #11547

### [API] Excessive memory and time consumed by API and dispatch when container fields (like "mounts") are large

04/25/2017 08:36 PM - Peter Amstutz

<b>Status:</b> New	<b>Start date:</b>
<b>Priority:</b> Normal	<b>Due date:</b>
<b>Assigned To:</b>	<b>% Done:</b> 0%
<b>Category:</b>	<b>Estimated time:</b> 0.00 hour
<b>Target version:</b>	
<b>Description</b>	
<p>arvados-cwl-runner created a container request that was about 75 MB of JSON. This caused huge memory bloat in the API server, paralyzed requests to both the containers and container_requests table (details on <a href="#">#11546</a>), and resulted in memory bloat of other services as well, such as crunch-dispatch-slurm:</p>	
<pre>\$ ps axv   grep crunch-dispatch-slurm PID TTY STAT TIME MAJFL TRS DRS RSS %MEM COMMAND 43366 ? S1 34:03 2248 0 3676584 2918600 10.1 /usr/bin/crunch-dispatch-slurm</pre>	
<p>crunch-dispatch-slurm does not use the "mounts" field, so it should not load it (or any other potentially large field it doesn't use).</p>	
<p>The API server should use a more efficient procedure to achieve atomic "lock" and "unlock" (currently this process involves an unnecessary ActiveRecord load/save cycle).</p>	
<p>If the API is still very slow after these changes, determine what makes it slow, and add some limits with suitable defaults.</p>	
<p>In any case, arvados-cwl-runner should not produce huge container requests.</p>	
<b>Related issues:</b>	
Related to Arvados - Bug #11548: workbench needs to handle API server timeout...	<b>New</b>
Related to Arvados - Bug #11546: Expensive container lock/unlock	<b>Resolved</b> 05/17/2017
Related to Arvados - Bug #11549: [CWL] Avoid mounting individual files	<b>Resolved</b> 04/27/2017

## History

### #1 - 04/25/2017 08:38 PM - Peter Amstutz

- File current added

- Description updated

### #2 - 04/25/2017 08:47 PM - Ward Vandewege

Stopping and starting:

```
2017-04-25_20:41:22.96814 2017/04/25 20:41:22 Error running "/usr/bin/queue" ["queue" "--all" "--format=%j"]
: fork/exec /usr/bin/queue: cannot allocate memory ""
2017-04-25_20:41:23.94909 2017/04/25 20:41:23 Error running "/usr/bin/queue" ["queue" "--all" "--format=%j"]
: fork/exec /usr/bin/queue: cannot allocate memory ""
2017-04-25_20:41:28.64481 2017/04/25 20:41:28 Error getting list of containers: "unexpected EOF"
2017-04-25_20:45:31.94756 2017/04/25 20:45:31 Error running "/usr/bin/queue" ["queue" "--all" "--format=%j"]
: fork/exec /usr/bin/queue: cannot allocate memory ""
2017-04-25_20:45:33.94237 2017/04/25 20:45:33 Error running "/usr/bin/queue" ["queue" "--all" "--format=%j"]
: fork/exec /usr/bin/queue: cannot allocate memory ""
2017-04-25_20:45:34.94765 2017/04/25 20:45:34 Error running "/usr/bin/queue" ["queue" "--all" "--format=%j"]
: fork/exec /usr/bin/queue: cannot allocate memory ""
2017-04-25_20:45:37.96405 2017/04/25 20:45:37 Error running "/usr/bin/queue" ["queue" "--all" "--format=%j"]
: fork/exec /usr/bin/queue: cannot allocate memory ""
2017-04-25_20:45:40.97709 2017/04/25 20:45:40 Submitting container grlhi-dz642-itcctbtq2z11b8t to slurm
2017-04-25_20:45:40.97732 2017/04/25 20:45:40 exec sbatch ["sbatch" "--share" "--workdir=/tmp" "--job-name=grlhi-dz642-itcctbtq2z11b8t" "--mem-per-cpu=3750" "--cpus-per-task=16"]
2017-04-25_20:46:09.03406 Stopping crunch-dispatch-slurm
2017-04-25_20:47:37.27458 Starting crunch-dispatch-slurm from /etc/sv/crunch-dispatch-slurm
2017-04-25_20:47:38.40428 2017/04/25 20:47:38 Start monitoring container grlhi-dz642-kh19hd88hk88a7m
```

```
$ date; ps axv | grep crunch-dispatch-slurm
```

Tue Apr 25 20:48:36 UTC 2017  
51812 ? S1 0:03 0 2362 860705 315600 1.0 /usr/bin/crunch-dispatch-slurm

### #3 - 04/25/2017 08:58 PM - Ward Vandewege

Looks like things started going haywire around here:

```
2017-04-25_18:14:20.89864 2017/04/25 18:14:20 sbatch succeeded: "Submitted batch job 21300"
2017-04-25_18:14:20.89867 2017/04/25 18:14:20 Start monitoring container qrlhi-dz642-khl9hd88hk88a7m
2017-04-25_18:32:22.91051 2017/04/25 18:32:22 Submitting container qrlhi-dz642-itcctbtq2z1lb8t to slurm
2017-04-25_18:32:22.91082 2017/04/25 18:32:22 exec sbatch ["sbatch" "--share" "--workdir=/tmp" "--job-name=qrlhi-dz642-itcctbtq2z1lb8t" "--mem-per-cpu=3750" "--cpus-per-task=16"]
2017-04-25_18:33:09.22483 2017/04/25 18:33:09 debug: runner is handling updates slowly, discarded previous update for qrlhi-dz642-itcctbtq2z1lb8t
2017-04-25_18:33:53.11340 2017/04/25 18:33:53 debug: runner is handling updates slowly, discarded previous update for qrlhi-dz642-itcctbtq2z1lb8t
2017-04-25_18:34:34.72911 2017/04/25 18:34:34 debug: runner is handling updates slowly, discarded previous update for qrlhi-dz642-itcctbtq2z1lb8t
2017-04-25_18:34:49.55992 2017/04/25 18:34:49 Error submitting container qrlhi-dz642-itcctbtq2z1lb8t to slurm: sbatch ["sbatch" "--share" "--workdir=/tmp" "--job-name=qrlhi-dz642-itcctbtq2z1lb8t" "--mem-per-cpu=3750" "--cpus-per-task=16"] failed: exit status 1 (stderr: "sbatch: error: Batch job submission failed: Requested node configuration is not available\n")
2017-04-25_18:35:18.63901 2017/04/25 18:35:18 debug: runner is handling updates slowly, discarded previous update for qrlhi-dz642-itcctbtq2z1lb8t
2017-04-25_18:39:03.88534 2017/04/25 18:39:03 Error running "/usr/bin/squeue" ["squeue" "--all" "--format=%j"] : fork/exec /usr/bin/squeue: cannot allocate memory ""
2017-04-25_18:39:04.88547 2017/04/25 18:39:04 Error running "/usr/bin/squeue" ["squeue" "--all" "--format=%j"] : fork/exec /usr/bin/squeue: cannot allocate memory ""
2017-04-25_18:39:18.88524 2017/04/25 18:39:18 Error running "/usr/bin/squeue" ["squeue" "--all" "--format=%j"] : fork/exec /usr/bin/squeue: cannot allocate memory ""
2017-04-25_18:39:19.88518 2017/04/25 18:39:19 Error running "/usr/bin/squeue" ["squeue" "--all" "--format=%j"] : fork/exec /usr/bin/squeue: cannot allocate memory ""
```

### #4 - 04/26/2017 12:05 AM - Ward Vandewege

Stopped all runit services. Restarted nginx. Restarted all runit services minus crunch-dispatch-slurm.

A few hours later, workbench still timing out on the dashboard page. Other pages work fine. See also bug [#11548](#).

Looks like we have some sort of serious memory leak in the API server now:

```
qrlhi:/var/www/arvados-api/shared/log# passenger-status
Version : 5.1.1
Date : 2017-04-26 00:03:23 +0000
Instance: pnhz97Yf (nginx/1.10.2 Phusion_Passenger/5.1.1)
```

----- General information -----

```
Max pool size : 128
App groups : 1
Processes : 10
Requests in top-level queue : 0
```

----- Application groups -----

```
/var/www/qrlhi.arvadosapi.com/current/public:
App root: /var/www/qrlhi.arvadosapi.com/current
Requests in queue: 0
* PID: 18986 Sessions: 0 Processed: 2181 Uptime: 1h 57m 21s
CPU: 47% Memory : 10278M Last used: 2s ago
* PID: 18995 Sessions: 0 Processed: 3694 Uptime: 1h 57m 21s
CPU: 10% Memory : 260M Last used: 14s ago
* PID: 19445 Sessions: 0 Processed: 993 Uptime: 1h 56m 37s
CPU: 3% Memory : 241M Last used: 1m 18s a
* PID: 48077 Sessions: 0 Processed: 534 Uptime: 1h 28m 17s
CPU: 1% Memory : 221M Last used: 1m 21s a
* PID: 48089 Sessions: 0 Processed: 151 Uptime: 1h 28m 16s
CPU: 0% Memory : 157M Last used: 1m 21s a
* PID: 48097 Sessions: 0 Processed: 47 Uptime: 1h 28m 16s
CPU: 0% Memory : 195M Last used: 5m 21s a
* PID: 48639 Sessions: 0 Processed: 29 Uptime: 1h 27m 51s
CPU: 0% Memory : 62M Last used: 13m 21s
* PID: 49052 Sessions: 0 Processed: 6 Uptime: 1h 27m 21s
CPU: 0% Memory : 45M Last used: 19m 21s
* PID: 49073 Sessions: 0 Processed: 2 Uptime: 1h 27m 20s
CPU: 0% Memory : 41M Last used: 19m 21s
* PID: 50689 Sessions: 0 Processed: 0 Uptime: 19m 16s
```

CPU: 0% Memory : 77M Last used: 19m 16s ago

```

qrlhi:/var/www/arvados-api/shared/log# free
      total        used        free      shared    buffers     cached
Mem:   28811760    15024744    13787016    156080      46392     994344
-/+ buffers/cache:  13984008    14827752
Swap:      0           0           0

```

Looking further, perhaps this has to do with container requests. Postgres slow query log:

```

2017-04-26 00:31:52 UTC LOG: duration: 10064.070 ms execute <unnamed>: SELECT "container_requests".* FROM "
container_requests" WHERE (container_requests.requesting_container_uuid='qrlhi-dz642-khl9hd88hk88a7m
') ORDER BY container_requests.modified_at desc, container_requests.uuid LIMIT 1000 OFFSET 0

```

Okay. Not that slow, but still slower than it should be. Explain analyze.... huh that looks ok:

```

arvados_production=# explain analyze SELECT container_requests.* FROM container_requests WHERE (container_req
uests.requesting_container_uuid='qrlhi-dz642-khl9hd88hk88a7m
') ORDER BY container_requests.modified_at desc, container_requests.uuid LIMIT 1000 OFFSET 0;
          QUERY PLAN

```

```

-----
Limit  (cost=23.13..23.16 rows=12 width=1507) (actual time=0.207..0.245 rows=15 loops=1)
-> Sort  (cost=23.13..23.16 rows=12 width=1507) (actual time=0.168..0.184 rows=15 loops=1)
    Sort Key: modified_at, uuid
    Sort Method: quicksort  Memory: 40kB
    -> Seq Scan on container_requests  (cost=0.00..22.91 rows=12 width=1507) (actual time=0.090..0.130 r
ows=15 loops=1)
        Filter: ((requesting_container_uuid)::text = 'qrlhi-dz642-khl9hd88hk88a7m'::text)
        Rows Removed by Filter: 141
Total runtime: 0.313 ms
(8 rows)
arvados_production=# select count(id) from container_requests;
 count
-----
    156
(1 row)

```

How can this possibly be so slow in the production logs? Let's poke at one:

```

arvados_production=# SELECT container_requests.* FROM container_requests WHERE (container_requests.requesting
_container_uuid='qrlhi-dz642-khl9hd88hk88a7m
') ORDER BY container_requests.modified_at desc, container_requests.uuid limit 1 \g /tmp/sample_cr.sql

# ls -laFh /tmp/sample_cr.sql
-rw-rw-r-- 1 postgres postgres 217M Apr 26 00:40 /tmp/sample_cr.sql

```

What the... No wonder we have sluggish Postgres queries. No wonder we see Ruby memory use explosions.

```

arvados_production=# select id,length(description) as description, length(properties) as properties, length(mo
unts) as mounts,length(runtime_constraints) as runtime_constraints, length(environment) as environment, length
(command) as command, length(filters) as filters, length(scheduling_parameters) as scheduling_parameters from
container_requests order by id \g /tmp/lengths

```

```

$ cat /tmp/lengths
 id | description | properties | mounts | runtime_constraints | environment | command | filters | schedulin
g_parameters
-----+-----+-----+-----+-----+-----+-----+-----+-----
  1 |              |          7 |    838 |          57 |         42 |    425 |         |
  2 |              |          7 |   68955 |          65 |          7 |    193 |         |
  3 |              |          2 |    805 |          55 |         41 |    319 |         |
  4 |              |          2 |    805 |          55 |         41 |    319 |         |
  5 |              |          2 |    805 |          55 |         41 |    319 |         |
  6 |              |          2 |    745 |          55 |         41 |    307 |         |
  7 |              |          2 |    341 |          55 |         41 |    312 |         |
  8 |              |          2 |    337 |          55 |         41 |    122 |         |

```

9	2		2	337	55	41	127	
10	2		2	310	55	41	17	
11	2		2	247	55	41	61	
12	2		2	273	55	41	61	
13	2		2	244	55	41	61	
14	2		2	563	66	2	176	
15	2		2	554	66	2	176	
16	2		2	556	66	2	176	
...								
120	2		2	1314	55	41	100	
121	2		2	1107	55	41	43	
122	2		2	301	55	41	88	
123	2		2	318	55	41	22	
124	2		2	246	55	41	35	
125	2		2	774	55	41	90	
126	2		2	91	55	41	12	
127	2		2	33	55	41	128	
128	2		2	33	55	41	128	
129	2		2	874	66	2	176	
130	2		2	95	55	41	12	
131	2		2	314	55	41	25	
132	2		2	1249	55	41	169	
133	2		2	829	66	2	176	
134	2		2	550	66	2	176	
135	2		2	86	55	69	35	
136	2		2	869	66	2	176	
137	2		22	556	66	2	176	
138	2		2	88634	39	2	176	
139	2		2	88601	39	2	176	
140	2		2	83766	39	2	176	
141	2		2	83766	39	2	176	
142	2		2	75637943	59	41	256	
143	2		2	75637943	59	41	256	
144	2		2	75637943	59	41	256	
145	2		2	75637943	59	41	256	
146	2		2	75637943	59	41	256	
147	2		2	75637943	59	41	256	
148	2		2	75637943	59	41	256	

149		2		2		75637943		59		41		256		
150		2		2		75637943		59		41		256		
151		2		2		75637943		59		41		256		
154		2		2		75637943		59		41		256		
155		2		2		75637943		59		41		256		
156		2		2		75637943		59		41		256		
157		2		2		75637943		59		41		256		
158		2		2		75637943		59		41		256		
(156 rows)														

#### #5 - 04/26/2017 02:09 AM - Ward Vandewege

I deleted the offending container requests. Arv threw lots of errors at me but eventually did the job, and now things are A-OK again. Workbench fully functional.

```
wardv@shell.qr1hi:~$ cat del-cr.sh
arv container_request delete --uid qr1hi-xvhdp-amnlx2o1ij72384
arv container_request delete --uid qr1hi-xvhdp-0v9iioehkkteqg7
arv container_request delete --uid qr1hi-xvhdp-gdoro474x6mlzf0
arv container_request delete --uid qr1hi-xvhdp-ggar6xs8wdq6z5f
arv container_request delete --uid qr1hi-xvhdp-s77gna8fborksau
arv container_request delete --uid qr1hi-xvhdp-d6e0tw34awdev0n
arv container_request delete --uid qr1hi-xvhdp-mx9r8k3kqlnputi
arv container_request delete --uid qr1hi-xvhdp-tddgn6gtbnacytu
arv container_request delete --uid qr1hi-xvhdp-uogsswwgfk03b8
arv container_request delete --uid qr1hi-xvhdp-sp0tiax8g97zssv
arv container_request delete --uid qr1hi-xvhdp-05cdb5pu829hjki
arv container_request delete --uid qr1hi-xvhdp-5x4ub0gf9plzira
arv container_request delete --uid qr1hi-xvhdp-7h7093oksr65sum
arv container_request delete --uid qr1hi-xvhdp-gfzayezhrjrj45l
arv container_request delete --uid qr1hi-xvhdp-99farw9kcihc38s
wardv@shell.qr1hi:~$ sh del-cr.sh
Error: Path not found
Error: Path not found
Error: Path not found
/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday:
:TimeoutError)
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_r
equest'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in
call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_
http_connection'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `
send'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2
levels) in execute!'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in
execute!'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
```

```

from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'

/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday:
:TimeoutError)
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_r
equest'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in
call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_
http_connection'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `
send'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2
levels) in execute!'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in
execute!'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'

```

Error: Path not found

Error: Path not found

```

/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday:
:TimeoutError)
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
  from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_r
equest'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in
call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_
http_connection'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
  from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'

```

```

    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `
send'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2
levels) in execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in
execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'

/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday:
:TimeoutError)
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_r
equest'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in
call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_
http_connection'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `
send'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2
levels) in execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in
execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'

```

Error: Path not found

```

/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday:
:TimeoutError)
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'

```

```

    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_request'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_http_connection'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `send'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2 levels) in execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'
/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday::TimeoutError)
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_request'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_http_connection'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `send'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2 levels) in execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
    from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute!'
    from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
    from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'
/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday::TimeoutError)
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
    from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'

```



```

from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_request'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_http_connection'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `send'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2 levels) in execute!'
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from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in execute!'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `'
/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday::TimeoutError)
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `transport_request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_request'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_http_connection'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `send'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2 levels) in execute!'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in execute!'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
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/usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:158:in `rbuf_fill': Net::ReadTimeout (Faraday::TimeoutError)
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:136:in `readuntil'

```

```

from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/protocol.rb:146:in `readline'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:40:in `read_status_line'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http/response.rb:29:in `read_new'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1437:in `block in transport_request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1434:in `catch'
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from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1407:in `request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1400:in `block in request'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:853:in `start'
from /usr/local/rvm/rubies/ruby-2.3.3/lib/ruby/2.3.0/net/http.rb:1398:in `request'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:80:in `perform_request'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:38:in `block in call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:85:in `with_net_http_connection'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/adapters/net_http.rb:33:in `call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/faraday-0.12.0.1/lib/faraday/response.rb:8:in `call'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client/request.rb:163:in `send'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:648:in `block (2 levels) in execute!'
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from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:645:in `block in execute!'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable/retry.rb:27:in `perform'
from /usr/local/rvm/gems/ruby-2.3.3/gems/retriable-1.4.1/lib/retriable.rb:15:in `retriable'
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:636:in `execute!'
,
from /usr/local/rvm/gems/ruby-2.3.3/gems/google-api-client-0.8.7/lib/google/api_client.rb:679:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:71:in `execute'
from /usr/local/rvm/gems/ruby-2.3.3/gems/arvados-cli-0.1.20170417140106/bin/arv:709:in `<top (required)>'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `load'
from /usr/local/rvm/gems/ruby-2.3.3/bin/arv:22:in `<main>'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `eval'
from /usr/local/rvm/gems/ruby-2.3.3/bin/ruby_executable_hooks:15:in `<main>'

```

#### #6 - 04/26/2017 12:31 PM - Peter Amstutz

- Subject changed from *crunch-dispatch-slurm using huge ram to [API] Reject huge serialized fields*  
- Description updated

#### #7 - 04/26/2017 12:33 PM - Peter Amstutz

- Description updated

#### #8 - 04/26/2017 01:23 PM - Peter Amstutz

- Description updated

#### #9 - 04/26/2017 02:56 PM - Tom Clegg

AFAIK apiserver regularly handles >75 MB serialized "properties" fields in log records, so I'm not convinced that the size of the serialized data is the real problem here.

#### #10 - 04/26/2017 04:20 PM - Peter Amstutz

Suggested test case to avoid container-specific issues:

Try creating a collection record with a complex "properties" field (e.g. 100,000 dict entries which are themselves objects) and see how that affects the request profile.

#### #11 - 04/26/2017 04:31 PM - Tom Clegg

Peter Amstutz wrote:

Try creating a collection record with a complex "properties" field (e.g. 100,000 dict entries which are themselves objects) and see how that affects the request profile.

Perhaps add to [source/sdk/python/tests/test\\_benchmark\\_collections.py](https://github.com/Arvados/arvados/blob/master/source/sdk/python/tests/test_benchmark_collections.py)

#### #12 - 04/26/2017 07:28 PM - Tom Clegg

- Subject changed from [API] Reject huge serialized fields to [API] Excessive memory and time consumed by API and dispatch when container fields (like "mounts") are large

#### #13 - 04/26/2017 07:37 PM - Tom Clegg

- Description updated

#### #14 - 04/27/2017 08:42 PM - Peter Amstutz

- File huge.py added

First time is time to create record, second time is time to fetch record.

Properties consisting of one 10 MB string:

```
$ python huge.py
payload about 10088844
14.6757330894
34t0i-7a9it-ko3a9mc8w2k7xrc
1.81077194214
```

Properties consisting of about 8 MB of JSON, as a dict with 100,000 objects:

```
$ python huge.py
payload about 8088854
54.548582077
34t0i-7a9it-b6t3vd2x5xqi8gc
19.4000740051
```

So there's about a 10x performance difference between a single huge string, and a complex serialized record. (Likely also a memory usage difference on API server, but I didn't benchmark that). This is consistent with the performance issues seen with the huge "mounts" entry.

#### #15 - 04/28/2017 06:09 PM - Tom Clegg

Indeed. Given that result, I don't think a column size limit seems like a good strategy for avoiding slowness.

Seems like the priorities should be

1. Fix [#11546](#) so lock/unlock don't block other queries happening at the same time
2. Avoid sending the mounts field (and other fields not used by dispatch) in lock/unlock responses (perhaps using the "select" parameter)
3. Avoid loading the mounts field (and other fields not used by dispatch) when dispatch uses get/index APIs

With those changes, we'd just have the unavoidable costs of the client submitting the large mounts hash and crunch-run retrieving it on the worker node, instead of an explosion of unnecessary serialize/transfer/deserialize sequences.

#### #16 - 05/17/2017 02:59 PM - Peter Amstutz

Instead of setting a column size limit, we can scan the JSON serialization to get an object count:

```
def count_js_objects n
  objcount = 0
  instr = false
  skip = false

  n.each_char do |c|
    if skip
      skip = false
    else
      case c
      when "{", "["
        objcount += 1
      when '\\\''
        skip = true
      when '"'
        if instr
          objcount += 1
        end
        instr = !instr
      end
    end
  end
  objcount
end
```

#### #17 - 08/28/2017 09:58 PM - Tom Morris

- Target version set to Arvados Future Sprints

#### #18 - 06/12/2018 01:29 PM - Joshua Randall

It looks like we are currently suffering this very same issue. Some of our container requests are very large, and our api server instance recently started crashing repeatedly due to memory exhaustion.

We initially tried lowering the number of workers, but there seems to be no upper limit to the amount of memory a single worker can take, as they just get larger and larger until the OOM is invoked.

Our workaround is to run a cron job once per minute that kills "fat passengers":

```
root@arvados-master-eglyx:/# cat /etc/cron.d/arvados_api_fat_passenger_killer
* * * * * root /var/www/arvados-api/current/script/arvados_api_fat_passenger_killer.sh
root@arvados-master-eglyx:/# cat /var/www/arvados-api/current/script/arvados_api_fat_passenger_killer.sh
#!/bin/bash

export PASSENGER_INSTANCE_REGISTRY_DIR=/var/run/nginx/passenger

date=$(date)
echo "arvados_api_fat_passenger_killer running at ${date}" >> /var/log/arvados_api_fat_passenger_killer.log
fat_passenger_pids=$(/usr/sbin/passenger-memory-stats | grep 'Passenger AppPreloader: /var/www/arvados-api/cu
rent' | grep -v grep | awk '$4>5000 {print $4, $1}' | sort -rg | awk '{print $2}') 2> /dev/null
for fat_passenger_pid in ${fat_passenger_pids}; do
    echo "killing ${fat_passenger_pid}"
    kill -SIGUSR1 ${fat_passenger_pid}
done >> /var/log/arvados_api_fat_passenger_killer.log
```

#### #19 - 06/12/2018 01:43 PM - Peter Amstutz

Are the container requests large because they have a very large workflow, or because they have a very large number of keep mounts?

#### #20 - 06/12/2018 02:13 PM - Joshua Randall

We have both kinds. For example, our a-c-r runner containers have large workflow inputs that is mostly in cwl.input.json and can take ~45s to retrieve:

```
mercury@arvados-shell-eglyx:~$ ls -l eglyx-xvhdp-d52pwy7flpucnm.json
-rw-r--r-- 1 mercury hgi 21758914 Jun 12 13:56 eglyx-xvhdp-d52pwy7flpucnm.json
mercury@arvados-shell-eglyx:~$ for mkey in $(cat eglyx-xvhdp-d52pwy7flpucnm
.json | jq -r '.mounts | keys | join(" ")'); do echo ${mkey}; (cat eglyx-xvhdp-d52pwy7flpucnm
.json | jq '.mounts.'"${mkey}'" | wc); done
/var/lib/cwl/cwl.input.json
410322 673941 23385057
/var/lib/cwl/workflow.json
3130 7849 113053
/var/spool/cwl
4 6 47
stdout
4 6 65
```

But others have a (very) large number of mounts and I cannot get you an example of one because we can rarely if ever receive them from the API server before it either times out or crashes due to memory exhaustion.

#### #21 - 06/13/2018 05:01 PM - Joshua Randall

N.B. we have updated our fat passenger killer after discovering that advice regarding doing passenger instance graceful restarts with SIGUSR1 is out of date. As of passenger 5, that no longer causes a graceful restart, and the advice appears to be to use `passenger-config detach-process` instead. This change has resolved some bad gateway errors we were seeing with the previous approach:

```
# cat /var/www/arvados-api/current/script/arvados_api_fat_passenger_killer.sh
#!/bin/bash

export PASSENGER_INSTANCE_REGISTRY_DIR=/var/run/nginx/passenger

date=$(date)
echo "arvados_api_fat_passenger_killer running at ${date}" >> /var/log/arvados_api_fat_passenger_killer.log
fat_passenger_pids=$(/usr/sbin/passenger-memory-stats | grep 'Passenger AppPreloader: /var/www/arvados-api/cu
rent' | grep -v grep | awk '$4>5000 {print $4, $1}' | sort -rg | awk '{print $2}') 2> /dev/null
for fat_passenger_pid in ${fat_passenger_pids}; do
    echo "detaching passenger process ${fat_passenger_pid}"
    passenger-config detach-process ${fat_passenger_pid}
done
```

```
done >> /var/log/arvados_api_fat_passenger_killer.log
```

### #22 - 06/14/2018 10:50 AM - Joshua Randall

Another example.

From passenger.log - I believe this was crunch attempting to update the container to say it has failed:

```
{"method": "PUT", "path": "/arvados/v1/containers/eglyx-dz642-jrft0qq1n81158b", "format": "html", "controller": "Arvados::V1::ContainersController", "action": "update", "status": 200, "duration": 9006160.12, "view": 0.44, "db": 5749338.9, "request_id": "req-d8ly8c41pp35sa80flpc", "client_ipaddr": "172.27.16.250", "client_auth": "eglyx-gj3su-xo6zbx218ugho7j", "params": {"container": {"exit_code": 1, "log": "ec8db9aa40ff0b393bcd9e65cd144a0+433", "output": "5551f5d7ec57a8aa9758d14a976e87e9+57", "state": "Complete"}}, "@timestamp": "2018-06-13T23:17:35.509049624Z", "@version": "1", "message": "[200] PUT /arvados/v1/containers/eglyx-dz642-jrft0qq1n81158b (Arvados::V1::ContainersController#update) "}
```

If I am reading that correctly, that appears to be 95m querying the database and an additional 54m processing within the API server.

```
arvados_api_production=# select uuid, char_length(mounts) from containers where uuid = 'eglyx-dz642-jrft0qq1n81158b';
-----
      uuid | char_length
-----+-----
eglyx-dz642-jrft0qq1n81158b |      108682927
(1 row)
```

This particular one appears to be another runner container (so, with only 4 entries in mounts). The size of the entry is down to a 108.6MB cwl.input.json

### #23 - 06/14/2018 03:42 PM - Tom Clegg

There are several queries in container/container\_request code that retrieve the entire object but only need a few fields like priority, state, and requesting\_container\_uuid. Adding select() to a few places might go a long way.

### #24 - 06/29/2018 06:21 PM - Tom Clegg

ArvadosModel#log\_start\_state spends significant time (and surely memory) doing Marshal.load(Marshal.dump(attributes)) + Marshal.load(Marshal.dump(logged\_attributes)) before each update, which is especially wasteful in transactions that don't end up modifying anything (e.g., update fails) and on systems where audit logs are not needed.

KindAndEtag#etag calls attributes.inspect, which seems to be much slower than other alternatives like Marshal.dump(attributes) and Oj.dump(attributes). (One data point: changing this to Marshal.dump() reduced collections#get(9tee4-4zz18-fbfj9efj9q282cz) request duration from 6s to 5s.)

### #25 - 07/31/2018 12:56 AM - Peter Amstutz

We recently found a fixed an issue where the version of the Oj (json marshaller) gem we were using had a bug that resulted in excessive memory usage. Perhaps is a root cause of this issue as well?

### #26 - 07/06/2021 09:23 PM - Peter Amstutz

- Target version deleted (Arvados Future Sprints)

## Files

File	Size	Date	Author
current	27 KB	04/25/2017	Peter Amstutz
huge.py	525 Bytes	04/27/2017	Peter Amstutz