

1. Objectives of this testing

1.1 This testing is focused on a demonstration of an unexpected behavior of compaction process in case if there are expired items in the bucket.

2. Installations description

2.1 Common settings for all installations: 3 nodes (VM) with 4VCPU + 4GB RAM, 20G HDD (SATA), all services are enabled (data, index, query), Ubuntu 14.04 64-bit, Data RAM quota = 2400M, Index RAM Quota = 256M, bucket name = «default», bucket size = 128M, i/o-priority = high, replicas = 1, view index replicas = enabled, flush = enabled, (AC-globally) MPI = 0.04, (AC-globally) Database fragmentation = 2% or 1Mb.

2.2 Different settings for installations:

Installation name	Settings
4.1.1.GA.F	Couchbase Server Enterprise 4.1.1-5914 (GA), full ejection
4.1.1.GA.V	Couchbase Server Enterprise 4.1.1-5914 (GA), value ejection

3. Testing methodology

3.0 Identify initial vBuckets generation

A. To check: «ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F '{ print \$3; }' | awk '{ count[\$1]++ } END { for(i in count) print i,count[i] }' | sort». **Expected: list «1 NUM», where NUM = [0..1023]**

3.1 Make 100K empty docs upserts with TTL = 1 minute. Upserts are performed multi-threaded (10 threads, thread ids = [0..9]) with Java SDK 2.3.1 via java sync call bucket.upsert(). Keys are formed as I:T:T, where «I» = thread id, «T» = current timestamp (milliseconds).

A. To do after: wait 1 hour 30 minutes

3.2 Identify current vBuckets generation

A. To check: «ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F '{ print \$3; }' | awk '{ count[\$1]++ } END { for(i in count) print i,count[i] }' | sort». **Expected: list «2 NUM», where NUM = [0..1023]**

3.3 Run **manual compaction** via UI => Data Buckets => «default» => Compact

A. To check after: current vBuckets generation via «ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F '{ print \$3; }' | awk '{ count[\$1]++ } END { for(i in count) print i,count[i] }' | sort». **Expected: list «2 NUM», where NUM = [0..1023] (i assume, that compaction already happened in 3.2)**

3.4 Press UI => Data Buckets => Documents button

A. To check after: ensure there are no more than 1 (last seq.no) entry of purged items per bucket via «awk -F"failed to fetch data from database, " '{ print \$2; }'

/opt/couchbase/var/lib/couchbase/logs/memcached.log.* | grep vBucket | sort | uniq | awk '{ count[\$1]++ } END { for(i in count) if(count[i] > 1) print i,count[i] }' | sort». **Expected: empty list**

B. To do after: wait 1 hour 30 minutes

3.5 Identify current vBuckets generation before second manual compaction

A. To check: `«ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort»`. **Expected: list «2 NUM», where NUM = [0..1023]**

3.6 Run *manual compaction* via UI => Data Buckets => «default» => Compact

A. To check after: current vBuckets generation via `«ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort»`. **Expected: list «2/3 NUM», where NUM = [0..1023] (i assume, that auto-compaction already happened up to 3.2; 3.3 and 3.4 should change nothing, but i suppose that probably re-queued items for full ejection could change generation number)**

3.7 Press UI => Data Buckets => Documents button

A. To check after: ensure there are no more than 1 (last seq.no) entry of purged items per bucket via `«awk -F"failed to fetch data from database, " '{ print $2; }' /opt/couchbase/var/lib/couchbase/logs/memcached.log.* | grep vBucket | grep purger | sort | uniq | awk '{ count[$1]++ } END { for(i in count) if(count[i] > 1) print i,count[i] }' | sort»`. **Expected: empty list**

4. Results

Installation	3.0.A (initial vbuckets generation)	3.2.A (vbucket generation after first potential AC)	3.3.A (vbucket generation after first manual compaction)	3.4.A (is there just 1 entry per vBucket after first manual compaction?)	3.5.A (vbucket generation after second potential AC)	3.6.A (vbucket generation after second manual compaction)	3.7.A (is there just 1 entry per vBucket after second manual compaction?)
4.1.1.GA.V	1 (682)	1 (682)	2 (682)	No (0)	2 (682)	3 (682)	No (0)
4.1.1.GA.F	1 (682)	1 (682)	2 (682)	No (many)	2 (682)	3 (682)	Yes

5. Additional information and suggestions

5.1. Don't even know what to say. Is there a clear algo of how compaction working ?

6. Testing sequence

6.1. 4.1.1.GA.V (this time value ejection is the first one)

6.1.0. Identified initial vBuckets generation. Strange, i expected 1024 items, but:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
1 682
root@182:~#
```

There are gaps in vBuckets data:

```
-rw-rw---- 1 couchbase couchbase 8238 Jul 26 09:16 340.couch.1
-rw-rw---- 1 couchbase couchbase 8238 Jul 26 09:16 341.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 09:16 513.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 09:16 514.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 09:16 515.couch.1
```

+ 0..170 missing at all. (seems like 2 x 171 are missing: 0..170 + 342..512; i assume, this is due to implementation: 1/3 of all vbuckets + 1/3 of all replicas; ok, but shout it be «sequential vBucket numbers»)?

6.1.1. Inserted 100K (and saw 100K «Item count» via UI). Awaited for 1 hour 30 minutes (in fact, almost 2 hours)

6.1.2. Identified again, seems like auto-compaction did not happen, as i unexpectedly saw the same generation number:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
1 682
```

I also checked items count via UI, it's == 0. But access time differs, looks like «something happened after one hour», but for one part of files it is +5 min comparing to another:

```
-rw-rw---- 1 couchbase couchbase 61531 Jul 26 10:16 338.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 10:16 339.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 10:16 340.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 10:16 341.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 10:21 513.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 10:21 514.couch.1
-rw-rw---- 1 couchbase couchbase 49243 Jul 26 10:21 515.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 10:21 516.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 10:21 517.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 10:21 518.couch.1
```

updated later: clock skew ? Definitely not:

```
grep@grep ~ $ for i in root@192.168.254.180 root@192.168.254.181 root@192.168.254.182; do echo `ssh $i date`; done
Tue Jul 26 11:45:35 UTC 2016
Tue Jul 26 11:45:35 UTC 2016
Tue Jul 26 11:45:35 UTC 2016
```

6.1.3. Ran manual compaction. Checked generation and seems like compaction happened:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
2 682
```

Modification time was changed too, and it was the same for all:

```
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 339.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 340.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 341.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 513.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 514.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 515.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 516.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 517.couch.2
```

6.1.4. Pressed UI => Data Buckets => Documents button. Checked UI message, got «There are currently no documents in this bucket corresponding to the search criteria». Checked log, expected empty list, and found it:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# awk -F"failed to fetch data from database, " '{ print $2; }'
/opt/couchbase/var/lib/couchbase/logs/memcached.log.* | grep vBucket | sort | uniq | awk '{ count[$1]++ } END { for(i in count) if(count[i] > 1) print i,count[i] }' | sort
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

But there was nothing at all (shouldn't we expect at least 1 entry per bucket as last seq.no ?):

```
root@182:/opt/couchbase/var/lib/couchbase/logs# grep vBucket ./memcached.log.*
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

After that, awaited 1 hour 30 minutes (in fact, 2+ hours).

6.1.5. Identified vb-generation after second potential auto-compaction, got as expected:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
2 682
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

Seems like nothing happened, and that's expected:

```
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 338.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 339.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 340.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 341.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 513.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 514.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 515.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 516.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 517.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 518.couch.2
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 11:35 519.couch.2
```

6.1.6. Ran second manual compaction. Seemed like manual compaction always forces gen-update:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
3 682
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

Yep, everything was updated:

```
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 336.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 337.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 338.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 339.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 340.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 341.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 513.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 514.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 515.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 13:49 516.couch.3
```

6.1.7. Pressed UI => Data Buckets => Documents button. Checked UI message, got «There are currently no documents in this bucket corresponding to the search criteria». Checked log, expected empty list, and got it:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# awk -F"failed to fetch data from database, " '{ print $2; }'
/opt/couchbase/var/lib/couchbase/logs/memcached.log.* | grep vBucket | grep purger | sort | uniq | awk '{ count[$1]++ } END { for(i in count)
if(count[i] > 1) print i,count[i] }' | sort
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

And once again there was nothing at all (shouldn't we expect at least 1 entry per bucket as last seq.no ?):

```
root@182:/opt/couchbase/var/lib/couchbase/logs# grep vBucket ./memcached.log.*
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

6.2. 4.1.1.GA.F (the most important part)

6.2.0. Identified initial vBuckets generation:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in
count) print i,count[i] }' | sort
1 682
root@182:~#
```

Just for interest, gaps were the same:

```
-rw-rw---- 1 couchbase couchbase 8238 Jul 26 14:12 340.couch.1
-rw-rw---- 1 couchbase couchbase 8238 Jul 26 14:12 341.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 14:12 513.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 14:12 514.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 14:12 515.couch.1
-rw-rw---- 1 couchbase couchbase 8238 Jul 26 14:12 516.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 14:12 517.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 14:12 518.couch.1
-rw-rw---- 1 couchbase couchbase 4142 Jul 26 14:12 519.couch.1
```

6.2.1. Inserted 100K (and checked 100K «Item count»). Awaited 1 hour 30 minutes.

6.2.2. Identified vBucket-gen after potential AC: once again unexpectedly the same generation number:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
1 682
```

And what about last access dates ? Once again +5 min «on the border»:

```
-rw-rw---- 1 couchbase couchbase 49243 Jul 26 15:11 335.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 15:11 336.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 15:11 337.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 15:11 338.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 15:11 339.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 15:11 340.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 15:11 341.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 15:16 513.couch.1
-rw-rw---- 1 couchbase couchbase 45147 Jul 26 15:16 514.couch.1
-rw-rw---- 1 couchbase couchbase 53339 Jul 26 15:16 515.couch.1
-rw-rw---- 1 couchbase couchbase 57435 Jul 26 15:16 516.couch.1
```

6.2.3. Ran manual compaction. Checked generation, and it was ok:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
2 682
root@182:~#
```

Checked access dates (interesting detail — they are of different size after compaction):

```
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 331.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 332.couch.2
-rw-rw---- 1 couchbase couchbase 12379 Jul 26 15:57 333.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 334.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 335.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 336.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 337.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 338.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 339.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 340.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 341.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 513.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 514.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 515.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 516.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 517.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 518.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 519.couch.2
```

And how many of them are of different sizes ?:

```
root@182:~# ls -la /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | grep "couch.2" | awk '{ print $5; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
12379 7
```

4130 1
8283 675

Is there a reasonable explanation about «how empty buckets after compaction could be of a different size»?

6.2.4. Pressed UI => Data Buckets => Documents button. Checked UI message, got «There are currently no documents in this bucket corresponding to the search criteria». Checked log, expected empty list, and here they were:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# awk -F"failed to fetch data from database, " '{ print $2; }'  
/opt/couchbase/var/lib/couchbase/logs/memcached.log.* | grep vBucket | sort | uniq | awk '{ count[$1]++ } END { for(i in count) if(count[i] > 1) print  
i,count[i] }' | sort  
vBucket=1000 100  
vBucket=1001 106  
vBucket=1002 79  
vBucket=1003 87  
vBucket=1004 104  
vBucket=1005 104  
vBucket=1006 95  
vBucket=1007 120  
vBucket=1008 91  
vBucket=1009 90  
vBucket=1010 100  
vBucket=1011 98  
vBucket=1012 85  
vBucket=1013 85  
vBucket=1014 101  
vBucket=1015 91  
vBucket=1016 105  
vBucket=1017 101  
vBucket=1018 98  
vBucket=1019 93  
vBucket=1020 104  
vBucket=1021 84  
vBucket=1022 102  
vBucket=1023 97  
vBucket=683 107  
vBucket=684 98  
vBucket=685 93  
vBucket=686 102  
vBucket=687 103  
vBucket=688 104  
vBucket=689 93  
vBucket=690 104  
vBucket=691 93  
vBucket=692 103  
vBucket=693 91  
vBucket=694 93  
vBucket=695 94  
vBucket=696 85  
vBucket=697 104  
vBucket=698 106  
vBucket=699 92  
vBucket=700 103  
vBucket=701 98  
vBucket=702 105  
vBucket=703 115  
vBucket=704 108  
vBucket=705 108  
vBucket=706 100  
vBucket=707 104  
vBucket=708 100  
vBucket=709 97  
vBucket=710 95  
vBucket=711 93  
vBucket=712 92  
vBucket=713 103  
vBucket=714 96  
vBucket=715 101  
vBucket=716 87  
vBucket=717 110
```

vBucket=718 112
vBucket=719 105
vBucket=720 106
vBucket=721 106
vBucket=722 104
vBucket=723 94
vBucket=724 106
vBucket=725 113
vBucket=726 117
vBucket=727 98
vBucket=728 102
vBucket=729 108
vBucket=730 106
vBucket=731 86
vBucket=732 94
vBucket=733 91
vBucket=734 94
vBucket=735 114
vBucket=736 100
vBucket=737 95
vBucket=738 104
vBucket=739 81
vBucket=740 110
vBucket=741 113
vBucket=742 104
vBucket=743 99
vBucket=744 86
vBucket=745 104
vBucket=746 100
vBucket=747 122
vBucket=748 91
vBucket=749 89
vBucket=750 85
vBucket=751 104
vBucket=752 118
vBucket=753 77
vBucket=754 103
vBucket=755 91
vBucket=756 96
vBucket=757 106
vBucket=758 106
vBucket=759 104
vBucket=760 108
vBucket=761 96
vBucket=762 88
vBucket=763 91
vBucket=764 81
vBucket=765 80
vBucket=766 95
vBucket=767 104
vBucket=768 89
vBucket=769 90
vBucket=770 90
vBucket=771 84
vBucket=772 101
vBucket=773 107
vBucket=774 95
vBucket=775 99
vBucket=776 94
vBucket=777 98
vBucket=778 93
vBucket=779 90
vBucket=780 91
vBucket=781 76
vBucket=782 83
vBucket=783 95
vBucket=784 88
vBucket=785 104
vBucket=786 89
vBucket=787 96
vBucket=788 126
vBucket=789 105
vBucket=790 96
vBucket=791 89
vBucket=792 103
vBucket=793 88

vBucket=794 107
vBucket=795 91
vBucket=796 106
vBucket=797 101
vBucket=798 98
vBucket=799 107
vBucket=800 92
vBucket=801 94
vBucket=802 111
vBucket=803 86
vBucket=804 111
vBucket=805 83
vBucket=806 98
vBucket=807 99
vBucket=808 92
vBucket=809 103
vBucket=810 96
vBucket=811 101
vBucket=812 107
vBucket=813 91
vBucket=814 97
vBucket=815 110
vBucket=816 107
vBucket=817 88
vBucket=818 94
vBucket=819 97
vBucket=820 95
vBucket=821 92
vBucket=822 104
vBucket=823 102
vBucket=824 89
vBucket=825 93
vBucket=826 94
vBucket=827 120
vBucket=828 115
vBucket=829 90
vBucket=830 93
vBucket=831 110
vBucket=832 92
vBucket=833 96
vBucket=834 123
vBucket=835 89
vBucket=836 85
vBucket=837 94
vBucket=838 117
vBucket=839 91
vBucket=840 102
vBucket=841 94
vBucket=842 81
vBucket=843 108
vBucket=844 90
vBucket=845 97
vBucket=846 96
vBucket=847 108
vBucket=848 98
vBucket=849 101
vBucket=850 100
vBucket=851 86
vBucket=852 101
vBucket=853 84
vBucket=854 103
vBucket=855 114
vBucket=856 91
vBucket=857 108
vBucket=858 90
vBucket=859 93
vBucket=860 73
vBucket=861 117
vBucket=862 109
vBucket=863 104
vBucket=864 92
vBucket=865 112
vBucket=866 99
vBucket=867 82
vBucket=868 94
vBucket=869 97

vBucket=870 85
vBucket=871 97
vBucket=872 112
vBucket=873 75
vBucket=874 88
vBucket=875 98
vBucket=876 93
vBucket=877 109
vBucket=878 93
vBucket=879 98
vBucket=880 98
vBucket=881 101
vBucket=882 100
vBucket=883 82
vBucket=884 92
vBucket=885 102
vBucket=886 95
vBucket=887 99
vBucket=888 95
vBucket=889 96
vBucket=890 90
vBucket=891 83
vBucket=892 81
vBucket=893 96
vBucket=894 96
vBucket=895 97
vBucket=896 105
vBucket=897 89
vBucket=898 105
vBucket=899 92
vBucket=900 121
vBucket=901 97
vBucket=902 99
vBucket=903 93
vBucket=904 91
vBucket=905 84
vBucket=906 100
vBucket=907 114
vBucket=908 119
vBucket=909 93
vBucket=910 107
vBucket=911 95
vBucket=912 94
vBucket=913 84
vBucket=914 100
vBucket=915 95
vBucket=916 104
vBucket=917 102
vBucket=918 101
vBucket=919 98
vBucket=920 96
vBucket=921 88
vBucket=922 84
vBucket=923 97
vBucket=924 95
vBucket=925 90
vBucket=926 73
vBucket=927 93
vBucket=928 102
vBucket=929 101
vBucket=930 104
vBucket=931 104
vBucket=932 94
vBucket=933 113
vBucket=934 99
vBucket=935 97
vBucket=936 99
vBucket=937 93
vBucket=938 109
vBucket=939 94
vBucket=940 100
vBucket=941 104
vBucket=942 93
vBucket=943 76
vBucket=944 88
vBucket=945 83

vBucket=946 98
vBucket=947 105
vBucket=948 98
vBucket=949 100
vBucket=950 121
vBucket=951 113
vBucket=952 92
vBucket=953 88
vBucket=954 96
vBucket=955 99
vBucket=956 106
vBucket=957 86
vBucket=958 103
vBucket=959 77
vBucket=960 115
vBucket=961 99
vBucket=962 100
vBucket=963 95
vBucket=964 99
vBucket=965 103
vBucket=966 114
vBucket=967 96
vBucket=968 109
vBucket=969 90
vBucket=970 116
vBucket=971 100
vBucket=972 105
vBucket=973 96
vBucket=974 104
vBucket=975 108
vBucket=976 113
vBucket=977 106
vBucket=978 102
vBucket=979 94
vBucket=980 87
vBucket=981 98
vBucket=982 99
vBucket=983 97
vBucket=984 89
vBucket=985 79
vBucket=986 90
vBucket=987 96
vBucket=988 97
vBucket=989 84
vBucket=990 95
vBucket=991 97
vBucket=992 89
vBucket=993 94
vBucket=994 113
vBucket=995 95
vBucket=996 95
vBucket=997 99
vBucket=998 94
vBucket=999 90

Examined 888 as an example ... most of entries are dup key id's:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# grep vBucket=888 ./memcached.log.* | head -n 20
./memcached.log.0.txt:2016-07-26T16:12:37.409578Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542695335:1469542695335 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.452883Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542697342:1469542697342 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.518104Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542699682:1469542699682 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.534736Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542700088:1469542700088 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.540397Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542699682:1469542699682 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.546918Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542700088:1469542700088 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.615611Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542702368:1469542702368 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.626924Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
```

```

key=0:1469542702368:1469542702368 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.678552Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542704698:1469542704698 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.689681Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542704698:1469542704698 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.776997Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542707814:1469542707814 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.789704Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542707814:1469542707814 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.865922Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542711034:1469542711034 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:37.884195Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542711034:1469542711034 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:38.140969Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542719393:1469542719393 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:38.150803Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542719393:1469542719393 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:38.629980Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542739219:1469542739219 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:38.639203Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=0:1469542739219:1469542739219 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:39.015473Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=1:1469542700665:1469542700665 error=document not found [none]
./memcached.log.0.txt:2016-07-26T16:12:39.036581Z WARNING (default) Warning: failed to fetch data from database, vBucket=888
key=1:1469542700665:1469542700665 error=document not found [none]

```

... any reasonable explanations ?
After that, again awaited 1 hour 30 minutes .

6.2.5. Identified vb-generation after second potential auto-compaction, got as expected, no signs or generation change:

```

root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
2 682
root@182:~#

```

And what about new access time during potential AC? Not a sign!:

```

-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 331.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 332.couch.2
-rw-rw---- 1 couchbase couchbase 12379 Jul 26 15:57 333.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 334.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 335.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 336.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 337.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 338.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 339.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 340.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 341.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 513.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 514.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 515.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 516.couch.2
-rw-rw---- 1 couchbase couchbase 8283 Jul 26 15:57 517.couch.2

```

Maybe couple of file sizes was changed ? No, nothing new:

```

root@182:~# ls -la /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | grep "couch.2" | awk '{ print $5; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
12379 7
4130 1
8283 675
root@182:~#

```

So, there is no any signs of autocompaction at all! (at value ejection there were at least dates change).

6.2.6. Ran second manual compaction. Vbuckets-gen was updated:

```
root@182:~# ls /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | awk -F. '{ print $3; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
3 682
root@182:~#
```

And files were updated too!

```
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 335.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 336.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 337.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 338.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 339.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 340.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 341.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 513.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 514.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 515.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 516.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 517.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 518.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 519.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 520.couch.3
-rw-rw---- 1 couchbase couchbase 4187 Jul 26 18:26 521.couch.3
```

They all are of one size now:

```
root@182:~# ls -la /opt/couchbase/var/lib/couchbase/data/default/ | grep -E "[0-9]{3}" | grep "couch.3" | awk '{ print $5; }' | awk '{ count[$1]++ } END { for(i in count) print i,count[i] }' | sort
4130 1
4187 682
```

This one passed through filter ;)

```
-rw-rw---- 1 couchbase couchbase 4130 Jul 26 18:25 master.couch.3
```

6.2.7. Pressed UI => Data Buckets => Documents button. Checked UI message, got «There are currently no documents in this bucket corresponding to the search criteria». But let's check a log with last timestamp «2016-07-26T18»:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# grep "2016-07-26T18:" /opt/couchbase/var/lib/couchbase/logs/memcached.log.* | awk -F"failed to fetch data from database, " '{ print $2; }' | grep vBucket | sort | uniq | awk '{ count[$1]++ } END { for(i in count) if(count[i] > 1) print i,count[i] }' | sort
root@182:/opt/couchbase/var/lib/couchbase/logs#
```

Working! And there is only one last entry as expected (if set set «print ones more then 0»):

```
root@182:/opt/couchbase/var/lib/couchbase/logs# grep "2016-07-26T18:" /opt/couchbase/var/lib/couchbase/logs/memcached.log.* | awk -F"failed to fetch data from database, " '{ print $2; }' | grep vBucket | sort | uniq | awk '{ count[$1]++ } END { for(i in count) if(count[i] > 0) print i,count[i] }' | sort
vBucket=1000 1
vBucket=1001 1
vBucket=1002 1
vBucket=1003 1
vBucket=1004 1
vBucket=1005 1
vBucket=1006 1
vBucket=1007 1
vBucket=1008 1
vBucket=1009 1
vBucket=1010 1
vBucket=1011 1
vBucket=1012 1
vBucket=1013 1
vBucket=1014 1
vBucket=1015 1
vBucket=1016 1
```

vBucket=1017 1
vBucket=1018 1
vBucket=1019 1
vBucket=1020 1
vBucket=1021 1
vBucket=1022 1
vBucket=1023 1
vBucket=683 1
vBucket=684 1
vBucket=685 1
vBucket=686 1
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vBucket=999 1

Re-examine 888 once again with last hour-timestamp «2016-07-26T18»:

```
root@182:/opt/couchbase/var/lib/couchbase/logs# grep vBucket=888 ./memcached.log.* | grep "2016-07-26T18"  
./memcached.log.1.txt:2016-07-26T18:32:43.779178Z WARNING (default) Warning: failed to fetch data from database, vBucket=888  
key=5:1469542703322:1469542703322 error=document not found [none]  
./memcached.log.1.txt:2016-07-26T18:32:43.780001Z WARNING (default) Warning: failed to fetch data from database, vBucket=888  
key=5:1469542703322:1469542703322 error=document not found [none]
```