mongoDB

How to ~~Waste Time and Money~~ Test~~ing~~ the Performance of a Software Product

David Daly | Lead Engineer -- Performance | @daviddaly44 | https://daviddaly.me/

mongoDB Dashboards Projects Issues Service Desk Agile Portfolio Create Search

Core Server / SERVER-16276

Perf degradation in query

Export

Details

Type:	Bug	Status:	CLOSED
Priority:	Major - P3	Resolution:	
Affects Version/s:	2.8.0-rc0	Fix Version/s:	
Component/s:	Performance		
Labels:	28qa		
Backwards Compatibility:	Fully Compatible		
Operating System:	ALL		

Description

Problem

Appears to be a perf degradation caused by commit e8437d34eee926e5c6bb3eac4a74f8a1fdf19448

```
e8437d34eee926e5c6bb3eac4a74f8a1fdf19448
@@@START@@@
Remove.v3.IntNonIdNoIndex
        1       1440.2860827436061
        2       1441.1362631578315
        4       1424.8497230369633
        8       901.6573578059949
@@@END@@@

2783e323051eb5eeaedee4a607934974177f74c2
@@@START@@@
Remove.v3.IntNonIdNoIndex
        1       1588.0643793020076
        2       1520.9383985954414
        4       1512.18813243067
        8       1156.9223116204623
@@@END@@@
```

-22%

People

Assignee: [redacted]
Assign to me

Reporter: [redacted]

Participants: [redacted]

Last commenter: [redacted]

Votes: 0 Vote for this issue

Watchers: 10 Start watching this issue

Dates

Created:	Nov 21 2014 03:52:50 PM GMT-0500
Updated:	Jan 23 2015 06:34:28 PM GMT-0500
Resolved:	Jan 21 2015 11:33:31 AM GMT-0500
Days since reply:	1 year, 13 weeks, 5 days ago
Date of 1st Reply:	Nov 21 2014 03:57:29 PM GMT-0500

Private Fields

Documentation Changes:	Not Needed
Driver Changes:	Not Needed

comment-role

Agile

View on Board

Reporter

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Edit | Comment | Assign | More | Re-Open Issue | Export

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Type:	Bug	Status:	CLOSED
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comment-role

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Reporter

“

Understand the performance of our software and when it changes.

How **NOT** to

Machines with Personality

Run tests by hand

Wait until release time

Have a dedicated team separate from dev

How **to**

Automate everything

Minimize noise

Involve everyone

Always be testing

Performance Use Cases

- Detect performance impacting commits (Waterfall)
- Test impact of proposed code change (Patch Test)
- Diagnose performance regressions (Diagnostics, Profiling)
- Release support (how do we compare to previous stable?)
- Add test coverage
- Performance exploration

Performance Use Cases

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Detect performance impacting commits (Waterfall)

Performance Testing in Continuous Integration

Setup a system under test

Run a workload

Report the results

Visualize the result

Decide (and alert) if the performance changed

Automate everything/Keep Noise Down

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Levels

System Level Tests (Sys-perf)

Multi node clusters in the cloud with end to end tests. Expensive ($s and hours), run least frequently

Microbenchmarks

Single-node cpu-bound tests. Dedicated hardware.

Unit Level Performance Tests

Google Benchmark framework. Some dedicated hardware. Least expensive ($s and hours)

“

The focus for DSI was serving the more complex requirements of end-to-end system performance tests on real clusters, automating every step including provisioning of hardware, and generating consistent, repeatable results.

DSI Goals

- Full end-to-end automation
- Support both CI and manual testing
- Elastic, public cloud infrastructure
- Everything configurable
- All configuration via YAML
- Diagnosability
- Repeatability

DSI Modules

- Bootstrap
- Infrastructure provisioning
- System setup
- Workload setup
- MongoDB setup
- Test Control
- Analysis
- Infrastructure teardown

Configuration Files

```yaml
mongod_config_file:
  storage:
    engine: wiredTiger
  replication:
    replSetName: rs0

topology:
  - cluster_type: replset
    id: rs0
    mongod:
      - public_ip: ${infrastructure_provisioning.out.mongod.0.public_ip}
      - public_ip: ${infrastructure_provisioning.out.mongod.1.public_ip}
      - public_ip: ${infrastructure_provisioning.out.mongod.2.public_ip}

# Meta data about this mongodb setup
meta:
  # The list of hosts that can be used in a mongodb connection string
  hosts: ${mongodb_setup.topology.0.mongod.0.private_ip}:27017
  hostname: ${mongodb_setup.topology.0.mongod.0.private_ip}
  mongodb_url: mongodb://${mongodb_setup.meta.hosts}/test?replicaSet=rs0
  is_replset: true
```

```yaml
run:
  - id: ycsb_load
    type: ycsb
    cmd: ./bin/ycsb load mongodb -s -P ../../workloadEvergreen -threads 8
    config_filename: workloadEvergreen
    workload_config: |
      mongodb.url=${mongodb_setup.meta.mongodb_url}
      recordcount=5000000
      workload=com.yahoo.ycsb.workloads.CoreWorkload
  - id: ycsb_100read
    type: ycsb
    cmd: ./bin/ycsb run mongodb -s -P ../../workloadEvergreen_100read -threads 32
    config_filename: workloadEvergreen_100read
    workload_config: |
      mongodb.url=${mongodb_setup.meta.mongodb_url}
      recordcount=5000000
      maxexecutiontime=240
      workload=com.yahoo.ycsb.workloads.CoreWorkload
      readproportion=1.0
```

Performance Testing in Continuous Integration

Setup a system under test

Run a workload

Report the results

Visualize the result

Decide (and alert) if the performance changed

Automate everything/Keep Noise Down

Show collapsed view | Filter variant | Filter task

	cad10 4/1/20 9:22 PM Luke Chen - Import wiredtiger: 5b5d7988560a20dbe827a1... more	c7818 4/1/20 8:16 PM Gregory Wlodarek - SERVER-47155 Limit the number of simultan... more	5 inactive versions	ee48b 4/1/20 5:29 PM David Storch - SERVER-46997 Test $out, $merge, non-inlin... more	8 inactive versions
Compile			INACTIVE BUILD		INACTIVE BUILD
Compile for Atlas-like			INACTIVE BUILD		INACTIVE BUILD
Linux 1-Node ReplSet			INACTIVE BUILD		INACTIVE BUILD
Linux 1-Node ReplSet 15 GB WiredTiger Cache			INACTIVE BUILD		INACTIVE BUILD
Linux 1-Node ReplSet CWRWC			INACTIVE BUILD		INACTIVE BUILD
Linux 1-Node ReplSet ESE CBC			INACTIVE BUILD		INACTIVE BUILD
Linux 1-Node ReplSet ESE GCM			INACTIVE BUILD		INACTIVE BUILD
Linux 1-Node ReplSet FLE			INACTIVE BUILD		INACTIVE BUILD
Linux 3-Node ReplSet			INACTIVE BUILD		INACTIVE BUILD
Linux 3-Node ReplSet (Auth Delay)			INACTIVE BUILD		INACTIVE BUILD
Linux 3-Node ReplSet (Flow Control off)			INACTIVE BUILD		INACTIVE BUILD
Linux 3-Node ReplSet (SSL)			INACTIVE BUILD		INACTIVE BUILD
Linux 3-Node ReplSet Initial Sync			INACTIVE BUILD		INACTIVE BUILD
Linux 3-Shard Cluster			INACTIVE BUILD		INACTIVE BUILD
Linux ReplSet Initial Sync LogKeeper			INACTIVE BUILD		INACTIVE BUILD
Linux Shard Lite Cluster			INACTIVE BUILD		INACTIVE BUILD
Linux Shard Lite Cluster CWRWC			INACTIVE BUILD		INACTIVE BUILD
Linux Standalone			INACTIVE BUILD		INACTIVE BUILD
Linux Standalone Audit			INACTIVE BUILD		INACTIVE BUILD
M60-Like 3-Node ReplSet			INACTIVE BUILD		INACTIVE BUILD

APR 3		4/3/2020
ca499	SERVER-39458 Conti…	10:06 AM
c91e0	SERVER-47214 early e…	9:52 AM
cac63	SERVER-45835 Add o…	5:41 AM
51990	PERF-1970 Check out …	5:26 AM
51990	SERVER-46534 Make …	9:04 PM
ba5aa	SERVER-47144 remov…	8:24 PM
APR 2		4/2/2020
20377	SERVER-46828 Remo…	7:26 PM
907fc	SERVER-47006: Imple…	6:53 PM
5ba76	SERVER-47269 Add u…	6:20 PM
81e0a	SERVER-45094 add r…	6:08 PM
b1edf	SERVER-45063 fix the…	1:40 PM
cf571	SERVER-46892 disall…	1:16 PM
0e7b4	SERVER-45094 check…	12:40 PM
89d74	SERVER-46892 add h…	10:23 AM
54034	SERVER-46040 Maint…	10:06 AM
778fc	SERVER-45911 SERV…	9:38 AM
27dd1	SERVER-46948 Increa…	9:10 AM
748ca	SERVER-46706 Add d…	8:57 AM
b0403	SERVER-46345 Remo…	8:14 AM
d2789	SERVER-46801 Conv…	10:05 PM
cad10	Import wiredtiger: 5b5d…	9:22 PM
c7818	SERVER-47155 Limit t…	8:16 PM
b3d8a	SERVER-47155 Index…	8:16 PM
2f239	SERVER-47155 Multil…	8:16 PM
APR 1		4/1/2020
61678	SERVER-46865 Make …	6:28 PM

cad10292bb

Import wiredtiger: 5b5d7988560a20dbe827a1fa16c0481e6c0e2821 from branch mongodb-4.4 ref: 660f3363bd..5b5d798856 for: 4.5.1 WT-382…
Luke Chen (luke.chen@mongodb.com) authored at Apr 1, 2020 9:22:58 pm

cad10

Makespan 344h 52m 32s
Time Spent 372h 27m 39s

By Variant | Grid

Show collapsed view

Compile
Compile for Atlas-like
Linux 1-Node ReplSet
Linux 1-Node ReplSet 15 GB WiredTiger Ca…
Linux 1-Node ReplSet CWRWC
Linux 1-Node ReplSet ESE CBC
Linux 1-Node ReplSet ESE GCM
Linux 1-Node ReplSet FLE
Linux 3-Node ReplSet
Linux 3-Node ReplSet (Auth Delay)
Linux 3-Node ReplSet (Flow Control off)
Linux 3-Node ReplSet (SSL)
Linux 3-Node ReplSet Initial Sync
Linux 3-Shard Cluster
Linux ReplSet Initial Sync LogKeeper
Linux Shard Lite Cluster
Linux Shard Lite Cluster CWRWC
Linux Standalone
Linux Standalone Audit
M60-Like 3-Node ReplSet
WT Develop 1-Node ReplSet
WT Develop 3-Node ReplSet
WT Develop Compile
WT Develop Standalone

Manifest


```
{
  "id": "sys_perf_cad10292bbd4f8e237c5ba85ec9265c21eddec38",
  "revision": "cad10292bbd4f8e237c5ba85ec9265c21eddec38",
  "project": "sys-perf",
  "branch": "master",
  "modules": {
    "dsi": {
      "branch": "master",
      "repo": "dsi",
      "revision": "8fcd6d2b9e73a112bbf8a7a4290bfd251ef88518",
      "owner": "10gen",
      "url": "https://api.github.com/repos/10gen/dsi/commits/8fcd6d2b9e73a112bbf8a7a4290bfd251ef88518"
    },
    "enterprise": {
      "branch": "master",
      "repo": "mongo-enterprise-modules",
      "revision": "21e92c8ce3ed881ae0c6eb9677a1c2e4bb0f5ec6",
      "owner": "10gen",
```

FEB 18		2/18/2020
07114	SERVER-46026 disk_...	2:24 PM
046a1	SERVER-45944 disall...	2:11 PM
ad8f8	SERVER-45620 Have...	1:57 PM
46ee9	Revert "SERVER-456...	1:43 PM
34dc0	SERVER-45610 Rejec...	1:27 PM
c1827	SERVER-46216 The ...	1:15 PM
0e8ab	SERVER-46026 jsCor...	1:03 PM
e01b8	SERVER-45944 add j...	12:51 PM
3f529	SERVER-46198 Use t...	12:19 PM
99e77	SERVER-28680: Fix n...	12:07 PM
19f7a	SERVER-46026 Fix s...	11:53 AM
14240	SERVER-45540 Gate...	11:33 AM
eb284	SERVER-43889 Disti...	11:19 AM
d9a68	SERVER-45273 Rem...	11:08 AM
77911	SERVER-45680: Burn...	10:55 AM
3e8fe	SERVER-46188 Blac...	10:30 AM
3c776	SERVER-46179 Relax...	9:55 AM
a6eb4	SERVER-45422 Test t...	9:22 AM
811b6	TIG-2242 Support ne...	7:35 AM
811b6	SERVER-46026 Fix te...	11:03 PM
FEB 16		2/16/2020
95c8f	SERVER-45623 read/...	11:51 PM
1d21e	SERVER-44356 Set c...	10:04 PM
FEB 15		2/15/2020
e3c00	SERVER-46026 Fix kil...	12:32 PM
cc221	SERVER-37726 Make...	10:21 AM
2a21a	SERVER-37726 Conc...	10:21 AM
5dc54	SERVER-37726 Add t...	10:21 AM
aa158	SERVER-37726 Add t...	10:21 AM
075fe	SERVER-46155 Rest...	10:00 AM
da28f	SERVER-46102 fix tes...	7:39 AM
61197	SERVER-44978 Threa...	6:19 AM
44a10	Revert "SERVER-459...	9:31 PM
30296	SERVER-46178 Exclu...	8:22 PM
ee466	SERVER-45885 remo...	8:09 PM
3c4dc	SERVER-45885 Index...	7:03 PM
FEB 14		2/14/2020
98042	SERVER-46174 Free ...	6:46 PM
cb1a4	SERVER-46145 Rem...	6:34 PM
7a91c	SERVER-45138 Add ...	6:22 PM
05fee	SERVER-46172 Tag r...	6:04 PM
0bbcf	SERVER-45592 Rais...	5:52 PM
53c9e	SERVER-45885 Index...	5:27 PM
18c43	SERVER-46171: New...	5:16 PM

95c8fc6a4a / Linux 3-Node ReplSet / crud_workloads

SUCCESS crud_workloads on Linux 3-Node ReplSet

SERVER-45623 read/write concern provenance 95c8f
Kevin Pulo (kevin.pulo@mongodb.com) authored at Feb 15, 2020 11...

45m 16s
i-0c0149fcd044bc905 rhel70-perf-replset
Started on Feb 16, 2020 11:03:40 am
Finished on Feb 16, 2020 11:48:57 am
Priority: 5

Depends On

- compile in compile-amazon2 — SUCCESS
- genny_generate_all_tasks in compile-amazon2 — SUCCESS

Files

Dsi Artifacts - Execution 0
Pip Requirements
workloads documentation

Tests

Filter tests — SORT BY: STATUS — Wrap

27 SUCCEEDED 0 FAILED — 1 seconds total runtime

Test	Time	Test Logs
benchRun		HTML · Raw
core.benchRun.mongod.0		HTML · Raw
core.benchRun.mongod.1		HTML · Raw
core.benchRun.mongod.2		HTML · Raw
core.fio.mongod.0		HTML · Raw
core.fio.mongod.1		HTML · Raw

Comparing to: B701656
Add comparison...

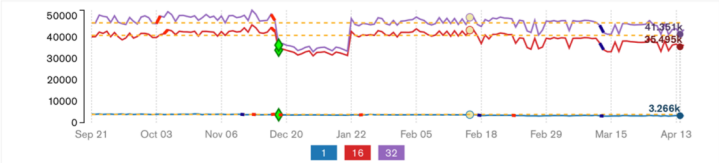
Tag this data...
Raw data
Historical data
Performance Discovery

Graph Table Trend

Thread Levels: Max Only All
Metric Name: ops/sec (Default)
click on a graph to lock to a commit

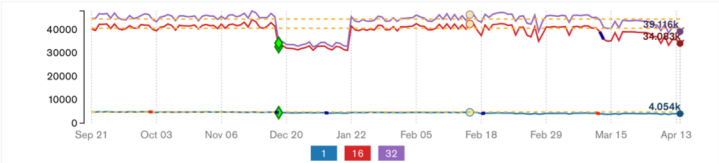
insert_jfalse

285490c
Apr 15, 2020
bfs:
ACK HIDE UNMARK
COMPARE
11.4% vs b701656



updatemulti_jfalse

285490c
Apr 15, 2020
bfs:
ACK HIDE UNMARK
COMPARE
12.1% vs b701656



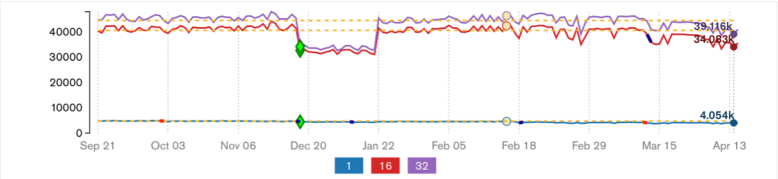
updatemulti_jfalse

285490c
Apr 15, 2020
bfs:

ACK HIDE
UNMARK

COMPARE

12.1% vs b701858



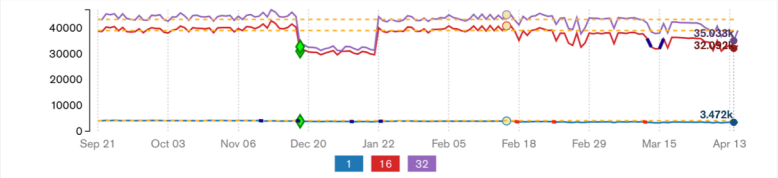
removemulti_jfalse

285490c
Apr 15, 2020
bfs:

ACK HIDE
UNMARK

COMPARE

19.3% vs b701858



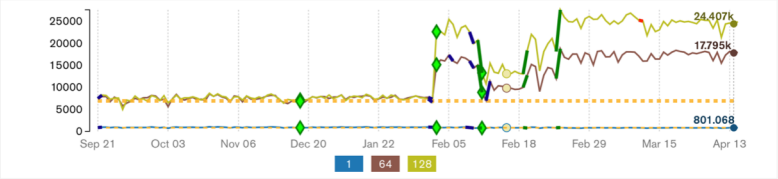
insert_jtrue

285490c
Apr 15, 2020
bfs:

ACK HIDE
UNMARK

COMPARE

165.8% vs b701858



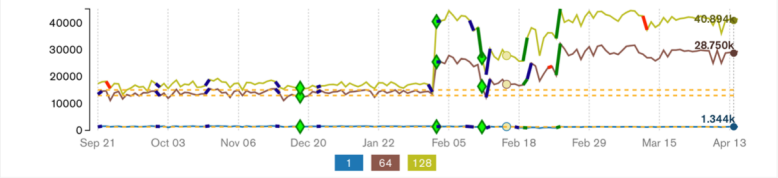
updatemulti_jtrue

285490c
Apr 15, 2020
bfs:

ACK HIDE
UNMARK

COMPARE

121.7% vs b701858



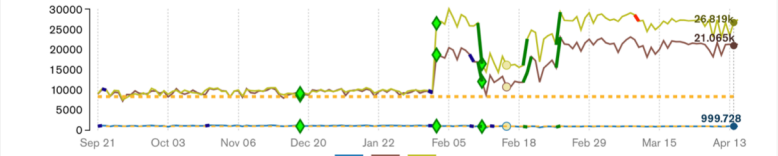
removemulti_jtrue

285490c
Apr 15, 2020
bfs:

ACK HIDE
UNMARK

COMPARE

157.0% vs b701858



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- See ICPE Paper: Change Point Detection in Software Performance Testing (video, slides)

Automate everything/Keep Noise Down

Change Points | Failures | Outliers | Rejected Outliers

Mode: Processed Unprocessed **Actions:** HIDE ACKNOWLEDGE Currently selected: 0

Revision	Hazard Level	Variant	Task	Test	Thread Level	Create Time
		^((?!wtdevelop).)*$	Linkbench	^((?!canary_|fio_|iperf|NetworkBandwidth|[01]_1c_avg_latency|0		>2020-02-17
2c7e2e2						
	-2%	linux-3-node-replSet	linkbench	LOAD_LINKS_BULK	max	2020-02-19T03:53:44Z
	-2%	linux-3-node-replSet	linkbench	LOAD_LINKS_BULK	21	2020-02-19T03:53:44Z
b77010c						
	-4%	linux-shard-lite	linkbench	DELETE_NODE	20	2020-02-19T15:12:36Z
	-3%	linux-shard-lite	linkbench	UPDATE_NODE	20	2020-02-19T15:12:36Z
	+5%	linux-shard-lite	linkbench	ADD_LINK	20	2020-02-19T15:12:36Z
	+6%	linux-shard-lite	linkbench	DELETE_LINK	20	2020-02-19T15:12:36Z
68dfffe						
d545406						
835e125						

Change Points | Failures | Outliers | Rejected Outliers

Mode: Processed Unprocessed **Actions:** HIDE ACKNOWLEDGE UNMARK Currently selected: 0

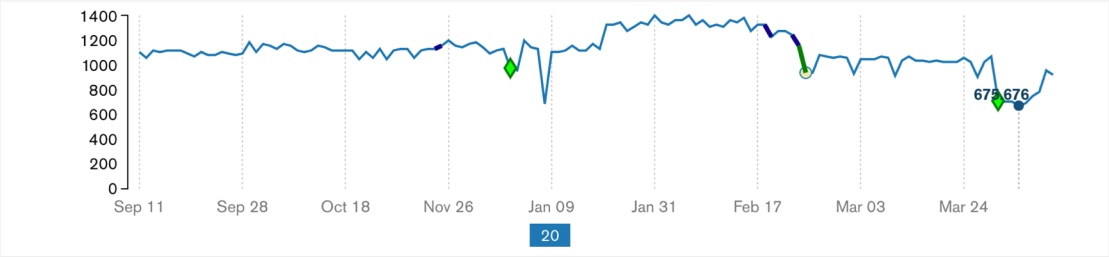
Revision	Hazard Level	Variant	Task	Test	Processed Type	Thread Level	Create Time
		^((?!wtdevelop).)*$	Linkbench	^((?!canary_|fio_|iperf|NetworkBandwidth|[01]_1c_avg	=acknowledged		>2020-02-17
2736345							
835e125							
ae7506f							
	-21%	linux-3-node-replSet	linkbench	ADD_NODE	acknowledged	20	2020-02-28T04:14:38Z
	-21%	linux-3-node-replSet	linkbench	ADD_NODE	acknowledged	max	2020-02-28T04:14:38Z
	-15%	linux-3-node-replSet	linkbench	MULTIGET_LINK	acknowledged	max	2020-02-28T04:14:38Z
	-15%	linux-3-node-replSet	linkbench	MULTIGET_LINK	acknowledged	20	2020-02-28T04:14:38Z
	-12%	linux-3-node-replSet	linkbench	GET_LINKS_LIST	acknowledged	20	2020-02-28T04:14:38Z
	-12%	linux-3-node-replSet	linkbench	GET_LINKS_LIST	acknowledged	max	2020-02-28T04:14:38Z
	+20%	linux-1-node-replSet-fle	linkbench	UPDATE_LINK	acknowledged	20	2020-02-28T04:14:38Z
	+21%	linux-1-node-replSet-fle	linkbench	ADD_LINK	acknowledged	20	2020-02-28T04:14:38Z
	+30%	linux-1-node-replSet-fle	linkbench	DELETE_LINK	acknowledged	20	2020-02-28T04:14:38Z
	+37%	linux-3-node-replSet	linkbench	UPDATE_LINK	acknowledged	max	2020-02-28T04:14:38Z
	+37%	linux-3-node-replSet	linkbench	UPDATE_LINK	acknowledged	20	2020-02-28T04:14:38Z
	+37%	linux-3-node-replSet	linkbench	ADD_LINK	acknowledged	max	2020-02-28T04:14:38Z
	+37%	linux-3-node-replSet	linkbench	ADD_LINK	acknowledged	20	2020-02-28T04:14:38Z
	+55%	linux-3-node-replSet	linkbench	DELETE_LINK	acknowledged	20	2020-02-28T04:14:38Z
	+55%	linux-3-node-replSet	linkbench	DELETE_LINK	acknowledged	max	2020-02-28T04:14:38Z
1d25290							
4dc6763							
12d7f8e							
cad1029							
96727ea							
f91e5e8							

ADD_NODE

90166a8
Apr 6, 2020
bfs:

ACK HIDE
UNMARK

COMPARE



UPDATE_NODE

DELETE_NODE

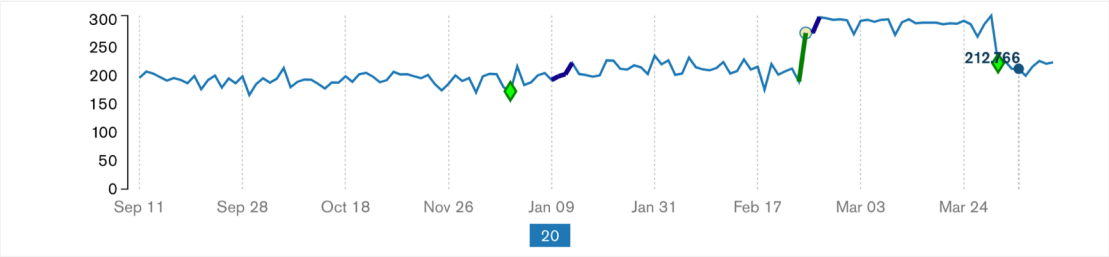
GET_NODE

ADD_LINK

90166a8
Apr 6, 2020
bfs:

ACK HIDE
UNMARK

COMPARE

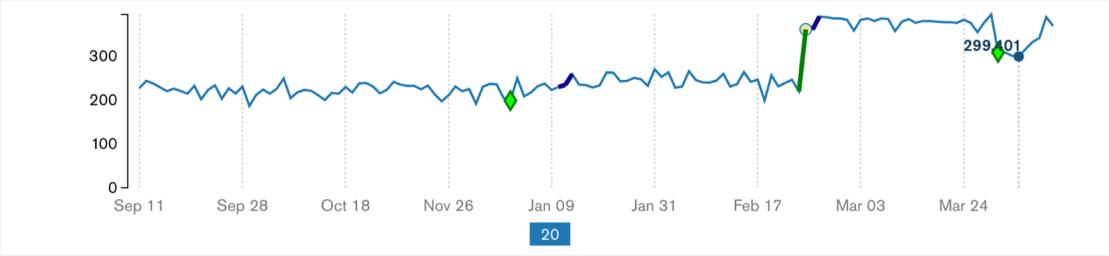


DELETE_LINK

90166a8
Apr 6, 2020
bfs:

ACK HIDE
UNMARK

COMPARE



Build Failures / BF-16424

30% improvement in crud_workloads/*_jtrue (System Performance) - ab2b097, Feb 27

Edit | Comment | Assign | More | Reopen Issue | Stuck | Export

Details

Type:	Build Failure
Status:	CLOSED
Priority:	Major - P3
Resolution:	Works as Designed
Labels:	bf-code, perf-improvement
Evergreen Project:	sys-perf
Failing Buildvariants:	atlas-like-M60, linux-1-node-replSet, linux-1-node-replSet-cwrwc, linux-1-node-replSet-fle, linux-3-node-replSet, linux-3-node-replSet-noflowcontrol, linux-3-shard, linux-shard-lite, linux-shard-lite-cwrwc, linux-standalone
Failing Tasks:	bestbuy_agg, change_streams_throughput, crud_workloads, crud_workloads_majority, industry_benchmarks_wmajority, linkbench, misc_workloads, mixed_writes_replica, mixed_writes_replica_delay_mixed, parallel_insert_replica, parallel_insert_replica_delay_mixed, refine_shard_key_transaction_stress
Failing Tests:	105_1c_findOne, 105_1c_total, 15_1c_findOne, ADD_LINK, CleanUp-DatabaseOperation.1, CleanUp-DatabaseOperation.11, CleanUp-DatabaseOperation.13, CleanUp-DatabaseOperation.17, CleanUp-DatabaseOperation.19, CleanUp-DatabaseOperation.21, CleanUp-DatabaseOperation.25, CleanUp-DatabaseOperation.27, CleanUp-DatabaseOperation.29, CleanUp-DatabaseOperation.3, CleanUp-DatabaseOperation.33, CleanUp-DatabaseOperation.35, CleanUp-DatabaseOperation.37, CleanUp-DatabaseOperation.5, CleanUp-DatabaseOperation.7, CleanUp-DatabaseOperation.9, DELETE_LINK, DeleteAndReinsert-Crud, DeleteAndReinsert-TotalModificationTime, MixedWrites-Crud, MixedWrites-W2InsertOne, MixedWrites-W3InsertOne, ParallelInsert-1-Insert_WMajority, ParallelInsert-1-Insert_WMajority_JFalse, ParallelInsert-256-Insert_WMajority, ParallelInsert-256-Insert_WMajority_JFalse, ParallelInsert-32-Insert_W1_JTrue, ParallelInsert-32-Insert_WMajority, ParallelInsert-512-Insert_WMajority, ParallelInsert-512-Insert_WMajority_JFalse, UPDATE_LINK, count_with_type_predicate-useAgg, insert_jfalse_wmajority, insert_jtrue, insert_jtrue_wmajority, removemulti_jfalse_wmajority, removemulti_jtrue, removemulti_jtrue_wmajority, updatemulti_jfalse_wmajority, updatemulti_jtrue, updatemulti_jtrue_wmajority, xldoc_2docs_10MB, ycsb_50read50update_w_majority, ycsb_95read5update_w_majority, ycsb_load
First Failing Revision:	ab2b0971d21bf8a208ee43312d91c4600b63ccc5
Count of Linked Failures:	0

People

Assignee:	David Daly
Reporter:	Sviatlana Zuiko
Votes:	0 Vote for this issue
Watchers:	4 Stop watching this issue

Dates

Created:	Mar 02 2020 12:00:48 PM GMT-0500
Updated:	Apr 06 2020 02:31:22 PM GMT-0400
Resolved:	Mar 03 2020 02:07:24 PM GMT-0500

Agile

View on Board

Reporter

name:	sviatlana.zuiko
email:	sviatlana.zuiko@mongodb.com

Release support

Can we release?

How is the performance?

Compared to the last release.

How many open issues are there?

Are they getting fixed? Are they stuck?

Do we have coverage for new features?

Your Results SYS_PERF_A4A33AE57B2BEBAAD649D9598880849/ Baseline Results SYS_PERF_4.2_B444815B69AB088A80 Use Expanded Data For Metric

Tickets	Build	Storage Engine	Task	Test	Threads	Ratio	Trend	Avg And Self	Ops/Sec	Baseline	Outlier
	Choose Build	Choose Storage Engine	Choose Task	^((?!canary_|fio_|iperf|NetworkBandwidth)(	Choose Threads						
BF-16943, …	Linux Shard Lite Cluster	wiredTiger	bestbuy_query	find_project_6_sort_indexed_skip_limit_1-n…	16	[illegible]			2,643.22	53.53	
BF-16943, …	Linux Shard Lite Cluster	wiredTiger	bestbuy_query	find_project_6_sort_indexed_skip_limit_1-n…	32	[illegible]			2,641.37	56.14	
BF-16943, …	Linux Shard Lite Cluster	wiredTiger	bestbuy_query	find_project_6_sort_indexed_skip_limit_1-n…	1	[illegible]			295.03	6.96	
BF-16943, …	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	[illegible]			295.93	42.62	
BF-16943, …	Linux Standalone	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	[illegible]			306.47	44.57	
BF-16943, …	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	[illegible]			294.10	42.95	
BF-16943, …	Linux Standalone	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	[illegible]			1,670.07	258.90	
BF-16943, …	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	[illegible]			1,583.28	246.83	
BF-16943, …	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	[illegible]			1,571.15	249.91	
BF-16943, …	Linux Standalone	wiredTiger	bestbuy_agg	find_limit-useAgg	1	[illegible]			141.01	35.95	
BF-16943, …	Linux Standalone	wiredTiger	crud_workloads	insert_jtrue	128	[illegible]			37,357.60	9,682.14	
BF-16943, …	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_limit-useAgg	1	[illegible]			137.74	35.78	
BF-16943, …	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_limit-useAgg	1	[illegible]			137.58	36.01	
BF-16943, …	Linux 3-Shard Cluster	wiredTiger	change_streams_multi_mongos	15_1c_max_latency	60	[illegible]			-18.00	-67.00	
BF-16943, …	Linux 3-Shard Cluster	wiredTiger	change_streams_multi_mongos	15_1c_avg_latency	60	[illegible]			-9.36	-32.78	
BF-16943, …	Linux Standalone	wiredTiger	crud_workloads	removemulti_jtrue	128	[illegible]			41,593.55	12,680.29	
BF-16943, …	Linux 1-Node ReplSet	wiredTiger	crud_workloads	insert_jtrue	128	[illegible]			25,629.31	8,280.55	
BF-16943, …	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_project-useAgg	1	[illegible]			0.05	0.02	
BF-16943, …	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_project-useAgg	1	[illegible]			0.05	0.02	
BF-16943, …	Linux Standalone	wiredTiger	bestbuy_agg	find_project-useAgg	1	[illegible]			0.05	0.02	
BF-16943, …	Linux 3-Node ReplSet	wiredTiger	crud_workloads	insert_jtrue	128	[illegible]			24,753.25	8,359.81	
	WT Develop 3-Node ReplSet	wiredTiger	crud_workloads	insert_jtrue	128	[illegible]			24,050.33	8,263.95	
BF-16943, …	Linux Standalone Audit	wiredTiger	crud_workloads	insert_jtrue	128	[illegible]			31,788.53	10,998.14	
BF-16943, …	Linux Standalone Audit	wiredTiger	crud_workloads	removemulti_jtrue	128	[illegible]			35,916.08	13,112.63	
BF-16943, …	Linux 3-Node ReplSet (Flow Control off)	wiredTiger	crud_workloads	insert_jtrue	128	[illegible]			23,621.79	8,667.00	
BF-16943, …	Linux 1-Node ReplSet	wiredTiger	crud_workloads	removemulti_jtrue	128	[illegible]			28,191.03	10,578.08	
BF-16943, …	Linux 3-Node ReplSet	wiredTiger	crud_workloads	removemulti_jtrue	128	[illegible]			27,018.13	10,399.26	

Your Results SYS_PERF_A4A33AE57B2BEBAAD649D9598880849/ Baseline Results SYS_PERF_4.2_B444815B69AB088A80 Use Expanded Data For Metric

Tickets	Build	Storage Engine	Task	Test	Threads	Ratio	Trend	Avg And Self	Ops/Sec	Baseline	Outlier
	Choose Build	Choose Storage Engine	BESTBUY_AGG	^((?!canary_|fio_|iperf|NetworkBandwidth|(	Choose Threads						
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	364			295.93	42.62	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	330			306.47	44.57	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	326			294.10	42.95	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	646			1,670.07	258.90	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	641			1,583.28	246.83	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	629			1,571.15	249.91	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_limit-useAgg	1	280			141.01	35.95	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_limit-useAgg	1	285			137.74	35.78	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_limit-useAgg	1	280			137.58	36.01	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_project-useAgg	1	224			0.05	0.02	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_project-useAgg	1	220			0.05	0.02	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_project-useAgg	1	221			0.05	0.02	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_limit-useAgg	8	226			397.23	175.92	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_project_skip_limit-useAgg	1	213			32.21	15.05	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_project_skip_limit-useAgg	1	212			31.32	14.77	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_project_skip_limit-useAgg	1	211			31.32	14.86	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_limit-useAgg	8	198			338.16	169.87	
BF-16943, ...	Linux Shard Lite Cluster	wiredTiger	bestbuy_agg	find_project-useAgg	1	191			0.03	0.01	
BF-16943, ...	Linux Shard Lite Cluster	wiredTiger	bestbuy_agg	find_limit-useAgg	1	187			38.12	20.41	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_limit-useAgg	8	179			304.52	169.74	
BF-16943, ...	Linux Shard Lite Cluster	wiredTiger	bestbuy_agg	find_project_skip_limit-useAgg	1	171			10.96	6.41	
BF-16943, ...	Linux Shard Lite Cluster	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	1	162			45.25	27.98	
BF-16943, ...	Linux Shard Lite Cluster	wiredTiger	bestbuy_agg	find_limit-useAgg	8	154			129.13	83.75	
BF-16943, ...	Linux Shard Lite Cluster	wiredTiger	bestbuy_agg	find_skip_limit_1-useAgg	8	153			142.40	93.15	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	bestbuy_agg	find_project_6_sort_indexed_skip_limit_1-u...	1	127			0.43	0.34	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	bestbuy_agg	find_project_6_sort_indexed_skip_limit_1-u...	1	126			0.43	0.34	
BF-16943, ...	Linux Standalone	wiredTiger	bestbuy_agg	find_project_6_sort_indexed_skip_limit_1-u...	1	126			0.43	0.34	

Your Results SYS_PERF_A4A33AE57B2BEBAAD649D9598880849/ Baseline Results SYS_PERF_4.2_B444815B69AB088A80 Use Expanded Data For Metric

Tickets	Build	Storage Engine	Task	Test	Threads	Ratio	Trend	Avg And Self	Ops/Sec	Baseline	Outlier
	Choose Build	Choose Storage Engine	MIXED_WORKLOADS	^((?!canary_|fio_|iperf|NetworkBandwidth	Choose Threads						
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	mixed_workloads	mixed_findOne	512	66			11,297.37	17,243.92	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_update	128	66			5,995.12	9,025.59	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_delete	128	67			6,148.19	9,229.85	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_insert	128	67			6,325.22	9,432.75	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_total	128	67			25,321.50	37,688.13	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_update	256	68			5,765.57	8,463.71	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_findOne	128	69			6,852.98	9,999.95	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_delete	256	70			5,990.50	8,613.60	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_insert	256	70			6,123.10	8,744.62	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_total	256	70			24,582.06	35,000.83	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_update	64	70			6,227.59	8,845.76	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_delete	64	70			6,399.61	9,079.15	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_total	64	71			26,524.43	37,306.31	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_insert	64	71			6,708.54	9,426.89	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_update	512	72			5,561.84	7,749.54	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_findOne	64	72			7,188.69	9,954.51	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_findOne	256	73			6,702.89	9,178.91	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_delete	512	74			5,734.85	7,797.00	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_insert	512	75			5,908.47	7,861.12	
BF-16943, ...	Linux 1-Node ReplSet	wiredTiger	mixed_workloads	mixed_findOne	256	75			11,493.03	15,274.04	
BF-16943, ...	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_total	512	75			23,614.48	31,363.06	
BF-16943, ...	Linux 3-Node ReplSet	wiredTiger	mixed_workloads	mixed_findOne	512	77			27,081.91	35,326.46	
BF-16943, ...	Linux 3-Node ReplSet (Flow Control off)	wiredTiger	mixed_workloads	mixed_insert	4	78			2,644.84	3,372.23	
BF-16943, ...	Linux 3-Node ReplSet (Flow Control off)	wiredTiger	mixed_workloads	mixed_delete	4	80			2,191.08	2,730.91	
BF-16943, ...	Linux 3-Node ReplSet (Flow Control off)	wiredTiger	mixed_workloads	mixed_update	4	80			2,075.37	2,584.97	
BF-16943	Linux 3-Shard Cluster	wiredTiger	mixed_workloads	mixed_findOne	512	81			6,409.33	7,955.40	

Humans in the loop

Periodically review everything. (Weekly, Monthly)

- Is everything important ticketed?
- Are the top issues being worked?
- Surface trade-offs that need to be addressed (e.g., New Feature X makes everything else 3% slower)

Put people on the hard parts, then see what can be automated next.

Ongoing Work

Work with Us

We have real world problems and would love to work with the community

- Noise Reduction work
- Dbtest.io: “Automated System Performance Testing at MongoDB”
- ICPE Paper: “The Use of Change Point Detection to Identify Software Performance Regressions in a Continuous Integration System” (video)

Our code is open source: signal-processing-algorithms, infrastructure code

Our regression environment is open, and the platform is open source

Our performance data is not open source, but we’re working to share it with academics

mongoDB

Thank you

David Daly | Lead Engineer -- Performance | @daviddaly44 | https://daviddaly.me/