

Kafka system testcases

- Description of testcases in Kafka system test
 - Replication Basic 1 Topic, 1 Partition (Kafka Replication Test Plan C.1)
 - Replication Basic 2 Topics, 3 Partitions Kafka Replication Test Plan C.1
 - Replication with Leader Failure 1 Topic, 1 Partition (Kafka Replication Test Plan C.3)
 - Replication with Leader Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)
 - Replication with Leader Failure 2 Topics, 3 Partitions (Kafka Replication Test Plan C.3)
 - Replication with Leader Failure 2 Topics, 3 Partitions Replica Factor 2 in a 3-broker cluster) (Kafka Replication Test Plan C.3)
 - Replication with Leader Hard Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)
 - Replication with Controller Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)
 - Replication with Follower Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)
 - Replication with Simulated Leader GC Pause (SIGSTOP => SIGCONT) 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)
 - Log Retention Testing (Size) 2 Topics, 2 Partitions Replica Factor = No. of brokers
 - Log Retention Testing (Size) 2 Topics, 2 Partitions Replica Factor < No. of brokers
 - Mirror Maker
 - Migration Tool
 - Others
- FAQ
 - How Do I Run A Quick Sanity Test?
 - How Do I Run A Full Regression Test?

Description of testcases in Kafka system test

Replication Basic 1 Topic, 1 Partition (Kafka Replication Test Plan C.1)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0001	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Sync	-1	0
testcase_0002	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Sync	-1	1
testcase_0003	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Sync	1	1
testcase_0004	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Async	-1	1
testcase_0005	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Async	1	1
testcase_0006	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	None	Sync	-1	1
testcase_0007	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	None	Async	-1	1
testcase_0008	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	None	Sync	1	1
testcase_0009	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	None	Async	1	1
testcase_0010	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 1048576	None	Async	1	1

testcase_0011	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 1048576 Auto Create Topic : true	None	Async	1	1
Replication Basic 2 Topics, 3 Partitions Kafka Replication Test Plan C.1					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0021	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 102400	None	Sync	-1	0
testcase_0022	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	None	Sync	1	0
testcase_0023	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	None	Async	1	1
testcase_0024	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000 Auto Create Topic: true	None	Async	1	1
Replication with Leader Failure 1 Topic, 1 Partition (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0101	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -15	Sync	-1	0
testcase_0102	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -15	Sync	-1	1
testcase_0103	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -15	Sync	1	1
testcase_0104	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -15	Async	-1	1
testcase_0105	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -15	Async	1	1
testcase_0106	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	kill -15	Sync	-1	1
testcase_0107	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	kill -15	Async	-1	1
testcase_0108	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	kill -15	Sync	1	1
testcase_0109	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 10240	kill -15	Async	1	1

testcase_0110	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 1048576	kill -15	Async	1	1
Replication with Leader Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0111	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	0
testcase_0112	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	0
testcase_0113	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	0
testcase_0114	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	0
testcase_0115	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	1
testcase_0116	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	1
testcase_0117	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	1
testcase_0118	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	1
testcase_0119	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400 Auto Create Topic: true	kill -15	Async	1	1
Replication with Leader Failure 2 Topics, 3 Partitions (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0121	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	0
testcase_0122	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	kill -15	Sync	1	0
testcase_0123	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	kill -15	Async	1	1
testcase_0124 (set log.index.interval.bytes to be slightly smaller than message size to force the indexing to be performed for each message)	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	kill -15	Sync	-1	0

testcase_0125 (set log.index.interval.bytes to be slightly smaller than message size to force the indexing to be performed for each message)	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	kill -15	Sync	1	0
testcase_0126 (set log.index.interval.bytes to be slightly smaller than message size to force the indexing to be performed for each message)	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	kill -15	Sync	-1	1
testcase_0127 (set log.index.interval.bytes to be slightly smaller than message size to force the indexing to be performed for each message)	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000	kill -15	Sync	1	1
testcase_0128	No. of topic : 2 No. of partition : 3 Replica factor : 3 Log segment size : 512000 Auto Create Topic: true	kill -15	Async	-1	1
Replication with Leader Failure 2 Topics, 3 Partitions Replica Factor 2 in a 3-broker cluster) (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0131	No. of topic : 2 No. of partition : 3 Replica factor : 2 Log segment size : 102400	kill -15	Sync	-1	0
testcase_0132	No. of topic : 2 No. of partition : 3 Replica factor : 2 Log segment size : 512000	kill -15	Sync	1	0
testcase_0133	No. of topic : 2 No. of partition : 3 Replica factor : 2 Log segment size : 512000	kill -15	Async	1	1
testcase_0134	No. of topic : 2 No. of partition : 3 Replica factor : 2 Log segment size : 102400 Auto Create Topic: true	kill -15	Async	-1	1
Replication with Leader Hard Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0151	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Sync	-1	0
testcase_0152	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Async	-1	0
testcase_0153	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Sync	1	0
testcase_0154	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Async	1	0
testcase_0155	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Sync	-1	1

testcase_0156	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Async	-1	1
testcase_0157	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Sync	1	1
testcase_0158	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -9	Async	1	1
testcase_159	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400 Auto Create Topic: true	kill -9	Async	-1	1
Replication with Controller Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0201	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	0
testcase_0202	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	0
testcase_0203	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	0
testcase_0204	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	0
testcase_0205	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	1
testcase_0206	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	1
testcase_0207	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	1
testcase_0208	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	1
testcase_0209	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400 Auto Create Topic: true	kill -15	Async	-1	1
Replication with Follower Failure 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0251	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	0

testcase_0252	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	0
testcase_0253	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	0
testcase_0254	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	0
testcase_0255	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	1
testcase_0256	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	1
testcase_0257	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	1
testcase_0258	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	1
testcase_0259	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400 Auto Create Topic: true	kill -15	Async	-1	1
Replication with Simulated Leader GC Pause (SIGSTOP => SIGCONT) 1 Topic, 3 Partition (Kafka Replication Test Plan C.3)					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_0301	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Sync	-1	0
testcase_0302	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Async	-1	0
testcase_0303	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Sync	1	0
testcase_0304	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Async	1	0
testcase_0305	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Sync	-1	1
testcase_0306	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Async	-1	1
testcase_0307	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Sync	1	1

testcase_0308	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400	kill - SIGSTOP kill -SIGCONT	Async	1	1
testcase_0309	No. of topic : 1 No. of partition : 3 Replica factor : 3 Log segment size : 102400 Auto Create Topic: true	kill - SIGSTOP kill -SIGCONT	Async	-1	1
Log Retention Testing (Size) 2 Topics, 2 Partitions Replica Factor = No. of brokers					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_4001	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	0
testcase_4002	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	0
testcase_4003	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Sync	-1	1
testcase_4004	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Sync	1	1
testcase_4005	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	0
testcase_4006	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	0
testcase_4007	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Async	-1	1
testcase_4008	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 102400	kill -15	Async	1	1
Log Retention Testing (Size) 2 Topics, 2 Partitions Replica Factor < No. of brokers					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_4011	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Sync	-1	0
testcase_4012	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Sync	1	0
testcase_4013	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Sync	-1	1
testcase_4014	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Sync	1	1

testcase_4015	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Async	-1	0
testcase_4016	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Async	1	0
testcase_4017	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Async	-1	1
testcase_4018	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 102400	kill -15	Async	1	1
Mirror Maker					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_5001	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Sync	-1	0
testcase_5002	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Sync	-1	0
testcase_5003 (2 instances of Mirror Maker with bouncing)	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	-1	1
testcase_5004 (2 instances of Mirror Maker with bouncing)	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	1	1
testcase_5005 (2 instances of Mirror Maker with bouncing)	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	-1	1
testcase_5006 (2 instances of Mirror Maker with bouncing)	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	1	1
Migration Tool					
Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_9001	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	None	Sync	-1	0
testcase_9003 (2 instances of Migration tool with bouncing)	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	-1	1
testcase_9004 (2 instances of Migration tool with bouncing)	No. of topic : 1 No. of partition : 1 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	1	1
testcase_9005 (2 instances of Migration tool with bouncing)	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	-1	1
testcase_9006 (2 instances of Migration tool with bouncing)	No. of topic : 2 No. of partition : 2 Replica factor : 3 Log segment size : 10240	kill -SIGTERM	Async	1	1
Others					

Test Case ID	Test Parameters	Failure	Sync/Async	acks	comp
testcase_9051	No. of topics: 300 No. of partitions: 4 No. of brokers: 8 Replica factor: 3	kill -SIGTERM	Sync	-1	0
testcase_9061 1. Testing "Clean Shutdown" by rolling bouncing brokers	No. of topics: 20 No. of partitions: 2 No. of brokers: 4 Replica factor: 2	kill -SIGTERM	Async	-1	1
testcase_9081 1. Stop one broker long enough (a few min) to make a lot of log segments truncated in that replica. 2. Start that broker again to observe its behaviour in catching up.	No. of topic : 2 No. of partition : 2 Replica factor : 2 Log segment size : 10240	None	Async	-1	1

FAQ

How Do I Run A Quick Sanity Test?

```
The Sanity test shell script will execute the following 2 test cases:
* testcase_0001 (basic test without Broker failure)
* testcase_1 (basic test with Leader failure)
```

```
In <kafka_home>/system_test
$ ./run_sanity.sh
```

How Do I Run A Full Regression Test?

- To execute System Test:

```
<kafka_home>/system_test/ $ python -u -B system_test_runner.py 2>&1 | tee system_test_output_`date +%s`.log

-u : python interpreter argument for unbuffering
-B : python interpreter argument not to generate binary file
```

- Notes
 1. A template for a full regression test with all testcases is provided as system_test/testcase_to_run_all.json. Please copy this file into testcase_to_run.json to execute all test cases.
 2. Otherwise, you may edit system_test/testcase_to_run.json to add / remove test cases to run
 3. Edit system_test/logging.conf to turn ON/OFF System Test debug messages (NOT Kafka code log4j messages)
 4. If you are running the System Test in your local box, there is no need to make any changes to the cluster_config.json
 5. You may change any properties' values inside <xxxx_testsuite>/testcase_xxxx/testcase_xxxx_properties.json to see different behavior. (eg. Changing "bounce_broker": "false" => "true" OR "replica_factor": "3" => "2", etc)