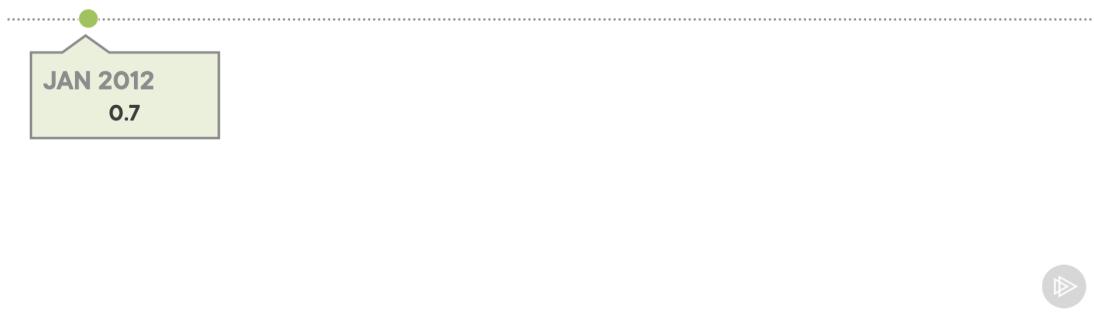
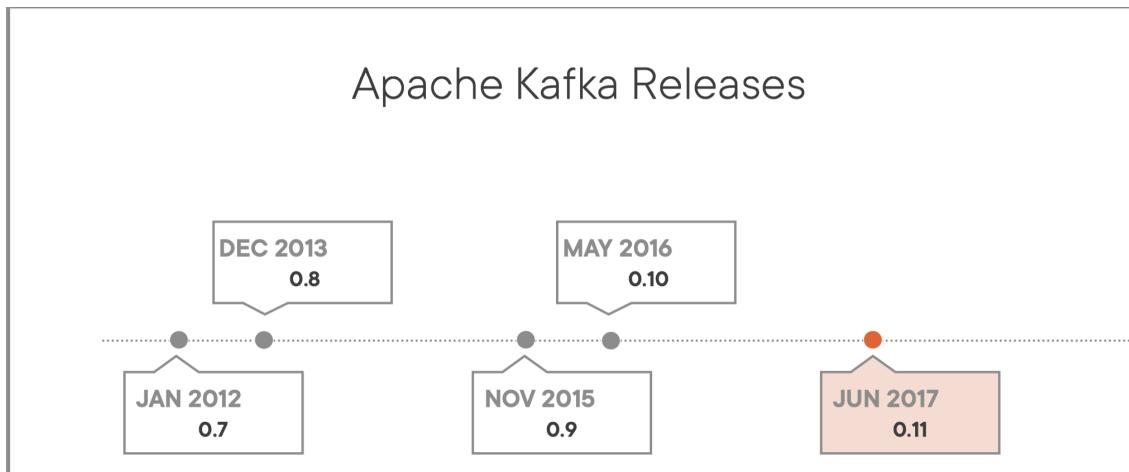
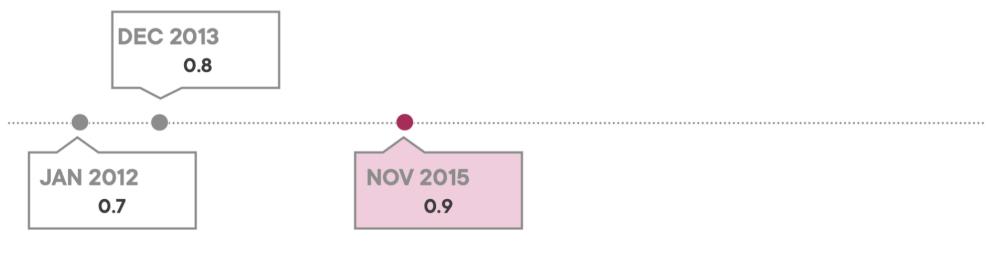


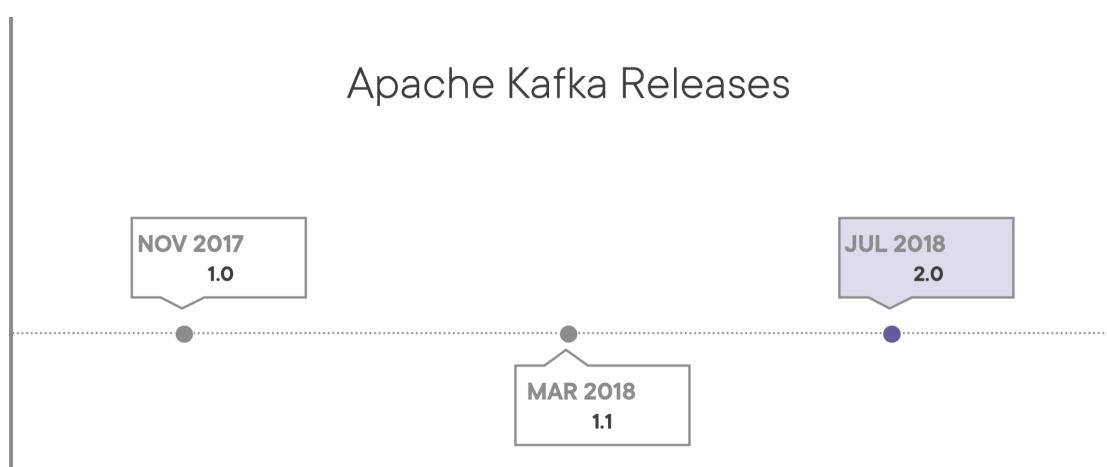
Apache Kafka Releases



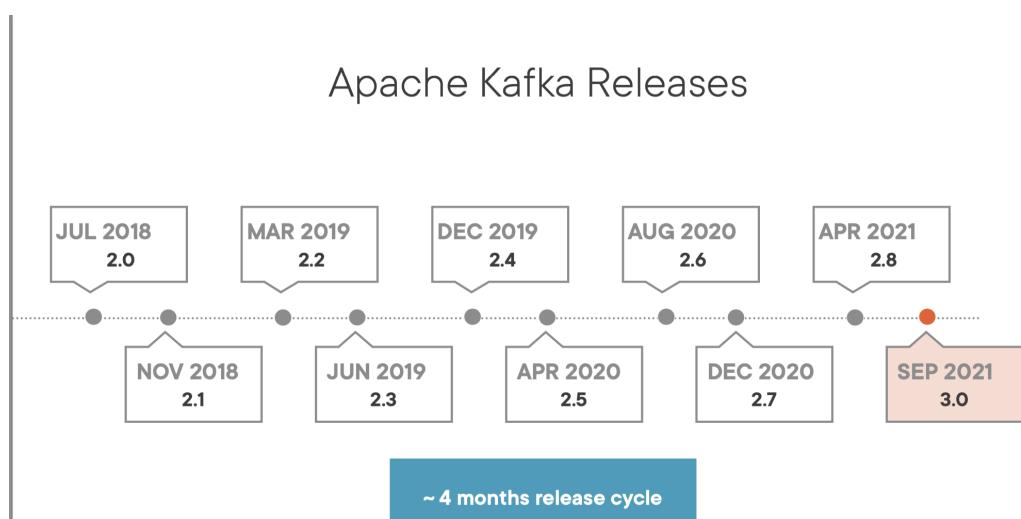
Apache Kafka Releases



Apache Kafka Releases



Apache Kafka Releases



KIP – Kafka Improvement Proposal

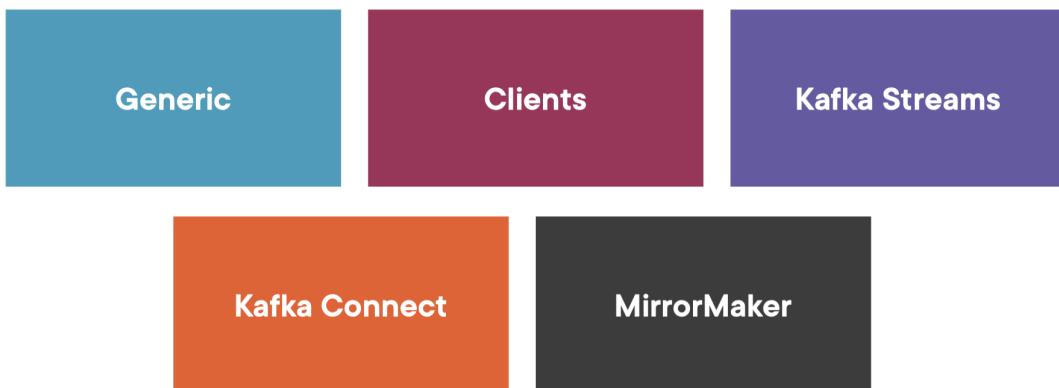
A wiki page containing all the technical details and motivation related to a change

bit.ly/kip-kafka

The diagram shows four white icons on a teal background: a rectangle, a series of dots, a square, and an oval.

<https://cwiki.apache.org/confluence/display/KAFKA/Kafka+Improvement+Proposals>
<https://cwiki.apache.org/confluence/display/KAFKA/KIP-866+ZooKeeper+to+KRaft+Migration>

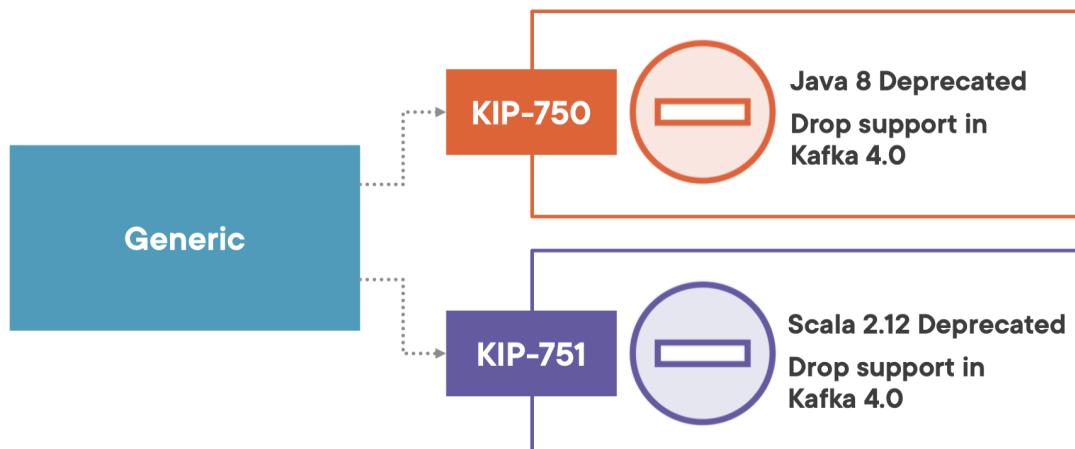
Kafka Improvement Proposals



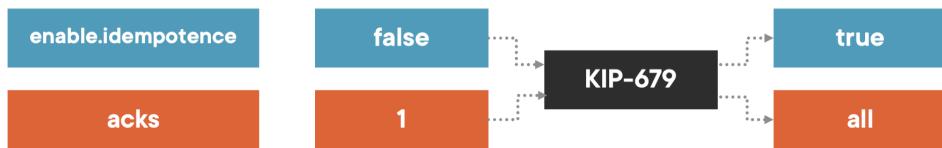
https://downloads.apache.org/kafka/3.0.0/RELEASE_NOTES.html



Generic KIPs



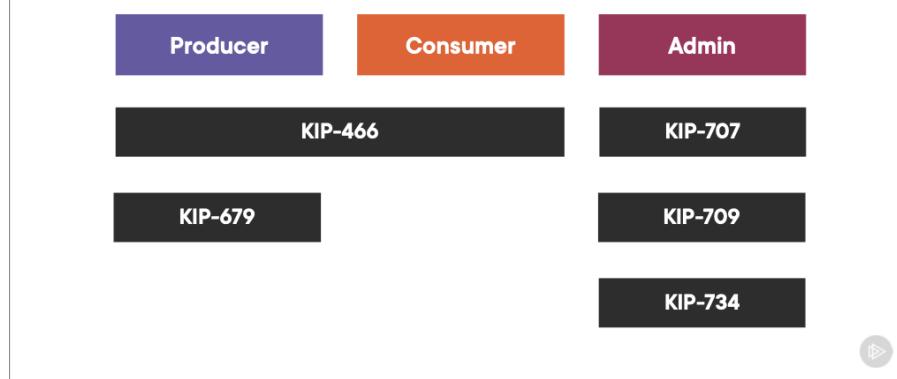
KIP-679



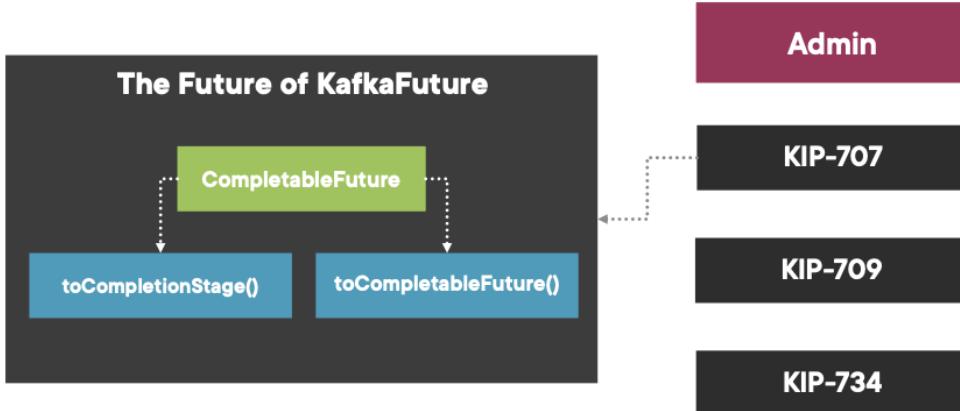
<https://cwiki.apache.org/confluence/display/KAFKA/KIP-679%3A+Producer+will+enable+the+strongest+delivery+guarantee+by+default>



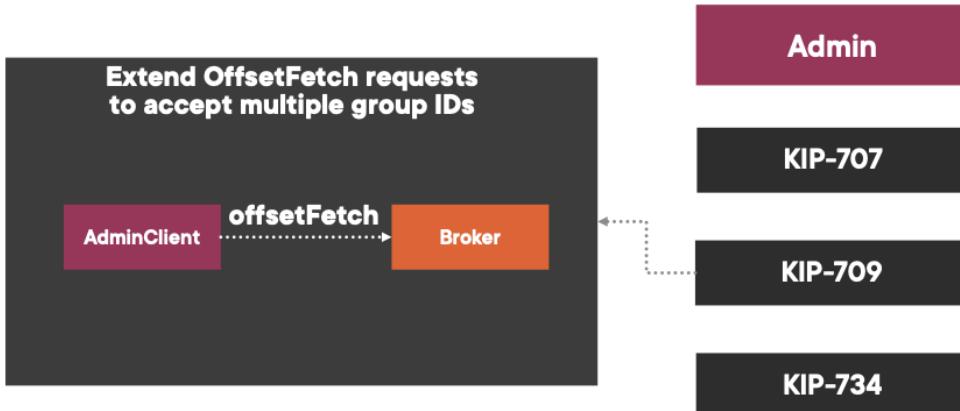
Clients KIPs



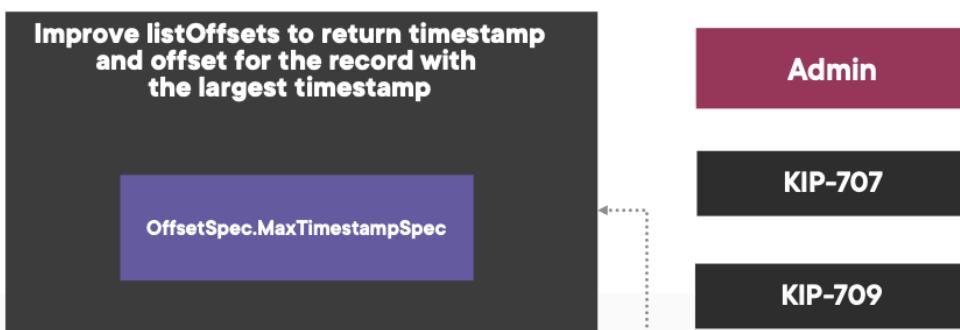
Admin Client KIPs



Admin Client KIPs



Admin Client KIPs



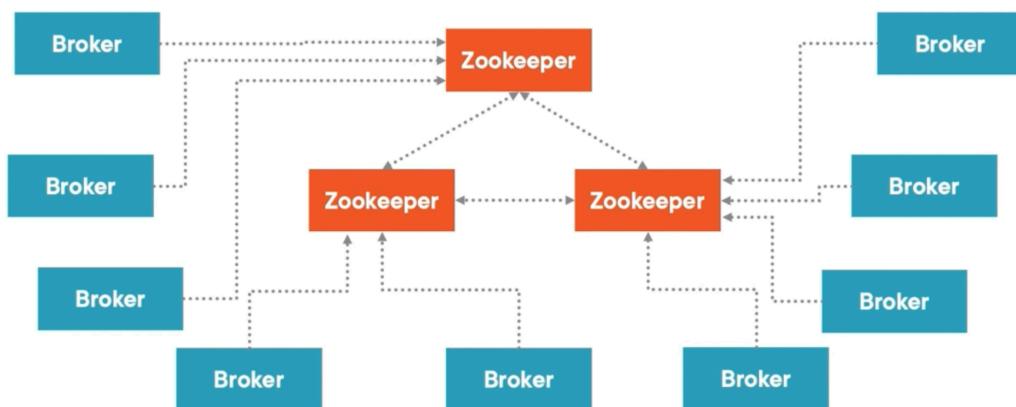
Goto: **kafka-session-all/kafka-3.0-kraft**

And execute following commands in different terminal:

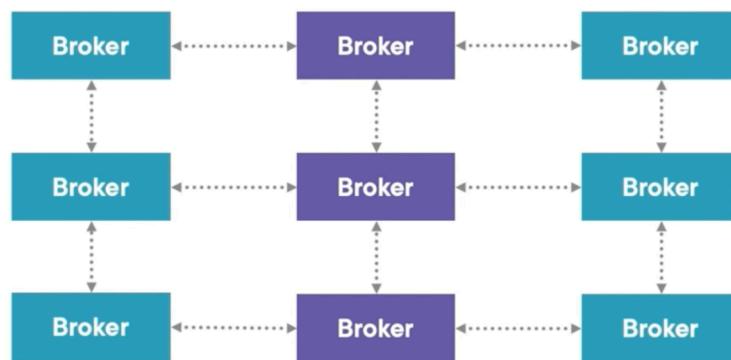
1. `./bin/zookeeper-server-start.sh config/zookeeper.properties`

2. `./bin/kafka-server-start.sh config/server.properties`

Before KRaft



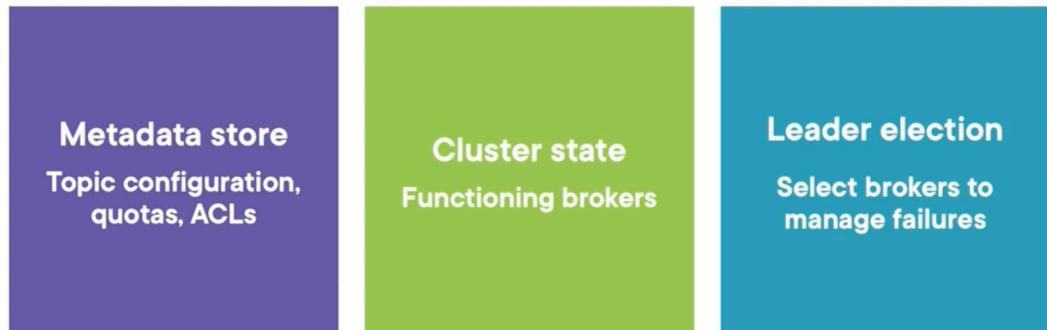
After KRaft



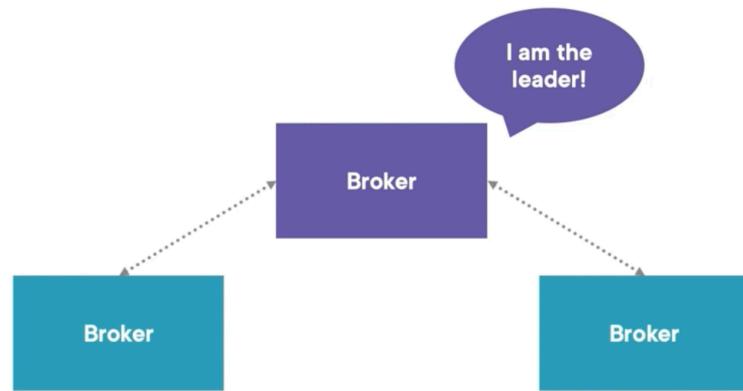
Zookeeper Removal



Zookeeper Role



Leader Election



Distributed Consensus

Ensures consensus of data among nodes in a distributed system or reaches an agreement on a proposal

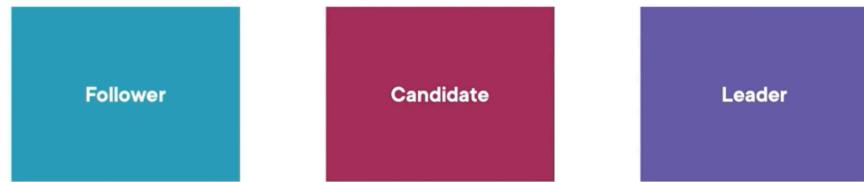
Distributed Consensus



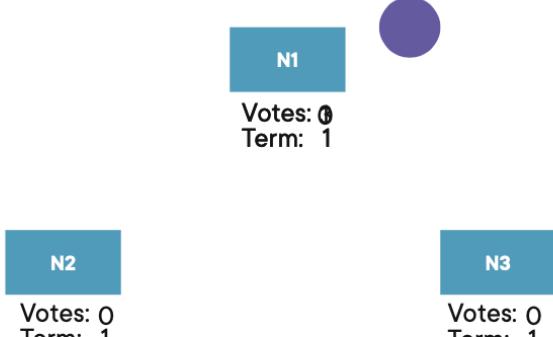
Paxos vs. Raft



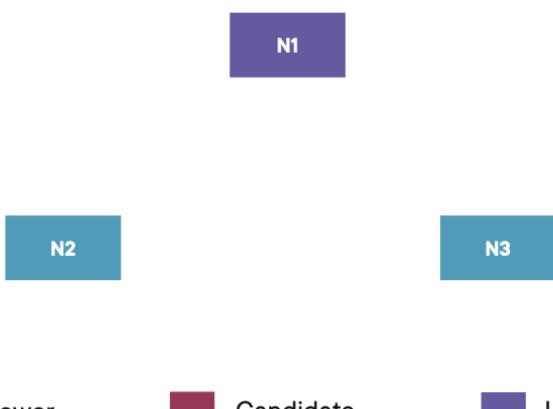
Raft Leader Election



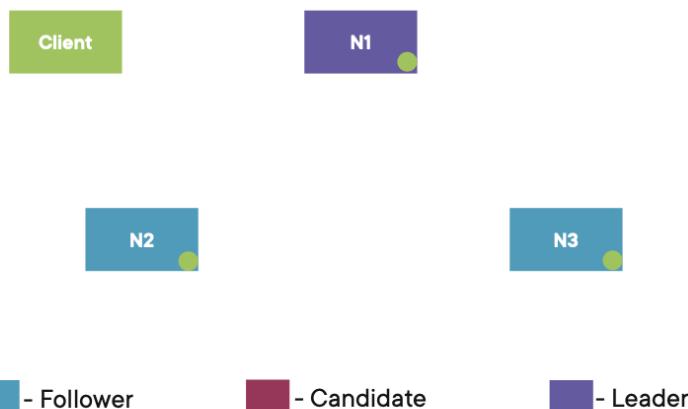
Raft Leader Election



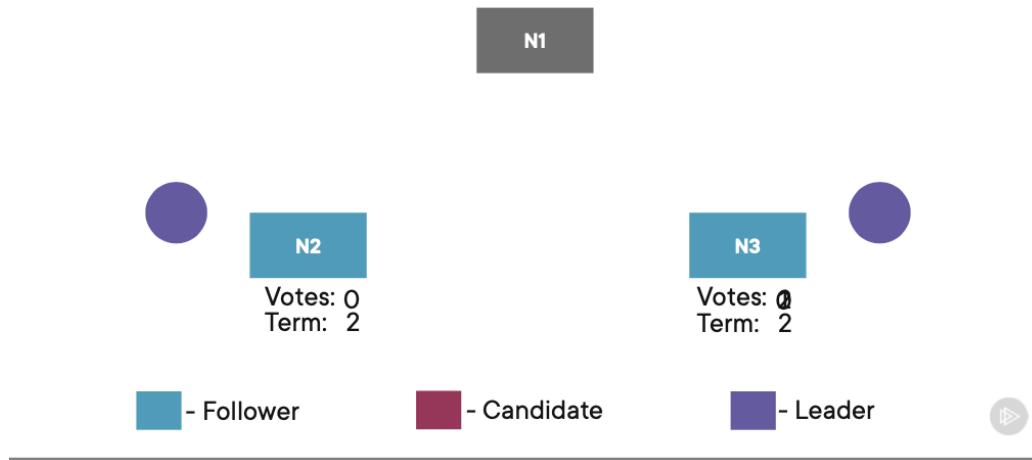
Raft Leader Election



Raft Leader Election



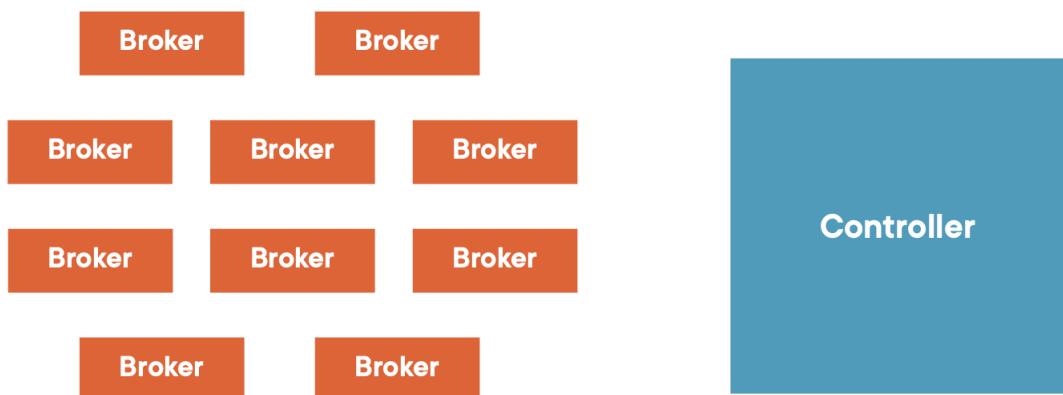
Raft Leader Election



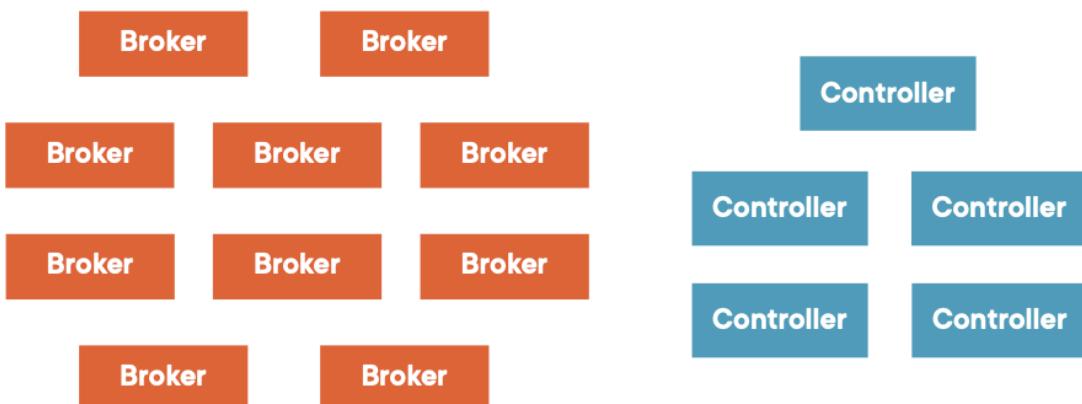
KRaft Mode



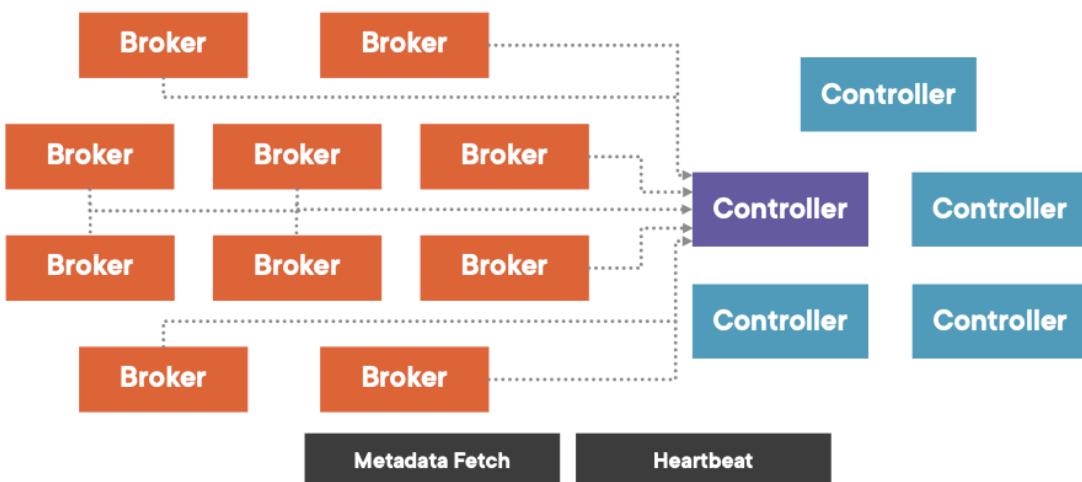
KRaft Mode



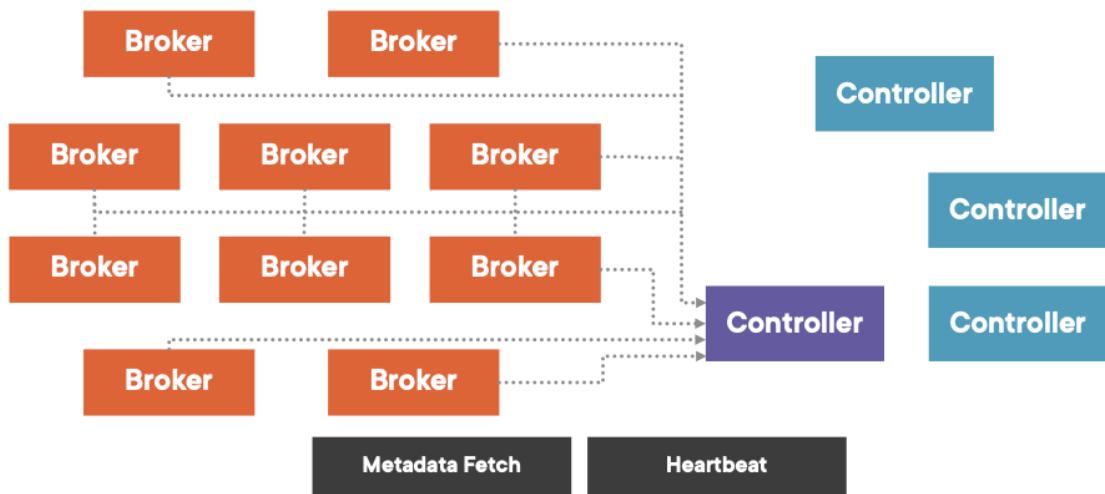
KRaft Mode



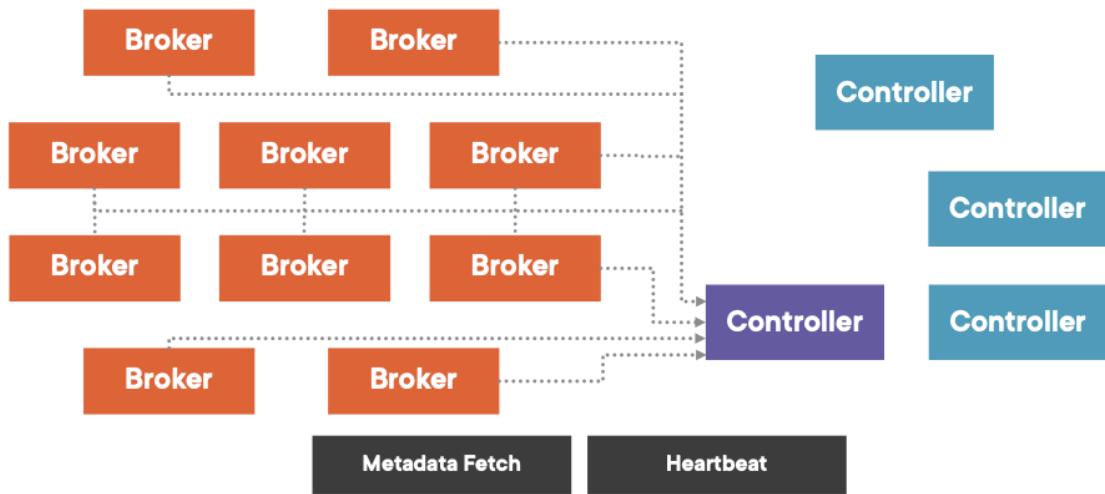
KRaft Mode



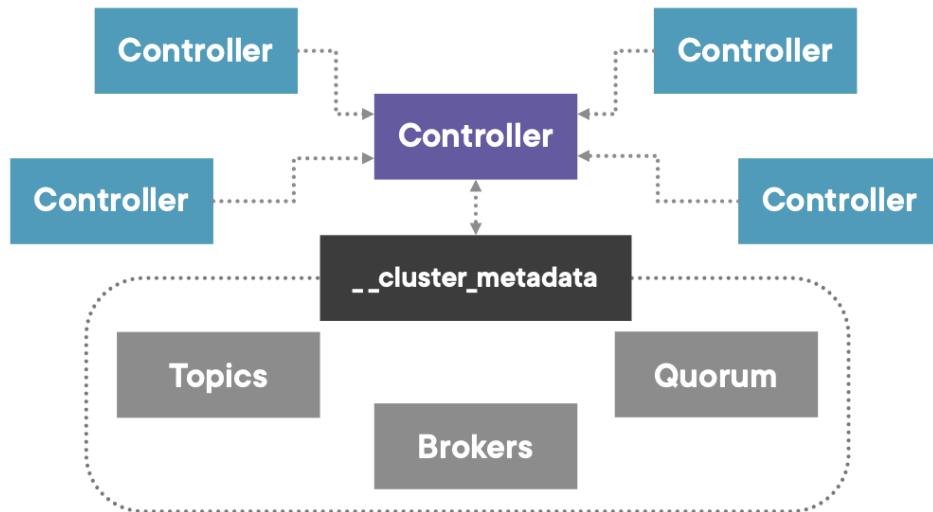
KRaft Mode



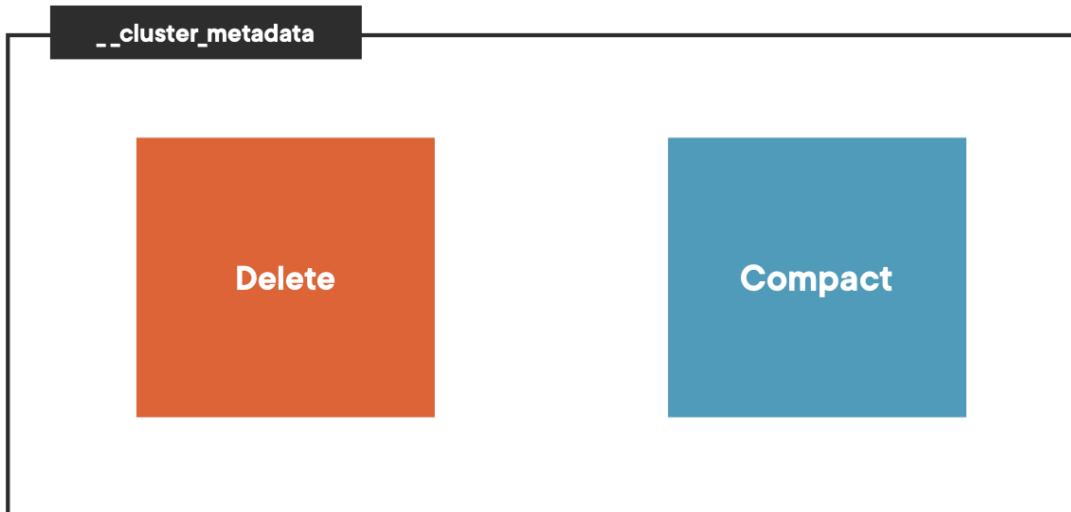
KRaft Mode



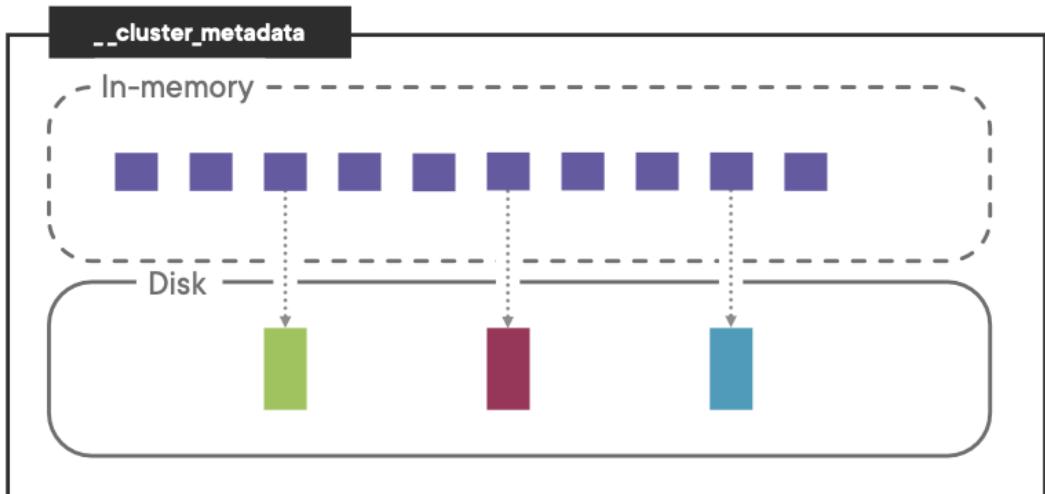
Cluster Metadata



Clean-up Policy



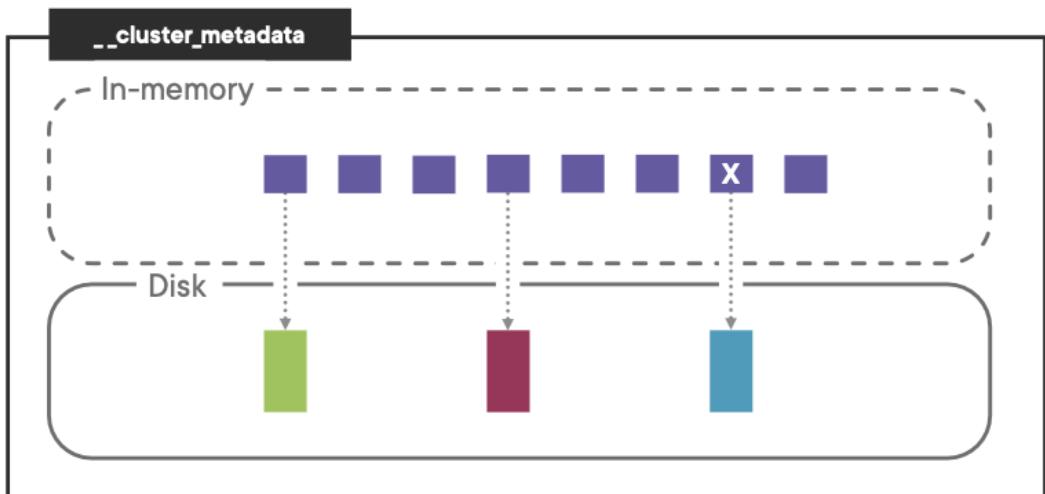
Snapshot



`metadata.snapshot.min.changed_records.ratio`

`metadata.log.max.record.bytes.between.snapshots`

Snapshot

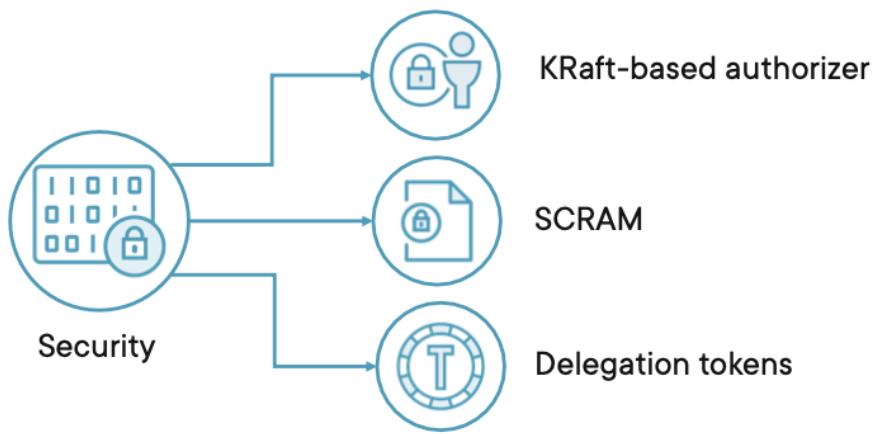


`metadata.start.offset.lag.time.max.ms`

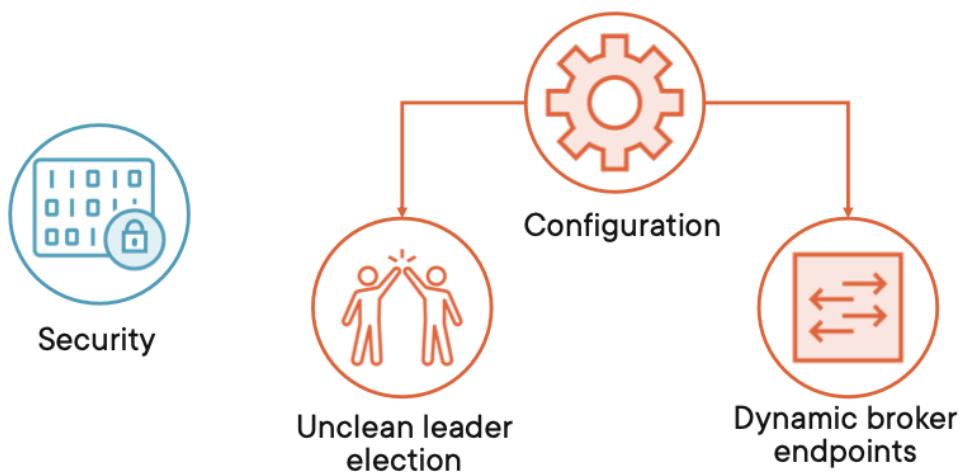
Broker States



KIP-500: Zookeeper Removal



KIP-500: Zookeeper Removal



KIP-500: Zookeeper Removal



Security

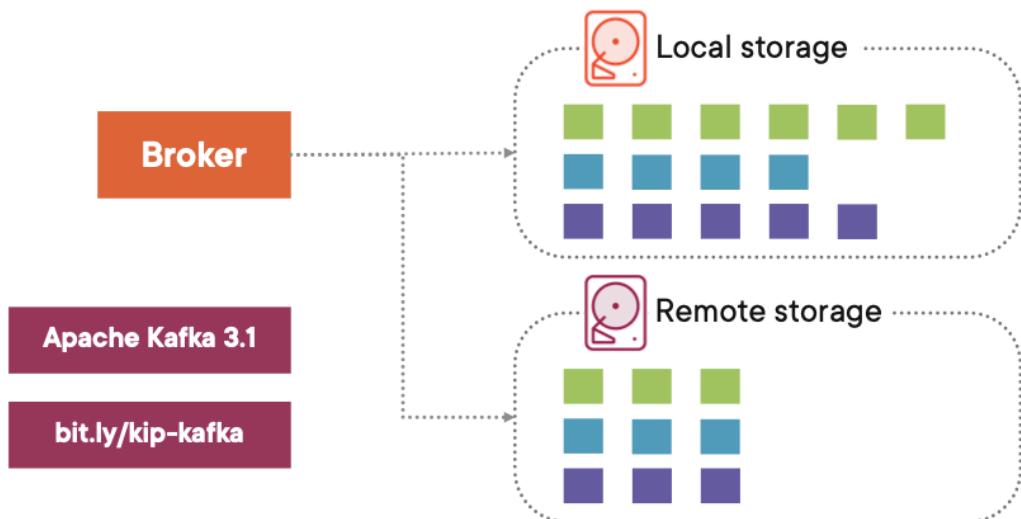


Configuration



JBOD support

KIP-405: Kafka Tiered Storage



EXPLORER

OPEN EDITORS

M3

> clients

< kafka_2.13-3.0.0

> bin

< config

< kraft

broker-1.properties

broker-2.properties

broker-3.properties

controller-1.properties

controller-2.properties

controller-3.properties

README.md

server.properties

connect-console-sink.prop...

connect-console-source.pr...

connect-distributed.propert...

OUTLINE

MAVEN

server.properties X

kafka_2.13-3.0.0 > config > kraft > server.properties

```
65 socket.receive.buffer.bytes=102400
66
67 # The maximum size of a request that the socket server will accept (p
68 socket.request.max.bytes=104857600
69
70
71 ##### Log Basics #####
72
73 # A comma separated list of directories under which to store log file
74 log.dirs=/tmp/kraft-combined-logs
75
76 # The default num
77 # parallelism for
78 # the brokers.
79 num.partitions=1
80
81 # The number of t
82 # This value is r
83 num.recovery.thre
84
85 ##### Internal Topic Settin...
```

Node IDs
Controllers: 1, 2, 3
Brokers: 4, 5, 6

EXPLORER

OPEN EDITORS

M3

> clients

< kafka_2.13-3.0.0

> bin

< config

< kraft

broker-1.properties

broker-2.properties

broker-3.properties

controller-1.properties

controller-2.properties

controller-3.properties

README.md

server.properties

connect-console-sink.prop...

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OUTLINE

MAVEN

server.properties X

kafka_2.13-3.0.0 > config > kraft > server.properties

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78 # the brokers.
79 num.partitions=1
80
81 # The number of t
82 # This value is r
83 num.recovery.thre
84
85 ##### Internal Topic Settin...
```

Bootstrap Servers
- localhost:9072
- localhost:9082
- localhost:9092

EXPLORER

OPEN EDITORS

M3

- > clients
- < kafka_2.13-3.0.0
 - > bin
 - < config
 - < kraft
 - broker-1.properties
 - broker-2.properties
 - broker-3.properties
 - controller-1.properties
 - controller-2.properties
 - controller-3.properties
 - README.md
 - server.properties
- < OUTLINE
- < MAVEN

server.properties X

kafka_2.13-3.0.0 > config > kraft > server.properties

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67 # The maximum size of a request that the socket server will accept (p
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77 # parallelism for
78 # the brokers.
79 num.partitions=1
80
81 # The number of t
82 # This value is r
83 num.recovery.thre
84
85 ##### Internal Topic Settinas #####

```

Controller Quorum Voters

- 1@localhost:9073
- 2@localhost:9083
- 3@localhost:9093

EXPLORER

OPEN EDITORS

M3

- > clients
- < kafka_2.13-3.0.0
 - > bin
 - < config
 - < kraft
 - broker-1.properties
 - broker-2.properties
 - broker-3.properties
 - controller-1.properties
 - controller-2.properties
 - controller-3.properties
 - README.md
 - server.properties
- < OUTLINE
- < MAVEN

server.properties X

kafka_2.13-3.0.0 > config > kraft > server.properties

```

65 socket.receive.buffer.bytes=102400
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75
76 # The default
77 # parallelism
78 # the brokers
79 num.partition
80
81 # The number
82 # This value
83 num.recovery.
84
85 ##### Internal Topic Settinas #####

```

Log Dirs

- /tmp/kraft-controller-1-logs/
- /tmp/kraft-controller-2-logs/
- /tmp/kraft-controller-3-logs/
- /tmp/kraft-broker-4-logs/
- /tmp/kraft-broker-5-logs/
- /tmp/kraft-broker-6-logs/

```
./bin/kafka-storage.sh random-uuid
mGKlutQPQdWW6OyXS23czA
```



```
TERMINAL bash - kafka_2.13-3.0.0 + - X X

kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh random-uuid
X-NUR9-zTZmIfC9epRb5Ig
kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh format -t X-NUR9-zTZmIfC9epRb5Ig -c ./config/kraft/controller-1.properties
Formatting /tmp/kraft-controller-1-logs
kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh format -t X-NUR9-zTZmIfC9epRb5Ig -c ./config/kraft/controller-2.properties
Formatting /tmp/kraft-controller-2-logs
kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh format -t X-NUR9-zTZmIfC9epRb5Ig -c ./config/kraft/controller-3.properties
Formatting /tmp/kraft-controller-3-logs
kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh format -t X-NUR9-zTZmIfC9epRb5Ig -c ./config/kraft/broker-1.properties
Formatting /tmp/kraft-broker-4-logs
kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh format -t X-NUR9-zTZmIfC9epRb5Ig -c ./config/kraft/broker-2.properties
Formatting /tmp/kraft-broker-5-logs
kafka_2.13-3.0.0 $ ./bin/kafka-storage.sh format -t X-NUR9-zTZmIfC9epRb5Ig -c ./config/kraft/broker-3.properties
Formatting /tmp/kraft-broker-6-logs
kafka_2.13-3.0.0 $
```

./bin/kafka-storage.sh format -t mGKlutQPQdWW6OyXS23czA -c
./config/kraft/controller-1.properties

./bin/kafka-storage.sh format -t mGKlutQPQdWW6OyXS23czA -c
./config/kraft/controller-2.properties

./bin/kafka-storage.sh format -t mGKlutQPQdWW6OyXS23czA -c
./config/kraft/controller-3.properties

./bin/kafka-storage.sh format -t mGKlutQPQdWW6OyXS23czA -c
./config/kraft/broker-1.properties

./bin/kafka-storage.sh format -t mGKlutQPQdWW6OyXS23czA -c
./config/kraft/broker-2.properties

./bin/kafka-storage.sh format -t mGKlutQPQdWW6OyXS23czA -c
./config/kraft/broker-3.properties

=====

./bin/kafka-server-start.sh ./config/kraft/
controller-1.properties

./bin/kafka-server-start.sh ./config/kraft/
controller-2.properties

./bin/kafka-server-start.sh ./config/kraft/
controller-3.properties

```
./bin/kafka-metadata-shell.sh --snapshot  
/tmp/kraft-controller-1-logs/_cluster_metadata-0/00000000000000000000000000000000.log
```

TERMINAL

```
kafka_2.13-3.0.0 $ ./bin/kafka-metadata-shell.sh --snapshot /tmp/kraft-controller-1-logs/_cluster_metadata-0/00000000000000000000000000000000.log  
Loading...  
Starting...  
[ Kafka Metadata Shell ]  
>> ls  
local metadataQuorum  
>> ls /metadataQuorum/  
leader  
>> cat /metadataQuorum/leader  
LeaderAndEpoch(leaderId=OptionalInt[1], epoch=7)  
>> █
```

```
./bin/kafka-server-start.sh ./config/kraft/broker-1.properties
```

```
./bin/kafka-server-start.sh ./config/kraft/broker-2.properties
```

```
./bin/kafka-server-start.sh ./config/kraft/broker-3.properties
```

TERMINAL

```
kafka_2.13-3.0.0 $ ./bin/kafka-metadata-shell.sh --snapshot /tmp/kraft-controller-1-logs/_cluster_metadata-0/00000000000000000000000000000000.log  
Loading...  
Starting...  
[ Kafka Metadata Shell ]  
>> ls  
local metadataQuorum  
>> ls /metadataQuorum/  
leader  
>> cat /metadataQuorum/leader  
LeaderAndEpoch(leaderId=OptionalInt[1], epoch=7)  
>> ls  
local metadataQuorum  
>> exit  
kafka_2.13-3.0.0 $ █
```

TERMINAL

A screenshot of a terminal window titled "java - kafka_2.13-3.0.0". The window contains the following text:

```
kafka_2.13-3.0.0 $ ./bin/kafka-metadata-shell.sh --snapshot /tmp/kraft-controller-1-logs/_cluster_metadata-0/00000000000000000000.log
Loading...
Starting...
[ Kafka Metadata Shell ]
>> ls
brokers local metadataQuorum
>> █
```

The command "ls" has been highlighted with a red rectangle.

TERMINAL

A screenshot of a terminal window titled "java - kafka_2.13-3.0.0". The window contains the following text:

```
kafka_2.13-3.0.0 $ ./bin/kafka-metadata-shell.sh --snapshot /tmp/kraft-controller-1-logs/_cluster_metadata-0/00000000000000000000.log
Loading...
Starting...
[ Kafka Metadata Shell ]
>> ls
brokers local metadataQuorum
>> ls /brokers/
4 5 6
>> ls /brokers/4
isFenced registration
>> cat /brokers/4/registration
RegisterBrokerRecord(brokerId=4, incarnationId=0qX08yxqR42yAZT2cYbdrA, brokerEpoch=0, endPoints=[BrokerEndpoint(name='PLAINTEXT', host='localhost', port=9072, securityProtocol=0)], features=[], rack=null, fenced=true)
>> █
```



TERMINAL

java - kafka_2.13-3.0.0 + ⌂ ⏺ ⏹ ⏸ ⏹ ⏸

```
kafka_2.13-3.0.0 $ ./bin/kafka-metadata-shell.sh --snapshot /tmp/kraft-controller-1-logs/_cluster_metadata-0/000000000000000000000000.log
Loading...
Starting...
[Kafka Metadata Shell]
>> ls
brokers configs local metadataQuorum topicIds topics
>> ls /topics/
__consumer_offsets lists
>> ls /topics/lists
0 id name
>> ls /topics/lists/0
data
>> cat /topics/lists/0/data
{
  "partitionId": 0,
  "topicId": "vq52z71oRVC0XfdhQuhYPg",
  "replicas": [ 5 ],
  "isr": [ 5 ],
  "removingReplicas": [ ],
  "addingReplicas": [ ],
  "leader": 5,
  "leaderEpoch": 0,
  "partitionEpoch": 0
}
>> █
```