Kafka 课程培训：工具简介

目录

1. topic管理：kafka-topics.sh

- topic是kafka的消息存储的基本单位。
- topic是生产和消费业务的基本载体。
- ./kafka-topic.sh --help

```
root@ecs-a3f7:/work/kafka_2.12-2.3.0/bin# ./kafka-topics.sh --help
This tool helps to create, delete, describe, or change a topic.
Option                                   Description
------                                   -----------
--alter                                  Alter the number of partitions,
                                           replica assignment, and/or
                                           configuration for the topic.
--at-min-isr-partitions                  if set when describing topics, only
                                           show partitions whose isr count is
                                           equal to the configured minimum. Not
                                           supported with the --zookeeper
                                           option.
--bootstrap-server <String: server to    REQUIRED: The Kafka server to connect
  connect to>                              to. In case of providing this, a
                                           direct Zookeeper connection won't be
                                           required.
--command-config <String: command        Property file containing configs to be
  config property file>                    passed to Admin Client. This is used
                                           only with --bootstrap-server option
                                           for describing and altering broker
                                           configs.
--config <String: name=value>            A topic configuration override for the
                                           topic being created or altered.The
                                           following is a list of valid
                                           configurations:
                                                cleanup.policy
                                                compression.type
                                                delete.retention.ms
                                                file.delete.delay.ms
                                                flush.messages
                                                flush.ms
                                                follower.replication.throttled.
                                           replicas
                                                index.interval.bytes
                                                leader.replication.throttled.replicas
                                                max.compaction.lag.ms
                                                max.message.bytes
                                                message.downconversion.enable
                                                message.format.version
                                                message.timestamp.difference.max.ms
                                                message.timestamp.type
                                                min.cleanable.dirty.ratio
                                                min.compaction.lag.ms
                                                min.insync.replicas
                                                preallocate
                                                retention.bytes
                                                retention.ms
                                                segment.bytes
                                                segment.index.bytes
                                                segment.jitter.ms
                                                segment.ms
                                                unclean.leader.election.enable
                                           See the Kafka documentation for full
                                           details on the topic configs.It is
                                           supported only in combination with --
                                           create if --bootstrap-server option
                                           is used.
--create                                 Create a new topic.
--delete                                 Delete a topic
--delete-config <String: name>           A topic configuration override to be
                                           removed for an existing topic (see
                                           the list of configurations under the
                                           --config option). Not supported with
                                           the --bootstrap-server option.
--describe                               List details for the given topics.
--disable-rack-aware                     Disable rack aware replica assignment
--exclude-internal                       exclude internal topics when running
                                           list or describe command. The
                                           internal topics will be listed by
                                           default
--force                                  Suppress console prompts
--help                                   Print usage information.
--if-exists                              if set when altering or deleting or
                                           describing topics, the action will
                                           only execute if the topic exists.
                                           Not supported with the --bootstrap-
                                           server option.
--if-not-exists                          if set when creating topics, the
                                           action will only execute if the
                                           topic does not already exist. Not
                                           supported with the --bootstrap-
                                           server option.
--list                                   List all available topics.
--partitions <Integer: # of partitions>  The number of partitions for the topic
                                           being created or altered (WARNING:
                                           If partitions are increased for a
                                           topic that has a key, the partition
                                           logic or ordering of the messages
                                           will be affected
--replica-assignment <String:            A list of manual partition-to-broker
  broker_id_for_part1_replica1 :           assignments for the topic being
  broker_id_for_part1_replica2 ,           created or altered.
  broker_id_for_part2_replica1 :
  broker_id_for_part2_replica2 , ...>
--replication-factor <Integer:           The replication factor for each
  replication factor>                      partition in the topic being created.
--topic <String: topic>                  The topic to create, alter, describe
                                           or delete. It also accepts a regular
                                           expression, except for --create
                                           option. Put topic name in double
                                           quotes and use the '\' prefix to
                                           escape regular expression symbols; e.
                                           g. "test\.topic".
--topics-with-overrides                  if set when describing topics, only
                                           show topics that have overridden
                                           configs
--unavailable-partitions                 if set when describing topics, only
                                           show partitions whose leader is not
                                           available
--under-min-isr-partitions               if set when describing topics, only
                                           show partitions whose isr count is
                                           less than the configured minimum.
                                           Not supported with the --zookeeper
                                           option.
--under-replicated-partitions            if set when describing topics, only
                                           show under replicated partitions
--version                                Display Kafka version.
--zookeeper <String: hosts>              DEPRECATED, The connection string for
                                           the zookeeper connection in the form
                                           host:port. Multiple hosts can be
                                           given to allow fail-over.
```

1. topic管理：kafka-topics.sh

- bootstrap-server：kafka的链接地址
- zookeeper：zookeeper链接地址
- create：创建topic的指令
- delete：删除topic的指令
- list：查询topic列表的指令
- describe：查询topic详情的指令
- topic：topic的名称
- partitions：创建topic时指定分区数
- replication-factor：创建topic时指定副本数
- config：创建topic时指定topic的配置

1. topic管理：kafka-topics.sh

- 查询topic列表：

bin/kafka-topics.sh --boostrap-server 127.0.0.1:9091 –list

- 查询topic详情（分区，副本，leader信息）：

bin/kafka-topics.sh --bootstrap-server 127.0.0.1:9091 --topic topicName –describe

- 创建topic：

bin/kafka-topics.sh --create --bootstrap-server 127.0.0.1:9091 --topic topicName --partitions 3 --replication-factor 2

- 删除topic：

bin/kafka-topics.sh --delete --bootstrap-server 127.0.0.1:9091 --topic topicName

2. 生产测试：kafka-console-producer.sh

- 脚本用于向指定的kafka集群进行消息生产

- ./kafka-console-producer.sh --help

2. 生产测试：kafka-console-producer.sh

```
root@ecs-a3f7:/work/kafka_2.12-2.3.0/bin# ./kafka-console-producer.sh
This tool helps to read data from standard input and publish it to Kafka.
Option                                   Description
------                                   -----------
--batch-size <Integer: size>             Number of messages to send in a single
                                           batch if they are not being sent
                                           synchronously. (default: 200)
--broker-list <String: broker-list>      REQUIRED: The broker list string in
                                           the form HOST1:PORT1,HOST2:PORT2.
--compression-codec [String:             The compression codec: either 'none',
  compression-codec]                       'gzip', 'snappy', 'lz4', or 'zstd'.
                                           If specified without value, then it
                                           defaults to 'gzip'
--help                                   Print usage information.
--line-reader <String: reader_class>     The class name of the class to use for
                                           reading lines from standard in. By
                                           default each line is read as a
                                           separate message. (default: kafka.
                                           tools.
                                           ConsoleProducer$LineMessageReader)
--max-block-ms <Long: max block on       The max time that the producer will
  send>                                    block for during a send request
                                           (default: 60000)
--max-memory-bytes <Long: total memory   The total memory used by the producer
  in bytes>                                to buffer records waiting to be sent
                                           to the server. (default: 33554432)
--max-partition-memory-bytes <Long:      The buffer size allocated for a
  memory in bytes per partition>           partition. When records are received
                                           which are smaller than this size the
                                           producer will attempt to
                                           optimistically group them together
                                           until this size is reached.
                                           (default: 16384)
--message-send-max-retries <Integer>     Brokers can fail receiving the message
                                           for multiple reasons, and being
                                           unavailable transiently is just one
                                           of them. This property specifies the
                                           number of retires before the
                                           producer give up and drop this
                                           message. (default: 3)
```

```
--metadata-expiry-ms <Long: metadata     The period of time in milliseconds
  expiration interval>                     after which we force a refresh of
                                           metadata even if we haven't seen any
                                           leadership changes. (default: 300000)
--producer-property <String:             A mechanism to pass user-defined
  producer_prop>                           properties in the form key=value to
                                           the producer.
--producer.config <String: config file>  Producer config properties file. Note
                                           that [producer-property] takes
                                           precedence over this config.
--property <String: prop>                A mechanism to pass user-defined
                                           properties in the form key=value to
                                           the message reader. This allows
                                           custom configuration for a user-
                                           defined message reader.
--request-required-acks <String:         The required acks of the producer
  request required acks>                   requests (default: 1)
--request-timeout-ms <Integer: request   The ack timeout of the producer
  timeout ms>                              requests. Value must be non-negative
                                           and non-zero (default: 1500)
--retry-backoff-ms <Integer>             Before each retry, the producer
                                           refreshes the metadata of relevant
                                           topics. Since leader election takes
                                           a bit of time, this property
                                           specifies the amount of time that
                                           the producer waits before refreshing
                                           the metadata. (default: 100)
--socket-buffer-size <Integer: size>     The size of the tcp RECV size.
                                           (default: 102400)
--sync                                   If set message send requests to the
                                           brokers are synchronously, one at a
                                           time as they arrive.
--timeout <Integer: timeout_ms>          If set and the producer is running in
                                           asynchronous mode, this gives the
                                           maximum amount of time a message
                                           will queue awaiting sufficient batch
                                           size. The value is given in ms.
                                           (default: 1000)
--topic <String: topic>                  REQUIRED: The topic id to produce
                                           messages to.
--version                                Display Kafka version.
```

2. 生产测试：kafka-console-producer.sh

- broker-list：kafka链接地址
- message-send-max-retries：消息的最大重试次数
- producer.config：客户端配置文件
- property：客户端自定义配置
- topic：topic名称

2. 生产测试：kafka-console-producer.sh

- 生产消息示例：

bin/kafka-console-producer.sh --broker-list 127.0.0.1:9091 --topic test

3. 消费测试：kafka-console-consumer.sh

- 脚本可以从kafka集群中使用指定的消费组消费指定topic的数据

- ./kafka-console-consumer.sh --help

3. 消费测试：kafka-console-consumer.sh

```
root@ecs-a3f7:/work/kafka_2.12-2.3.0/bin# ./kafka-console-consumer.sh --help
This tool helps to read data from Kafka topics and outputs it to standard output.
Option                                   Description
------                                   -----------
--bootstrap-server <String: server to    REQUIRED: The server(s) to connect to.
  connect to>
--consumer-property <String:             A mechanism to pass user-defined
  consumer_prop>                           properties in the form key=value to
                                           the consumer.
--consumer.config <String: config file>  Consumer config properties file. Note
                                           that [consumer-property] takes
                                           precedence over this config.
--enable-systest-events                  Log lifecycle events of the consumer
                                           in addition to logging consumed
                                           messages. (This is specific for
                                           system tests.)
--formatter <String: class>              The name of a class to use for
                                           formatting kafka messages for
                                           display. (default: kafka.tools.
                                           DefaultMessageFormatter)
--from-beginning                         If the consumer does not already have
                                           an established offset to consume
                                           from, start with the earliest
                                           message present in the log rather
                                           than the latest message.
--group <String: consumer group id>      The consumer group id of the consumer.
--help                                   Print usage information.
--isolation-level <String>               Set to read_committed in order to
                                           filter out transactional messages
                                           which are not committed. Set to
                                           read_uncommittedto read all
                                           messages. (default: read_uncommitted)
--key-deserializer <String:
  deserializer for key>
--max-messages <Integer: num_messages>   The maximum number of messages to
                                           consume before exiting. If not set,
                                           consumption is continual.
--offset <String: consume offset>        The offset id to consume from (a non-
                                           negative number), or 'earliest'
                                           which means from beginning, or
                                           'latest' which means from end
                                           (default: latest)
--partition <Integer: partition>         The partition to consume from.
                                           Consumption starts from the end of
                                           the partition unless '--offset' is
                                           specified.
--property <String: prop>                The properties to initialize the
                                           message formatter. Default
                                           properties include:
                                                print.timestamp=true|false
                                                print.key=true|false
                                                print.value=true|false
                                                key.separator=<key.separator>
                                                line.separator=<line.separator>
                                                key.deserializer=<key.deserializer>
                                                value.deserializer=<value.
                                           deserializer>
                                         Users can also pass in customized
                                           properties for their formatter; more
                                           specifically, users can pass in
                                           properties keyed with 'key.
                                           deserializer.' and 'value.
                                           deserializer.' prefixes to configure
                                           their deserializers.
--skip-message-on-error                  If there is an error when processing a
                                           message, skip it instead of halt.
--timeout-ms <Integer: timeout_ms>       If specified, exit if no message is
                                           available for consumption for the
                                           specified interval.
--topic <String: topic>                  The topic id to consume on.
--value-deserializer <String:
  deserializer for values>
--version                                Display Kafka version.
--whitelist <String: whitelist>          Regular expression specifying
                                           whitelist of topics to include for
                                           consumption.
```

3. 消费测试：kafka-console-consumer.sh

- bootstrap-server：kafka链接地址
- consumer-property：自定义消费配置
- consumer.config：自定义配置文件
- from-beginning：若不存在消费进度，则从头开始消费
- group：消费组
- partition：消费的分区
- topic：消费的topic名称
- whitelist：消费topic的正则表达式

3. 消费测试：kafka-console-consumer.sh

- 消费命令

bin/kafka-console-consumer.sh --bootstrap-server 127.0.0.1:9091 --topic test --group mygroup --from-beginning

4 消费组管理：kafka-consumer-groups.sh

- 用于查询消费组列表和详情，监控消费状态如消费进度、当前消费者、消费者的分区分配等

- kafka-consumer-group.sh --help

4 消费组管理：kafka-consumer-groups.sh

```
root@ecs-a3f7:/work/kafka_2.12-2.3.0/bin# ./kafka-consumer-groups.sh
This tool helps to list all consumer groups, describe a consumer group, delete consumer gr
Option                                  Description
------                                  -----------
--all-groups                            Apply to all consumer groups.
--all-topics                            Consider all topics assigned to a
                                          group in the `reset-offsets` process.
--bootstrap-server <String: server to   REQUIRED: The server(s) to connect to.
  connect to>
--by-duration <String: duration>        Reset offsets to offset by duration
                                          from current timestamp. Format:
                                          'PnDTnHnMnS'
--command-config <String: command       Property file containing configs to be
  config property file>                   passed to Admin Client and Consumer.
--delete                                Pass in groups to delete topic
                                          partition offsets and ownership
                                          information over the entire consumer
                                          group. For instance --group g1 --
                                          group g2
--describe                              Describe consumer group and list
                                          offset lag (number of messages not
                                          yet processed) related to given
                                          group.
--dry-run                               Only show results without executing
                                          changes on Consumer Groups.
                                          Supported operations: reset-offsets.
--execute                               Execute operation. Supported
                                          operations: reset-offsets.
--export                                Export operation execution to a CSV
                                          file. Supported operations: reset-
                                          offsets.
--from-file <String: path to CSV file>  Reset offsets to values defined in CSV
                                          file.
--group <String: consumer group>        The consumer group we wish to act on.
--help                                  Print usage information.
--list                                  List all consumer groups.
--members                               Describe members of the group. This
                                          option may be used with '--describe'
                                          and '--bootstrap-server' options
                                          only.
                                        Example: --bootstrap-server localhost:
                                          9092 --describe --group group1 --
                                          members
--offsets                               Describe the group and list all topic
                                          partitions in the group along with
                                          their offset lag. This is the
                                          default sub-action of and may be
                                          used with '--describe' and '--
                                          bootstrap-server' options only.
                                        Example: --bootstrap-server localhost:
                                          9092 --describe --group group1 --
                                          offsets
--reset-offsets                         Reset offsets of consumer group.
                                          Supports one consumer group at the
                                          time, and instances should be
                                          inactive
                                        Has 2 execution options: --dry-run
                                          (the default) to plan which offsets
                                          to reset, and --execute to update
                                          the offsets. Additionally, the --
                                          export option is used to export the
                                          results to a CSV format.
                                        You must choose one of the following
                                          reset specifications: --to-datetime,
                                          --by-period, --to-earliest, --to-
                                          latest, --shift-by, --from-file, --
                                          to-current.
                                        To define the scope use --all-topics
                                          or --topic. One scope must be
                                          specified unless you use '--from-
                                          file'.
--shift-by <Long: number-of-offsets>    Reset offsets shifting current offset
                                          by 'n', where 'n' can be positive or
                                          negative.
--state                                 Describe the group state. This option
                                          may be used with '--describe' and '--
                                          bootstrap-server' options only.
                                        Example: --bootstrap-server localhost:
                                          9092 --describe --group group1 --
                                          state
--timeout <Long: timeout (ms)>          The timeout that can be set for some
                                          use cases. For example, it can be
                                          used when describing the group to
                                          specify the maximum amount of time
                                          in milliseconds to wait before the
                                          group stabilizes (when the group is
                                          just created, or is going through
                                          some changes). (default: 5000)
--to-current                            Reset offsets to current offset.
--to-datetime <String: datetime>        Reset offsets to offset from datetime.
                                          Format: 'YYYY-MM-DDTHH:mm:SS.sss'
--to-earliest                           Reset offsets to earliest offset.
--to-latest                             Reset offsets to latest offset.
--to-offset <Long: offset>              Reset offsets to a specific offset.
--topic <String: topic>                 The topic whose consumer group
                                          information should be deleted or
                                          topic whose should be included in
                                          the reset offset process. In `reset-
                                          offsets` case, partitions can be
                                          specified using this format: `topic1:
                                          0,1,2`, where 0,1,2 are the
                                          partition to be included in the
                                          process. Reset-offsets also supports
                                          multiple topic inputs.
--verbose                               Provide additional information, if
                                          any, when describing the group. This
                                          option may be used with '--
                                          offsets'/'--members'/'--state' and
                                          '--bootstrap-server' options only.
                                        Example: --bootstrap-server localhost:
                                          9092 --describe --group group1 --
                                          members --verbose
--version                               Display Kafka version.
```

4 消费组管理：kafka-consumer-groups.sh

- bootstrap-server：kafka链接地址
- command-config：自定义客户端配置
- describe：查询消费组详细信息
- group：消费组名称
- list：查询所有消费组名称

4 消费组管理：kafka-consumer-groups.sh

- 查询消费组列表：

bin/kafka-consumer-groups.sh --bootstrap-server 127.0.0.1:9292 --list

- 查询消费组详情：

bin/kafka-consumer-groups.sh --bootstrap-server 127.0.0.1:9292 --describe --group test-grp

5.1 DMS Kafka细粒度监控：实例级别监控

5.2 DMS Kafka细粒度监控：节点级别监控

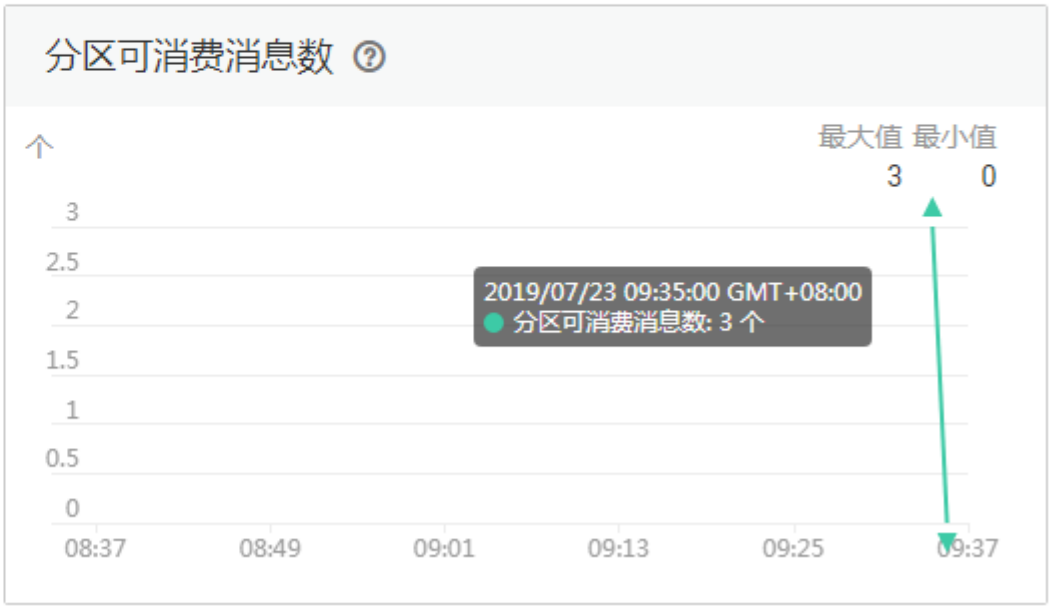
5.3 DMS Kafka细粒度监控：队列级别监控

5.4 DMS Kafka细粒度监控：消费监控

消费组 group　　队列 topic-sasl　　分区 0

近1小时　近3小时　近12小时　自动刷新

更长时间范围监控曲线请在监控视图中点击↖↘进入大图模式查看。



实战演练

- 创建topic： topic-test01
- 使用kafka-console-producer.sh生产消息
- 使用kafka-console-consumer.sh消费消息
- 使用kafka-consumer-groups.sh查看消费详情
- 查看DMS CES监控数据

kafka下载地址：http://mirror.bit.edu.cn/apache/kafka/2.3.0/kafka_2.12-2.3.0.tgz

Thank You