

# KIP-575: build a Kafka-Exporter by Java

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*Kafka runs on JVM, but no JVM exporter in kafka-ecosystems. i wrote one on Spring boot for working and very happy to share.*

## Status

**Current state:** *Under Discussion*

**Discussion thread:** [here](#) *[Change the link from the KIP proposal email archive to your own email thread]*

**JIRA:** [here](#) *[Change the link from KAFKA-1 to your own ticket]*

Please keep the discussion on the mailing list rather than commenting on the wiki (wiki discussions get unwieldy fast).

## Motivation

*kafka is an excellent MQ/Data Pipeline running on JVM, but no exporters JVMly. for a better future of Kafka-Ecosystems the Apache needs a formal exporter like <https://github.com/apache/rocketmq-exporter>. i wrote one for working, and hope to give to Apache. there are a lot of metric in JMX, it can be configed in the exporter-config.*

## Public Interfaces

### How to config an Exporter?

#### common config

```
server:
  port: 5650
spring:
  application:
    name: kafka-exporter
  profiles:
    active: dev
  http:
    encoding:
      charset: UTF-8
      enabled: true
      force: true
  logging:
    config: classpath:logback.xml

task:
  count: 8
  brokerTopicMetrics:
    cron: 1/15 * * * * ?
  lagMetrics:
    cron: 1/15 * * * * ?
  jvmMetrics:
    cron: 1/15 * * * * ?
  replicaMetrics:
    cron: 1/15 * * * 12 ?
  networkMetrics:
    cron: 1/15 * * * * ?
```

```

logFlushMetrics:
  cron: 1/15 * * * * ?
kafkaControllerMetrics:
  cron: 1/15 * * * 12 ?
kafkaClusterMetrics:
  cron: 1/15 * * * 12 ?
kafka-exporter:
  kafka-versions.0.10.2.0: 1 ## different kafka versions using different api versions
  kafka-versions.0.10.1.1: 1 ## different kafka versions using different api versions
  kafka-versions.1.0.0: 1
  canSendToPaladin: true
  ## allowCollectMetrics and forbidCollectMetricNames for this yml's task config
  allowCollectMetrics.brokerTopicMetrics:
    - kafka.server:type=BrokerTopicMetrics,name=*
    - kafka.server:type=BrokerTopicMetrics,name=*,topic=*
  forbidCollectMetricNames.brokerTopicMetrics:
    - FetchMessageConversionsPerSec
  allowCollectMetrics.jvmMetrics:
    - java.lang:type=GarbageCollector,name=*
    - java.lang:type=Threading
  forbidCollectMetricNames.jvmMetrics:
    - Code Cache
  allowCollectMetrics.replicaMetrics:
    - kafka.server:type=ReplicaManager,name=*
  forbidCollectMetricNames.replicaMetrics:
    - aa
  allowCollectMetrics.networkMetrics:
    - kafka.network:type=RequestMetrics,name=*,request=*
    - kafka.network:type=RequestMetrics,name=*,request=*,version=* # for 2.0.0
    - kafka.network:type=SocketServer,name=*
    - kafka.network:type=RequestChannel,name=*
    - kafka.server:type=KafkaRequestHandlerPool,name=*
  forbidCollectMetricNames.networkMetrics:
    - MessageConversionsTimeMs # normally , use metric name
    - TemporaryMemoryBytes
    - MessageConversionsTimeMs
    - ThrottleTimeMs
    - TotalTimeMs
    - LocalTimeMs
    - RemoteTimeMs
    - RequestBytes
    - ResponseQueueTimeMs
    - ResponseSendTimeMs
  forbidCollectMetricNames.RequestMetrics:
    - AlterConfigs
    - AlterReplicaLogDirs
    - ApiVersions
    - ControlledShutdown
    - CreateAcls
    - CreateDelegationToken
    - DeleteAcls
    - DeleteRecords
    - DescribeAcls
    - DescribeConfigs
    - DescribeDelegationToken
    - DescribeLogDirs
    - EndTxn
    - ExpireDelegationToken
    - InitProducerId
    - OffsetForLeaderEpoch
    - RenewDelegationToken
    - SaslAuthenticate
    - SaslHandshake
    - StopReplica
    - TxnOffsetCommit
    - WriteTxnMarkers
    - AddOffsetsToTxn
  allowCollectMetrics.logFlushMetrics:
    - kafka.log:type=LogFlushStats,name=LogFlushRateAndTimeMs
    - kafka.log:type=LogCleanerManager,name=*
  forbidCollectMetricNames.logFlushMetrics:

```

```
- aa
allowCollectMetrics.kafkaControllerMetrics:
- kafka.controller:type=KafkaController,name=*
forbidCollectMetricNames.kafkaControllerMetrics:
- aa
allowCollectMetrics.kafkaClusterMetrics:
- kafka.cluster:type=Partition,name=*,topic=*,partition=*
forbidCollectMetricNames.kafkaClusterMetrics:
- aa
jmx-excludes-metrics.brokerTopicMetrics:
- aa
jmx-excludes-attrs.BrokerTopicMetrics:
- aa
jmx-excludes-attrs-global:
- EventType
- RateUnit
- LatencyUnit
- 50thPercentile
- 75thPercentile
- 98thPercentile
- LastGcInfo
- MemoryPoolNames
- ObjectName
- Valid
- Name
- ThreadAllocatedMemoryEnabled
- ThreadAllocatedMemorySupported
- ThreadContentionMonitoringEnabled
- AllThreadIds
- ThreadCpuTimeSupported
- ThreadCpuTimeEnabled
- ThreadContentionMonitoringSupported
- CurrentThreadCpuTimeSupported
- ObjectMonitorUsageSupported
- SynchronizerUsageSupported
```

**kafka clusters' you want to monitor**

```

kafka-exporter:
  zookeepers:
    - cluster-name: cluster-name-of-your-kafka-brokers ##cluster name
      zk-ip-and-port: 127.0.0.1:2181,127.0.0.2:2181 ## zookeeper addresses
      zk-kafka-path: /kafka ## zookeeper namespace
      excludes-topics.BrokerTopicMetrics:
        - aaa
        - bbb
        - beexiao(.*)
      jmx-excludes-metrics.BrokerTopicMetrics:
        - aa
        - bb
      jmx-excludes-metrics.RequestMetrics:
        - AlterConfigs
        - AlterReplicaLogDirs
        - ApiVersions
        - ControlledShutdown
        - CreateAcls
        - CreateDelegationToken
        - DeleteAcls
        - DeleteRecords
        - DescribeAcls
        - DescribeConfigs
        - DescribeDelegationToken
        - DescribeLogDirs
        - EndTxn
        - ExpireDelegationToken
        - InitProducerId
        - OffsetForLeaderEpoch
        - RenewDelegationToken
        - SaslAuthenticate
        - SaslHandshake
        - StopReplica
        - TxnOffsetCommit
        - WriteTxnMarkers
        - AddOffsetsToTxn
      jmx-excludes-attrs.BrokerTopicMetrics:
        - EventType
        - RateUnit
      jmx-excludes-attrs.GarbageCollector:
        - LastGcInfo
        - MemoryPoolNames
        - ObjectName
        - Valid
        - Name
      jmx-excludes-attrs.ReplicaManager:
        - EventType
        - RateUnit
      jmx-excludes-attrs.RequestMetrics:
        - EventType
        - RateUnit
        - FifteenMinuteRate
        - FiveMinuteRate
        - 75thPercentile
        - 98thPercentile
      jmx-excludes-attrs.LogFlushRateAndTimeMs:
        - LatencyUnit
        - RateUnit
        - EventType
        - FifteenMinuteRate
        - 50thPercentile
        - 75thPercentile
        - 98thPercentile

```

**metric names for now**

kafka\_BrokerTopicMetrics\_BytesInPerSec\_Count  
kafka\_BrokerTopicMetrics\_BytesInPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_BytesInPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_BytesInPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_BytesInPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_BytesOutPerSec\_Count  
kafka\_BrokerTopicMetrics\_BytesOutPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_BytesOutPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_BytesOutPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_BytesOutPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_BytesRejectedPerSec\_Count  
kafka\_BrokerTopicMetrics\_BytesRejectedPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_BytesRejectedPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_BytesRejectedPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_BytesRejectedPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_FailedFetchRequestsPerSec\_Count  
kafka\_BrokerTopicMetrics\_FailedFetchRequestsPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_FailedFetchRequestsPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_FailedFetchRequestsPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_FailedFetchRequestsPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_FailedProduceRequestsPerSec\_Count  
kafka\_BrokerTopicMetrics\_FailedProduceRequestsPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_FailedProduceRequestsPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_FailedProduceRequestsPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_FailedProduceRequestsPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_MessagesInPerSec\_Count  
kafka\_BrokerTopicMetrics\_MessagesInPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_MessagesInPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_MessagesInPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_MessagesInPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_ProduceMessageConversionsPerSec\_Count  
kafka\_BrokerTopicMetrics\_ProduceMessageConversionsPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_ProduceMessageConversionsPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_ProduceMessageConversionsPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_ProduceMessageConversionsPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesInPerSec\_Count  
kafka\_BrokerTopicMetrics\_ReplicationBytesInPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesInPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesInPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesInPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesOutPerSec\_Count  
kafka\_BrokerTopicMetrics\_ReplicationBytesOutPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesOutPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesOutPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_ReplicationBytesOutPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_TotalFetchRequestsPerSec\_Count  
kafka\_BrokerTopicMetrics\_TotalFetchRequestsPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_TotalFetchRequestsPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_TotalFetchRequestsPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_TotalFetchRequestsPerSec\_OneMinuteRate  
kafka\_BrokerTopicMetrics\_TotalProduceRequestsPerSec\_Count  
kafka\_BrokerTopicMetrics\_TotalProduceRequestsPerSec\_FifteenMinuteRate  
kafka\_BrokerTopicMetrics\_TotalProduceRequestsPerSec\_FiveMinuteRate  
kafka\_BrokerTopicMetrics\_TotalProduceRequestsPerSec\_MeanRate  
kafka\_BrokerTopicMetrics\_TotalProduceRequestsPerSec\_OneMinuteRate  
kafka\_GarbageCollector\_G1\_Old\_Generation\_CollectionCount  
kafka\_GarbageCollector\_G1\_Old\_Generation\_CollectionTime  
kafka\_GarbageCollector\_G1\_Young\_Generation\_CollectionCount  
kafka\_GarbageCollector\_G1\_Young\_Generation\_CollectionTime  
kafka\_KafkaController\_ActiveControllerCount\_Value  
kafka\_KafkaController\_ControllerState\_Value  
kafka\_KafkaController\_GlobalPartitionCount\_Value  
kafka\_KafkaController\_GlobalTopicCount\_Value  
kafka\_KafkaController\_OfflinePartitionsCount\_Value  
kafka\_KafkaController\_PreferredReplicaImbalanceCount\_Value  
kafka\_KafkaRequestHandlerPool\_RequestHandlerAvgIdlePercent\_Count  
kafka\_KafkaRequestHandlerPool\_RequestHandlerAvgIdlePercent\_FifteenMinuteRate  
kafka\_KafkaRequestHandlerPool\_RequestHandlerAvgIdlePercent\_FiveMinuteRate  
kafka\_KafkaRequestHandlerPool\_RequestHandlerAvgIdlePercent\_MeanRate  
kafka\_KafkaRequestHandlerPool\_RequestHandlerAvgIdlePercent\_OneMinuteRate  
kafka\_LogCleanerManager\_max\_dirty\_percent\_Value

```
kafka_LogCleanerManager_time_since_last_run_ms_Value
kafka_LogFlushStats_LogFlushRateAndTimeMs_95thPercentile
kafka_LogFlushStats_LogFlushRateAndTimeMs_999thPercentile
kafka_LogFlushStats_LogFlushRateAndTimeMs_99thPercentile
kafka_LogFlushStats_LogFlushRateAndTimeMs_Count
kafka_LogFlushStats_LogFlushRateAndTimeMs_FifteenMinuteRate
kafka_LogFlushStats_LogFlushRateAndTimeMs_FiveMinuteRate
kafka_LogFlushStats_LogFlushRateAndTimeMs_Max
kafka_LogFlushStats_LogFlushRateAndTimeMs_Mean
kafka_LogFlushStats_LogFlushRateAndTimeMs_MeanRate
kafka_LogFlushStats_LogFlushRateAndTimeMs_Min
kafka_LogFlushStats_LogFlushRateAndTimeMs_OneMinuteRate
kafka_LogFlushStats_LogFlushRateAndTimeMs_StdDev
kafka_Partition_InSyncReplicasCount_Value
kafka_Partition_LastStableOffsetLag_Value
kafka_Partition_ReplicasCount_Value
kafka_Partition_UnderMinIsr_Value
kafka_Partition_UnderReplicated_Value
kafka_ReplicaManager_FailedIsrUpdatesPerSec_Count
kafka_ReplicaManager_FailedIsrUpdatesPerSec_FifteenMinuteRate
kafka_ReplicaManager_FailedIsrUpdatesPerSec_FiveMinuteRate
kafka_ReplicaManager_FailedIsrUpdatesPerSec_MeanRate
kafka_ReplicaManager_FailedIsrUpdatesPerSec_OneMinuteRate
kafka_ReplicaManager_IsrExpandsPerSec_Count
kafka_ReplicaManager_IsrExpandsPerSec_FifteenMinuteRate
kafka_ReplicaManager_IsrExpandsPerSec_FiveMinuteRate
kafka_ReplicaManager_IsrExpandsPerSec_MeanRate
kafka_ReplicaManager_IsrExpandsPerSec_OneMinuteRate
kafka_ReplicaManager_IsrShrinksPerSec_Count
kafka_ReplicaManager_IsrShrinksPerSec_FifteenMinuteRate
kafka_ReplicaManager_IsrShrinksPerSec_FiveMinuteRate
kafka_ReplicaManager_IsrShrinksPerSec_MeanRate
kafka_ReplicaManager_IsrShrinksPerSec_OneMinuteRate
kafka_ReplicaManager_LeaderCount_Value
kafka_ReplicaManager_OfflineReplicaCount_Value
kafka_ReplicaManager_PartitionCount_Value
kafka_ReplicaManager_UnderMinIsrPartitionCount_Value
kafka_ReplicaManager_UnderReplicatedPartitions_Value
kafka_RequestChannel_RequestQueueSize_Value
kafka_RequestChannel_ResponseQueueSize_Value
kafka_RequestMetrics_RequestQueueTimeMs_95thPercentile
kafka_RequestMetrics_RequestQueueTimeMs_999thPercentile
kafka_RequestMetrics_RequestQueueTimeMs_99thPercentile
kafka_RequestMetrics_RequestQueueTimeMs_Count
kafka_RequestMetrics_RequestQueueTimeMs_Max
kafka_RequestMetrics_RequestQueueTimeMs_Mean
kafka_RequestMetrics_RequestQueueTimeMs_Min
kafka_RequestMetrics_RequestQueueTimeMs_StdDev
kafka_RequestMetrics_RequestsPerSec_Count
kafka_RequestMetrics_RequestsPerSec_FifteenMinuteRate
kafka_RequestMetrics_RequestsPerSec_FiveMinuteRate
kafka_RequestMetrics_RequestsPerSec_MeanRate
kafka_RequestMetrics_RequestsPerSec_OneMinuteRate
kafka_SocketServer_MemoryPoolAvailable_Value
kafka_SocketServer_MemoryPoolUsed_Value
kafka_SocketServer_NetworkProcessorAvgIdlePercent_Value
kafka_Threading_CurrentThreadCpuTime
kafka_Threading_CurrentThreadUserTime
kafka_Threading_DaemonThreadCount
kafka_Threading_PeakThreadCount
kafka_Threading_ThreadCount
kafka_Threading_TotalStartedThreadCount
kafka_consumer_lag
kafka_topic_partitions
```

## Proposed Changes

build a whole new kafka-exporter RUN-ON-JVM for kafka

## Compatibility, Deprecation, and Migration Plan

- *What impact (if any) will there be on existing users?* Answer: we can monitor our kafka clusters more easily using prometheus exporter in java, and many many metrics you want.
- *If we are changing behavior how will we phase out the older behavior?* Answer: prometheus is a very good monitor for midwares like kafka, or maybe your ops has already use it.
- *If we need special migration tools, describe them here.* Answer: some prometheus servers, and prometheus alert manager
- *When will we remove the existing behavior?* Answer: all exporters run stable and you can view all metrics in some UI(like grafana)



## Rejected Alternatives

let's do this!

