KIP-1000: List Client Metrics Configuration Resources

Status

Current state: *Accepted*

Discussion thread: *here*

JIRA: *KAFKA-15831*

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

Motivation

This KIP introduces a way to list the client metrics configuration resources introduced by KIP-714. The client metrics configuration resources can be created, read, updated and deleted using the existing RPCs and the `kafka-configs.sh` tool, in common with all of the other configuration resources. There is, as yet, no way to list these resources. Some configuration resources, such as brokers, are singletons. Some are associated with other Kafka resources, such as topics. Client metrics configuration resources are named, but not associated with another Kafka resource, so there needs to be a way to list them.

Proposed Changes

The KIP adds a new RPC to the Kafka protocol called `ListClientMetricsResources` which responds with a list of the client metrics configuration resources. It also adds `AdminClient.listClientMetricsResources` to provide a programming interface for building tools to list client metrics configuration resources.

As an example, you could get the configuration for all of the client metrics resources using two calls:

```
AdminClient.listClientMetricsResources()
AdminClient.describeConfigs(Collection<ConfigResource>)
```

Public Interfaces

This KIP introduces support for obtaining a list of client metrics configuration resources to the Kafka protocol and admin client.

Kafka Protocol

ListClientMetricsResources RPC

Client metrics configuration is only supported for KRaft clusters. This KIP is only supported for KRaft clusters.

```
{
  "apiKey": XX,
  "type": "request",
  "listeners": ["broker"],
  "name": "ListClientMetricsResourcesRequest",
  "validVersions": "0",
  "flexibleVersions": "0+",
  "fields": [
  ]
}

{
  "apiKey": XX,
  "type": "response",
  "name": "ListClientMetricsResourcesResponse",
  "validVersions": "0",
  "flexibleVersions": "0+",
  "fields": [
      { "name": "ThrottleTimeMs", "type": "int32", "versions": "0+",
        "about": "The duration in milliseconds for which the request was throttled due to a quota violation, or 
zero if the request did not violate any quota." },
      { "name": "ErrorCode", "type": "int16", "versions": "0+" },
      { "name": "ClientMetricsResources", "type": "[]ClientMetricsResource", "versions": "0+", "fields": [
        { "name": "Name", "type": "string", "versions": "0+" }
      ]}
  ]
}
```

Admin Client

The following methods are added to the `org.apache.kafka.client.admin.Admin` interface.

```
   /**
    * List the client metrics configuration resources available in the cluster.
    *
    * @param options The options to use when listing the client metrics resources.
    * @return The ListClientMetricsResourcesResult.
    */
   ListClientMetricsResourcesResult listClientMetricsResources(ListClientMetricsResourcesOptions options);

   /**
    * List the client metrics configuration resources available in the cluster with the default options.
    * <p>
    * This is a convenience method for {@link #listClientMetricsResources(ListClientMetricsResourcesOptions)}
    * with default options. See the overload for more details.
    *
    * @return The ListClientMetricsResourcesResult.
    */
   default ListClientMetricsResourcesResult listClientMetricsResources() {
      return listClientMetricsResources(new ListClientMetricsResourcesOptions());
   }
```

The options are defined as follows:

```
package org.apache.kafka.client.admin;

/**
 * Options for {@link Admin#listClientMetricsResources()}.
 *
 * The API of this class is evolving, see {@link Admin} for details.
 */
@InterfaceStability.Evolving
public class ListClientMetricsResourcesOptions extends AbstractOptions<ListClientMetricsResourcesOptions> {
}
```

The result is defined as follows:

```
package org.apache.kafka.clients.admin;

/**
 * The result of the {@link Admin#listClientMetricsResources()} call.
 * <p>
 * The API of this class is evolving, see {@link Admin} for details.
 */
@InterfaceStability.Evolving
public class ListClientMetricsResourcesResult {
    /**
     * Returns a future that yields either an exception, or the full set of client metrics
     * resource listings.
     *
     * In the event of a failure, the future yields nothing but the first exception which
     * occurred.
     */
    public KafkaFuture<Collection<ClientMetricsResourceListing>> all() {
    }
}
```

And finally the listing itself, which is initially only the name:

```
package org.apache.kafka.clients.admin;

@InterfaceStability.Evolving
public class ClientMetricsResourceListing {
    private final String name;

    public ClientMetricsResourceListing(String name) {
        this.name = name;
    }

    public String name() {
        return name;
    }
}
```

Tools

kafka-client-metrics.sh

A new option `--list` is added to `kafka-client-metrics.sh` which lists the client metrics resources without describing them.

```
$ kafka-client-metrics.sh --bootstrap-server $BROKERS --list
```

Security

Client metrics configuration resources are secured using the CLUSTER resource.

API Request	Resource	ACL operation
ListClientMetricsResources	CLUSTER	DESCRIBE_CONFIGS

Compatibility, Deprecation, and Migration Plan

No impact.

Test Plan

The KIP implementation will be accompanied by the usual set of unit tests.

Rejected Alternatives

None.