

KIP-249: Add Delegation Token Operations to KafkaAdminClient

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Status

Current state: *["Under Discussion"]*

Discussion thread: [here](#)

JIRA: [KAFKA-6447](#)

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

Motivation

[KIP-48](#) added support for delegation token based authentication mechanism. [KIP-48/KAFKA-4541](#) implemented protocol request and response for delegation token operations.

This KIP is about adding these delegation token operations to the new Admin Client API.

Public Interfaces

The AdminClient API will have the following new methods added

```
AdminClient {
    //create delegation token with default options
    public CreateDelegationTokenResult createDelegationToken()

    //create delegation token with supplied options
    public abstract CreateDelegationTokenResult createDelegationToken(CreateDelegationTokenOptions options)

    //renew delegation token with default options
    public RenewDelegationTokenResult renewDelegationToken(byte[] hmac)

    //renew delegation token token with supplied options
    public abstract RenewDelegationTokenResult renewDelegationToken(byte[] hmac,
RenewDelegationTokenOptions options);

    //expire delegation token immediately
    public ExpireDelegationTokenResult expireDelegationToken(byte[] hmac)

    //expire delegation token with supplied options
    public abstract ExpireDelegationTokenResult expireDelegationToken(byte[] hmac,
ExpireDelegationTokenOptions options);

    //returns all the user owned tokens and other tokens where user have Describe permission
    public DescribeDelegationTokenResult describeDelegationToken()

    //returns all the tokens for the given options
    public abstract DescribeDelegationTokenResult describeDelegationToken(DescribeDelegationTokenOptions
options);
}
```

CreateDelegationTokenResult's future objects can return the following exceptions:

```
DELEGATION_TOKEN_REQUEST_NOT_ALLOWED,  
INVALID_PRINCIPAL_TYPE  
DELEGATION_TOKEN_AUTH_DISABLED
```

RenewDelegationTokenResult and ExpireDelegationTokenResult's future objects can throw the following exceptions:

```
DELEGATION_TOKEN_REQUEST_NOT_ALLOWED,  
DELEGATION_TOKEN_AUTH_DISABLED  
DELEGATION_TOKEN_OWNER_MISMATCH  
DELEGATION_TOKEN_EXPIRED  
DELEGATION_TOKEN_NOT_FOUND
```

DescribeDelegationTokenResult's future object can throw the following exceptions:

```
DELEGATION_TOKEN_REQUEST_NOT_ALLOWED,  
DELEGATION_TOKEN_AUTH_DISABLED
```

Proposed Changes

The following classes will be added.

CreateDelegationTokenResult, CreateDelegationTokenOptions

RenewDelegationTokenResult, RenewDelegationTokenOptions

ExpireDelegationTokenResult, ExpireDelegationTokenOptions

DescribeDelegationTokenResult, DescribeDelegationTokenOptions

```
public class CreateDelegationTokenResult {  
    private final KafkaFuture<DelegationToken> delegationToken;  
  
    CreateDelegationTokenResult(KafkaFuture<DelegationToken> delegationToken) {  
        this.delegationToken = delegationToken;  
    }  
  
    /**  
     * Returns a future which yields a delegation token  
     */  
    public KafkaFuture<DelegationToken> delegationToken() {  
        return delegationToken;  
    }  
}  
  
public class CreateDelegationTokenOptions extends AbstractOptions<CreateDelegationTokenOptions> {  
    // default value is -1, This will default the token maxLifeTime to server side config value (delegation.  
token.max.lifetime.ms).  
    private long maxLifeTimeMs = -1;  
    private List<KafkaPrincipal> renewers = new LinkedList<>();  
  
    public CreateDelegationTokenOptions renewers(List<KafkaPrincipal> renewers) {  
        this.renewers = renewers;  
        return this;  
    }  
  
    public List<KafkaPrincipal> renewers() {  
        return renewers;  
    }  
  
    public CreateDelegationTokenOptions maxlifeTimeMs(long maxLifeTimeMs) {  
        this.maxLifeTimeMs = maxLifeTimeMs;  
        return this;  
    }  
}
```

```

    }

    public long maxlifeTimeMs() {
        return maxLifeTimeMs;
    }
}

public class RenewDelegationTokenResult {
    private final KafkaFuture<Long> expiryTimestamp;

    RenewDelegationTokenResult(KafkaFuture<Long> expiryTimestamp) {
        this.expiryTimestamp = expiryTimestamp;
    }

    /**
     * Returns a future which yields expiry timestamp
     */
    public KafkaFuture<Long> expiryTimestamp() {
        return expiryTimestamp;
    }
}

public class RenewDelegationTokenOptions extends AbstractOptions<RenewDelegationTokenOptions> {
    // default value is -1. This will default the Renew Time period to a server side config value (delegation.
    token.expiry.time.ms).
    private long renewTimePeriodMs = -1;

    public RenewDelegationTokenOptions renewTimePeriodMs(long renewTimePeriodMs) {
        this.renewTimePeriodMs = renewTimePeriodMs;
        return this;
    }

    public long renewTimePeriodMs() {
        return renewTimePeriodMs;
    }
}

public class ExpireDelegationTokenResult {
    private final KafkaFuture<Long> expiryTimestamp;

    ExpireDelegationTokenResult(KafkaFuture<Long> expiryTimestamp) {
        this.expiryTimestamp = expiryTimestamp;
    }

    /**
     * Returns a future which yields expiry timestamp
     */
    public KafkaFuture<Long> expiryTimestamp() {
        return expiryTimestamp;
    }
}

public class ExpireDelegationTokenOptions extends AbstractOptions<ExpireDelegationTokenOptions> {
    //default value is -1. This token will get invalidated immediately
    private long expiryTimePeriodMs = -1;

    public ExpireDelegationTokenOptions expiryTimePeriodMs(long expiryTimePeriodMs) {
        this.expiryTimePeriodMs = expiryTimePeriodMs;
        return this;
    }

    public long expiryTimePeriodMs() {
        return expiryTimePeriodMs;
    }
}

public class DescribeDelegationTokenResult {
    private final KafkaFuture<List<DelegationToken>> delegationTokens;

```

```

DescribeDelegationTokenResult(KafkaFuture<List<DelegationToken>> delegationTokens) {
    this.delegationTokens = delegationTokens;
}

/**
 * Returns a future which yields list of delegation tokens
 */
public KafkaFuture<List<DelegationToken>> delegationTokens() {
    return delegationTokens;
}
}

public class DescribeDelegationTokenOptions extends AbstractOptions<DescribeDelegationTokenOptions> {
    //default null value indicates to return all the allowed tokens
    private List<KafkaPrincipal> owners;

    public DescribeDelegationTokenOptions owners(List<KafkaPrincipal> owners) {
        this.owners = owners;
        return this;
    }

    public List<KafkaPrincipal> owners() {
        return owners;
    }
}

```

Compatibility, Deprecation, and Migration Plan

- This is a new API and won't affect existing users.

Rejected Alternatives