dxFeed Market Data:
Token Based Authorization

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Contents

1. Introduction

1.1. Purpose

This document is an addition to dxFeed Java/C/C# APIs and describes connection using token based authorization.

1.2. Scope

To provide your customers with dxFeed market data, you can connect to our market data feeds with token based authentication. It ensures that each request to a server is accompanied by a signed token, which the server verifies for authenticity and only then responds to the request. Thus, your clients get access to allowed market data feeds for specified period. We do not get your clients' personal details.

2. Token

2.1. Token format

Self-signed token format:

```
token := encoded-payload "." signature
encoded-payload := BASE64(UTF8(payload))
signature := BASE64(HMAC-SHA256(encoded-payload, UTF8(secret)))
payload := issuer "," subject "," not-before-time "," expiration-
time "," issued-at-time "," message,
```

where:

- `secret` – the key used for signature validation
- `issuer` – principal that issued this token
- `subject` - subject of this token
- `not-before-time` - time when token get to be valid
- `expiration-time` - expiration time of the token, after which token will not be valid
- `issued-at-time` - when this token was issued
- `message` - any string

All time variables are specified in seconds from the epoch, in UTC.

For additional information, please check:

- UTF-8
- Base64
- HMAC-SHA256

2.2. Java implementation

Set classpath to folder with auther-api.jar. You get access to the library:

- `com.devexperts.mdd.auth.entitle.EntitleLoginHandlerFactory` - login handler factory that plugs into dxFeed API via manifest (by implementing `com.devexperts.qd.qtp.auth.QDLoginHandlerFactory` service interface - see META-INF/ folder)
- `com.devexperts.mdd.auth.entitle.SampleClient` - sample client code to test the connection. In order to use login handler factory, connection string must specify [login=entitle] parameter.
- `com.devexperts.mdd.auth.util.SignedToken` - it is used to create tokens signed by shared secret.

To generate the token, please use the following code:

```
return SignedToken.newBuilder()
    .setIssuer(issuer)
    .setSubject(sessionType)
    .setMessage(user)
    .setIssuedNow()
    .setExpirationFromNow(Duration.ofDays(1))
    .toToken()
    .signToken(secret);
```

Where

- issuer – principal that issued this token
- sessionType – session that you want to provide to your customer
- user – user ID
- secret – the key used for signature validation

2.2.1. Error handling

You can handle errors from the server. For this, please change `EntitleLoginHandlerFactory.AutherLoginHandler#login(String)` to react to errors from dxFeed by analyzing `reason` parameter. To find session duplicate events, search for **Duplicate session** text in the error description.

2.3. C and C# implementation

If you use C or C# dxFeed API to connect to dxFeed market data, please generate a token based on the token format.

3. Establishing connection

Specify the generated token when establishing a connection. Use the following functions:

For Java API: String address = "127.0.0.1:7501[login=entitle:" + token + "]";
Or (preferably) set global variable and use shorter connection string
AutherLoginHandlerFactory.setAppToken(token);
address = "127.0.0.1:7501[login=entitle]";

For C API: `dxf_create_connection_auth_bearer()` function

For C# API: `NativeConnection(string address, string token, Action<IDxConnection> disconnectListener)` constructor of `NativeConnection` class

For web service: `dx.feed.setAuthToken(token);`

4. Testing

To test connection, please use this command:

```
java -Dentitle=<issuer>,<session-name>,<user-id> -DentitleSecret=<session-secret>
auther-api.jar <host:port>[login=entitle] Quote IBM,GOOG,AAPL
```

Sample:

```
java -Dentitle=acme,demo,1234 -DentitleSecret=0123456789 -jar auther-api.jar
localhost:7501[login=entitle] Quote IBM,GOOG,AAPL
```