Using ROhdsiWebApi with security enabled Atlas/WebAPI

Contents

1 Active Directory, Windows and database authentication 1

2 Google authentication 2

3 WebAPI authentication in a Shiny app 3

It is common for Atlas and WebAPI to have an authentication/authorization layer. Using ROhdsiWebApi with a security-enabled WebAPI instance requires a special security token to be sent along with any WebAPI request. This token is known as a bearer token and is created anytime a user logs in to Atlas.

The first step in using ROhdsiWebApi with security-enabled instance of Atlas/WebAPI is to identify which type of authentication is being used.

Commonly used options are

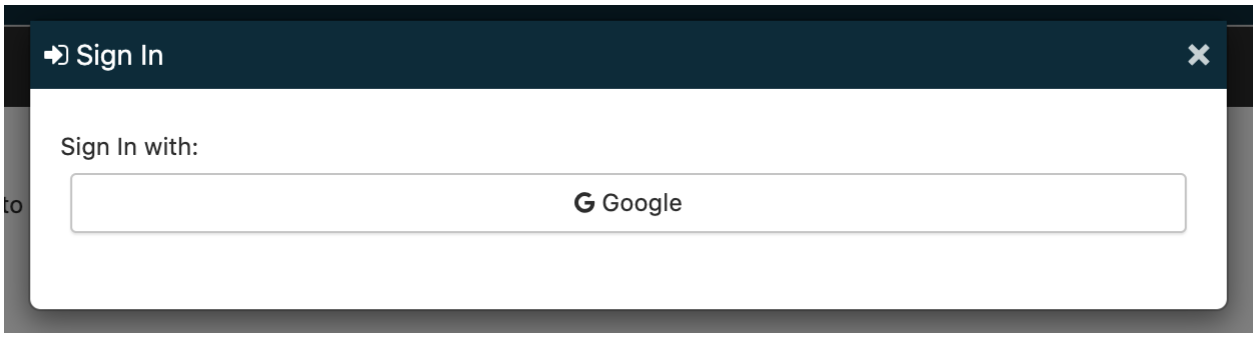
1. Active Directory
2. Database: An internal WebAPI database table stores usernames and passwords
3. Windows
4. Google (OAuth2)

If you attempt to use ROhdsiWebApi on a security-enabled WebAPI instance without first authenticating you will see an http 401 error.

```r
library(ROhdsiWebApi)
baseUrl <- "https://yourSecureAtlas.ohdsi.org/"
getCdmSources(baseUrl)
```

```
#> Error in eval(expr, envir, enclos): Error: http error 401: Unauthorized request. Try running `authori
```

Supported login types will be visible on the ATLAS platform sign in page:



1 Active Directory, Windows and database authentication

If you typically log in to Atlas using a username and password then WebAPI is likely using either Active Directory or database authentication. In this case it is easy to authorize ROhdsiWebApi by calling the `authorizeWebAPI()` function.

```r
authorizeWebApi(baseUrl,
                authMethod = "db",
                webApiUsername = Sys.getenv("WEBAPI_USERNAME"),
                webApiPassword = Sys.getenv("WEBAPI_PASSWORD"))
```

This function does not return a value but instead has a side effect of retrieving the bearer token from WebAPI and saving it in the ROhdsiWebApi global package environment. If you are using Active Directory then set `authMethod = "ad"` and if you are using database authentication then set `authMethod = "db"`. Make sure that your password is stored in an environment variable defined in the .Renviron file (easily accessed by calling `usethis::edit_r_environ()`) or stored and retrieved using the keyring package. Never store passwords in your R code.

If your client platform is windows, on a domain with NT authentication enabled, you may not need to enter a username and password.

```r
authorizeWebApi(baseUrl, authMethod = "windows")
```

If your client is linux, OSX or not logged in to an NT domain you will need to enter a username and password as for the above methods of authentication.

If authorization was successful then the bearer token will be stored in the global package environment associated with its WebAPI base URL. If you are working with multiple WebAPI instances at the same time the correct token will be used with each instance since the base URL uniquely identifies the instance. Your username password are not saved or cached by the ROhdsiWebApi package.

```r
ls(ROhdsiWebApi:::ROWebApiEnv)
```

```
#> [1] "https://yourSecureAtlas.ohdsi.org/"
```

```r
ROhdsiWebApi:::ROWebApiEnv[["https://yourSecureAtlas.ohdsi.org/"]]
```

```
#> $authHeader
#> [1] "Bearer gSyJhbzciOiJIOZUxMiJ9.eyJzdWIiOIJhZGFtLx57wgSyJhb..."
```

This bearer token will then be added to the header all future requests sent by ROhdsiWebApi and all of the package API call functions should work.

```r
getCdmSources(baseUrl)
```

```
#> # A tibble: 2 x 7
#>   sourceId sourceName  sourceKey   sourceDialect cdmDatabaseSchema vocabDatabaseSchema resultsDataba
#>      <int> <chr>       <chr>       <chr>         <chr>             <chr>               <chr>
#> 1      911 SynPUF 110k synpuf-110k postgresql    cdm_531           cdm_531             results_atlas
#> 2      912 SynPUF 2.3m synpuf-2m   postgresql    cdm_531           cdm_531             results_atlas
```

You will need to run authorizeWebApi each time R is restarted or when the bearer token expires. The lifetime of a bearer token depends on your Atlas/WebAPI installation.

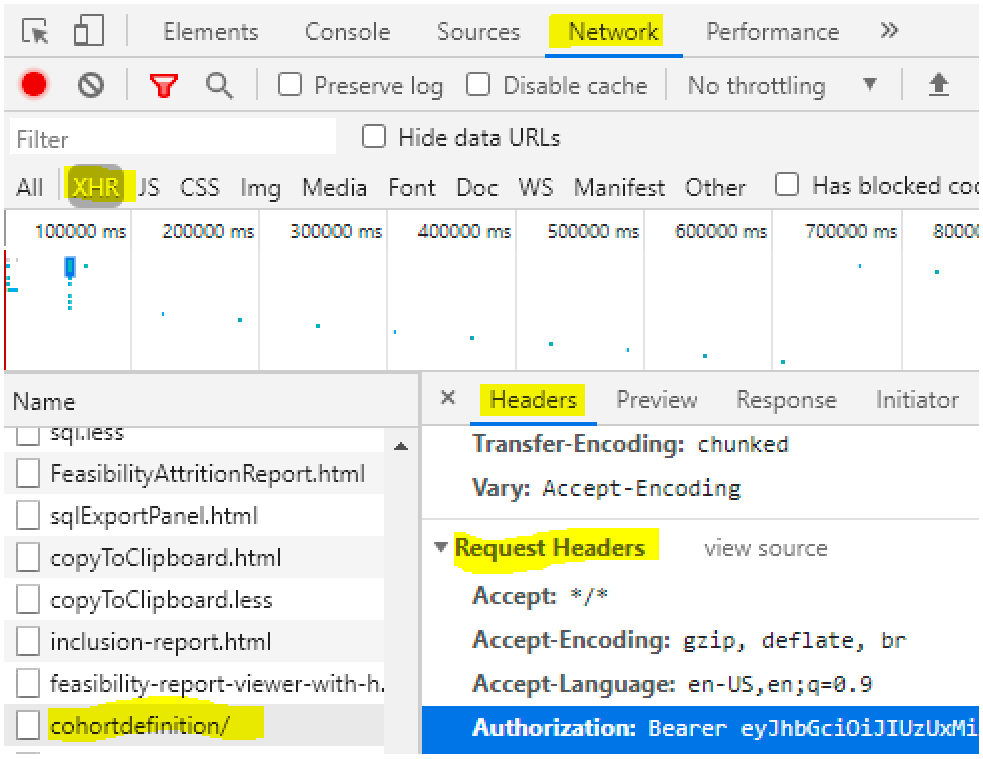
2 Google authentication

Unfortunately there is currently no easy way to retrieve the bearer token from within R when using Google (OAuth2) authentication/authorization. However ROhdsiWebApi exposes a function that allows users to manually set the header that will be added to all future WebAPI requests.

Retrieving the Bearer token from a web browser is not difficult but does require getting in the weeds of the Chrome developer tools and is not very convenient. The process is

1. Log into Atlas using Chrome and go to the cohort definitions tab.
2. Open Chrome developer tools, click "Network", click cohortdefinition/

3. Click Headers -> Request Headers and copy the Authorization field that starts with “Bearer”



Transfer-Encoding: chunked
Vary: Accept-Encoding

Accept: */*
Accept-Encoding: gzip, deflate, br
Accept-Language: en-US,en;q=0.9
Authorization: Bearer eyJhbGciOiJIUzUxMi

```r
baseUrl <- "https://atlas.ohdsi.org/WebAPI"

# Bearer copied from Google developer tools
token <- "Bearer eyJsdfiem3Mcju7KRc4cCI6MTYxNDk5MTMxNX0.oVFpFnvhFK3SqYlRhdj"

setAuthHeader(baseUrl, authHeader = token)

getCdmSources(baseUrl)
```

```
#> # A tibble: 1 x 7
#>   sourceId sourceName sourceKey  sourceDialect cdmDatabaseSchema vocabDatabaseSchema resultsDatabase
#>      <int> <chr>      <chr>      <chr>         <chr>             <chr>               <chr>
#> 1        1 SYNPUF 5%  SYNPUF5PCT postgresql    synpuf5pct        unrestricted_vocabs synpuf5pct_resu
```

3 WebAPI authentication in a Shiny app

There may be cases where ROhdsiWebApi will be used in a Shiny application with an instance of WebAPI that is using security. In that case the shiny app author will either want to prompt the user for their Atlas username and password or use a service account to connect to WebAPI.

To avoid errors due to token expiration `tryCatch` can be used to automatically re-authorize ROhdsiWebApi. However be sure to securely store passwords and not include them in plain text in the Shiny app.

```r
tryCatch(getCdmSources(baseUrl),
         error = function(s) {
           if(grepl("http error 401", e)) {
             authorizeWebApi(baseUrl,
                authMethod = "db",
                webApiUsername = Sys.getenv("WEBAPI_USERNAME"),
                webApiPassword = Sys.getenv("WEBAPI_PASSWORD"))
             getCdmSources(baseUrl)
           } else {
             stop(e)
           }
         })
```