Java Token Validator

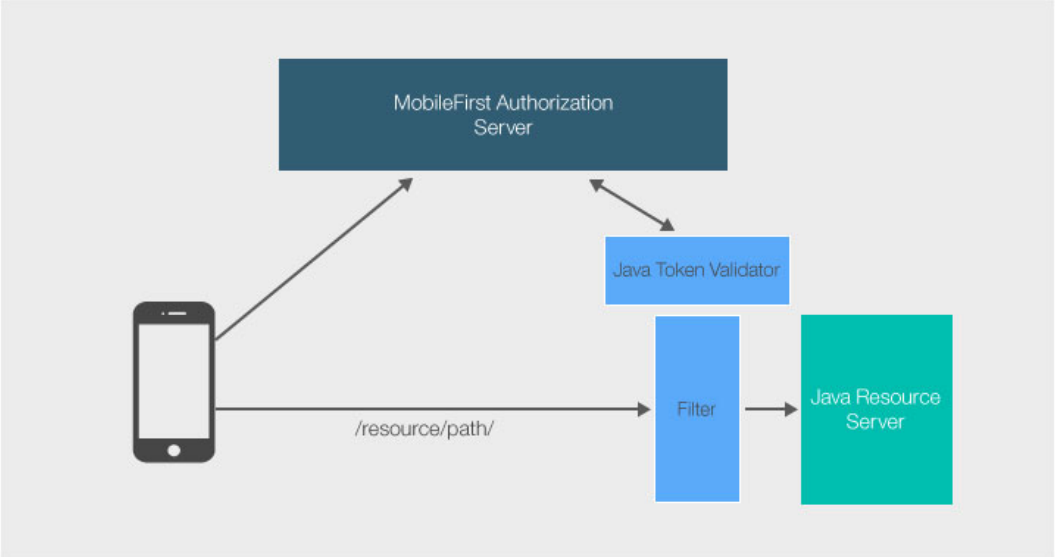
Overview

MobileFirst Foundation provides a Java library to enforce security capabilities on external resources.
The Java library is provided as a JAR file (**mfp-java-token-validator-8.0.0.jar**).

This tutorial shows how to protect a simple Java Servlet, `GetBalance`, by using a scope (`accessRestricted`).

Prerequesites:

- Read the Using the MobileFirst Server to authenticate external resources (../) tutorial.
- Understanding of the MobileFirst Foundation security framework (../../).



Adding the .jar file dependency

The **mfp-java-token-validator-8.0.0.jar** file is available as a **maven dependency**:

```
<dependency>
  <groupId>com.ibm.mfp</groupId>
  <artifactId>mfp-java-token-validator</artifactId>
  <version>8.0.0</version>
</dependency>
```

Instantiating the TokenValidationManager

To be able to validate tokens, instantiate `TokenValidationManager`.

```
TokenValidationManager(java.net.URI authorizationURI, java.lang.String clientId, java.lang.String clientSecret);
```

- `authorizationURI`: the URI of the Authorization server, usually the MobileFirst Server. For example **http://localhost:9080/mfp/api**.
- `clientId`: The confidential client ID that you configured in the MobileFirst Operations Console.
- `clientSecret`: The confidential client secret that you configured in the MobileFirst Operations Console.

> The library exposes an API that encapsulates and simplifies the interaction with the authorization server's introspection endpoint. For a detailed API reference, see the MobileFirst Java Token Validator API reference (http://www.ibm.com/support/knowledgecenter/en/SSHS8R_8.0.0/com.ibm.worklight.apiref.doc/apiref/r_mfpf_java_token_validator_api.html?view=kc).

Validating the credentials

The `validate` API method asks the authorization server to validate the authorization header:

```
public TokenValidationResult validate(java.lang.String authorizationHeader, java.lang.String expectedScope);
```

- `authorizationHeader`: The content of the `Authorization` HTTP header, which is the access token. For example, it could be obtained from an `HttpServletRequest` (`httpServletRequest.getHeader("Authorization")`).
- `expectedScope`: The scope to validate the token against, for example `accessRestricted`.

You can query the resulting `TokenValidationResult` object for an error or for valid introspection data:

```
TokenValidationResult tokenValidationRes = validator.validate(authCredentials, expectedScope);
if (tokenValidationRes.getAuthenticationError() != null) {
  // Error
  AuthenticationError error = tokenValidationRes.getAuthenticationError();
  httpServletResponse.setStatus(error.getStatus());
  httpServletResponse.setHeader("WWW-Authenticate", error.getAuthenticateHeader());
} else if (tokenValidationRes.getIntrospectionData() != null) {
  // Success logic here
}
```

Introspection data

The `TokenIntrospectionData` object returned by `getIntrospectionData()` provides you with some information about the client, such as the user name of the currently active user:

```
httpServletRequest.setAttribute("introspection-data", tokenValidationRes.getIntrospectionData());
```

```
TokenIntrospectionData introspectionData = (TokenIntrospectionData) request.getAttribute("introspection-data");
String username = introspectionData.getUsername();
```

Cache

The `TokenValidationManager` class comes with an internal cache which caches tokens and introspection data. The purpose of the cache is to reduce the amount of token *introspections* done against the Authorization Server, if a request is made with the same header.

The default cache size is **50000 items**. After this capacity is reached, the oldest token is removed.

The constructor of `TokenValidationManager` can also accept a `cacheSize` (number of introspection data items) to store:

```
public TokenValidationManager(java.net.URI authorizationURI, java.lang.String clientId, java.lang.String clientSecret, long cacheSize);
```

Protecting a simple Java Servlet

1. Create a simple Java Servlet called `GetBalance`, which returns a hardcoded value:

   ```
   @WebServlet("/GetBalance")
   public class GetBalance extends HttpServlet {
      private static final long serialVersionUID = 1L;

      protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
         //Return hardcoded value
         response.getWriter().append("17364.9");
      }

   }
   ```

2. Create a `javax.servlet.Filter` implementation, called `JTVFilter`, which will validate the authorization header for a given scope:

```
public class JTVFilter implements Filter {

  public static final String AUTH_HEADER = "Authorization";
  private static final String AUTHSERVER_URI = "http://localhost:9080/mfp/api"; //Set here your authorization server URI
  private static final String CLIENT_ID = "jtv"; //Set here your confidential client ID
  private static final String CLIENT_SECRET = "jtv"; //Set here your confidential client SECRET

  private TokenValidationManager validator;
  private FilterConfig filterConfig = null;

  @Override
  public void init(FilterConfig filterConfig) throws ServletException {
    URI uri = null;
    try {
      uri = new URI(AUTHSERVER_URI);
      validator = new TokenValidationManager(uri, CLIENT_ID, CLIENT_SECRET);
      this.filterConfig = filterConfig;
    } catch (Exception e1) {
      System.out.println("Error reading introspection URI");
    }
  }

  @Override
  public void doFilter(ServletRequest req, ServletResponse res, FilterChain filterChain) throws IOException, ServletException {
    String expectedScope = filterConfig.getInitParameter("scope");
    HttpServletRequest httpServletRequest = (HttpServletRequest) req;
    HttpServletResponse httpServletResponse = (HttpServletResponse) res;

    String authCredentials = httpServletRequest.getHeader(AUTH_HEADER);

    try {
      TokenValidationResult tokenValidationRes = validator.validate(authCredentials, expectedScope);
      if (tokenValidationRes.getAuthenticationError() != null) {
        // Error
        AuthenticationError error = tokenValidationRes.getAuthenticationError();
        httpServletResponse.setStatus(error.getStatus());
        httpServletResponse.setHeader("WWW-Authenticate", error.getAuthenticateHeader());
      } else if (tokenValidationRes.getIntrospectionData() != null) {
        // Success
        httpServletRequest.setAttribute("introspection-data", tokenValidationRes.getIntrospectionData());
        filterChain.doFilter(req, res);
      }
    } catch (TokenValidationException e) {
      httpServletResponse.setStatus(500);
    }
  }

}
```

3. In the servlet's **web.xml** file, declare an instance of `JTVFilter` and pass the **scope** `accessRestricted` as a parameter:

```
<filter>
  <filter-name>accessRestricted</filter-name>
  <filter-class>com.sample.JTVFilter</filter-class>
  <init-param>
    <param-name>scope</param-name>
    <param-value>accessRestricted</param-value>
  </init-param>
</filter>
```

Then protect your servlet with the filter:

```
<filter-mapping>
  <filter-name>accessRestricted</filter-name>
  <url-pattern>/GetBalance</url-pattern>
</filter-mapping>
```

Sample

You can deploy the project on the supported application servers (Tomcat, WebSphere Application Server full profile, and WebSphere Application Server Liberty profile).
Download the simple Java servlet (https://github.com/MobileFirst-Platform-Developer-Center/JavaTokenValidator/tree/release80).

Sample usage

1. Make sure to update the confidential client (../#confidential-client) and secret values in the MobileFirst Operations Console.
2. Deploy either of the security checks: **UserLogin (../../user-authentication/security-check/)** or **PinCodeAttempts (../../credentials-**

validation/security-check/).

3. Register the matching application.
4. Map the `accessRestricted` scope to the security check.
5. Update the client application to make the `WLResourceRequest` to your servlet URL.