Java Token Validation

Overview

MobileFirst Platform Foundation provides a Java library to facilitate the authentication of external resources.
The Java library is provided as a .jar file (**mfp-java-token-validator-8.0.0.jar**).

This tutorial will show how to protect a simple Java Servlet, `GetBalance`, using a scope `accessRestricted`.

Prerequesite:

- Make sure to read the Using the MobileFirst Server to authenticate external resources (../) tutorial.
- Understanding of the MobileFirst Platform Foundation security framework (../../).

Adding the .jar file dependency

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

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

If Internet connectivity is not available while developing, prepare to work offline:

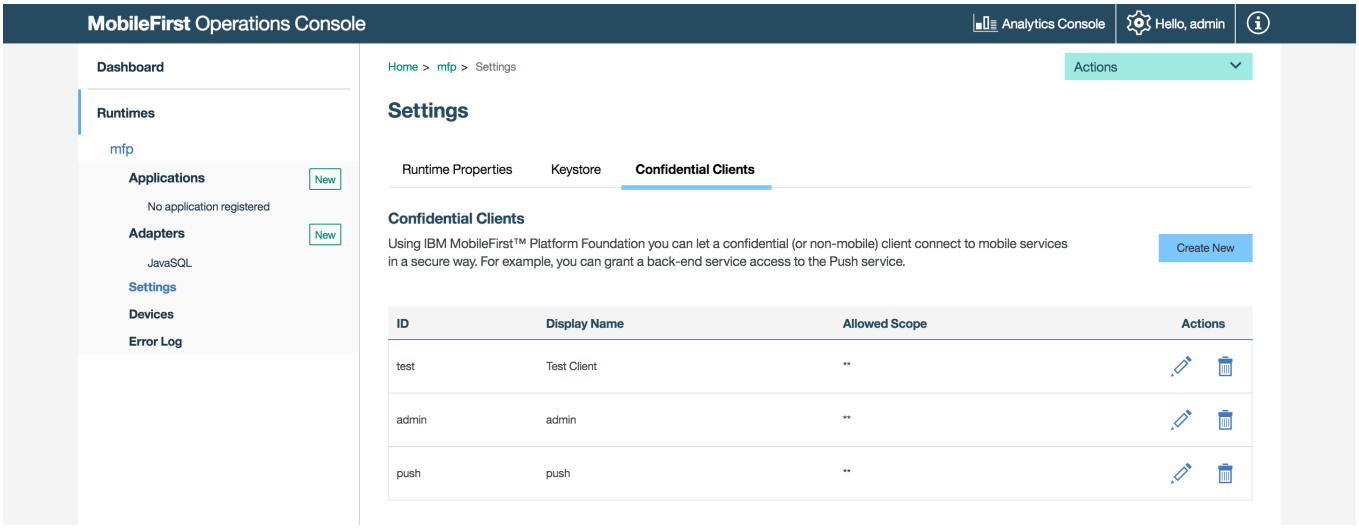
1. Make sure you have first installed Maven.
2. Download the MobileFirst Platform Foundation Development Kit Installer (file:////home/travis/build/MFPSamples/DevCenter/_site/downloads/).
3. Start the server and download from the Downloads page the **mfp-java-token-validator.jar** file.
4. Add a dependency (../../../adapters/creating-adapters/#dependencies)

Instantiating the TokenValidationManager

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

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

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



Validating the credentials

The `validate` API method will ask the authorization server to validate the authorization header:

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

- `authorizationHeader`: The content of the `Authorization` HTTP header. For example, it could be obtained from a `HttpServletRequest` (`httpServletRequest.getHeader("Authorization")`).
- `expectedScope`: *Optional*. The scope to validate the token against.

You can query the resulting `TokenValidationResult` object for either an error or 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
  httpServletRequest.setAttribute("introspection-data", tokenValidationRes.getIntrospectionData());
  filter.doFilter(req, res);
}
```

Introspection data

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

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

> For additional API methods, see the JavaDoc.

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.

> **Important:** Before a token is retrieved from the cache, its expiration is checked (the expiration is a field in the introspection data), and is removed if expired. This is done internally by the MobileFirst security framework.

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 Ser
vletException, IOException {
      //Return hardcoded value
      response.getWriter().append("17364.9");
   }

}
```

2. Create a `javax.servlet.Filter` implementation, called `JTVFilter`, that 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
authentication 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 filter) throws IOExc
eption, 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, expectedS
cope);
         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.getIntrospectio
nData());
            filter.doFilter(req, res);
         }
      } catch (TokenValidationException e) {
         httpServletResponse.setStatus(500);
      }
   }

}
```

3. In the servlet's **web.xml**, 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 supported application servers (Tomcat, WebSphere Full profile and WebSphere Liberty profile).
Download the simple Java servlet ().

Sample usage

1. Make sure to update the 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.