

# Authentication Concepts

## Overview

The OAuth 2.0 (<http://oauth.net/>) protocol is based on the acquisition of an access token, which encapsulates the authorization that is granted to the client. In that context, IBM MobileFirst Platform Server serves as an authorization server and is able to generate such tokens. The client can then use these tokens to access resources on a resource server, which can be either MobileFirst Server itself or an external server. The resource server checks the validity of the token to make sure that the client can be granted access to the requested resource. This separation between resource server and authorization server in the new OAuth-based model allows you to enforce MobileFirst security on resources that are running outside MobileFirst Server.

This tutorial covers the following topics:

- Authorization flow
- Authorization entities
- Protecting resources
- Configuring Authentication from the MobileFirst Console
- Further reading

## Authorization flow

The new MobileFirst end-to-end authorization flow has two phases: the client acquires the token and then uses it to access a protected resource.

## Acquiring a token

In this phase, the client undergoes security checks in order to receive an access token. These security checks use authorization entities, which are described in the next section.

### Obtain token flow

Obtain a token from the MFP Server that encapsulates the authorization permissions that were granted to the client.

1. Client sends a request to obtain a token.
2. Client undergoes security checks according to the requested scope of the token.
3. Client receives and stores the token.



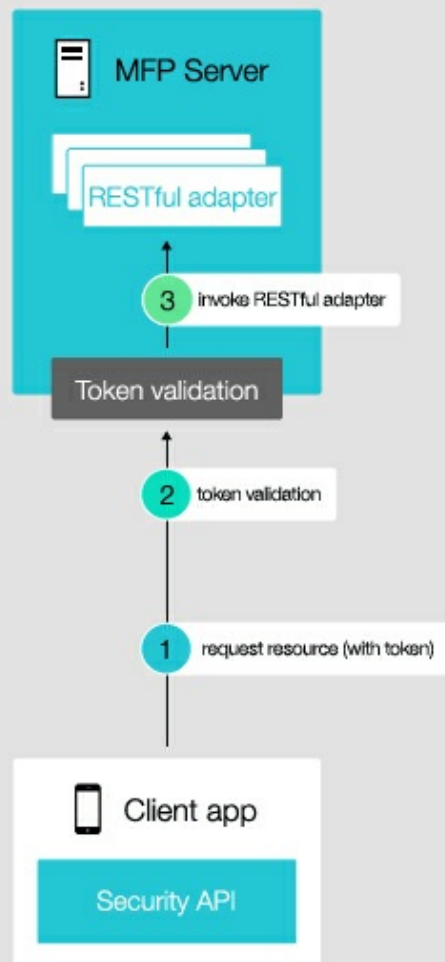
## Using a token to access a protected resource

It is possible to enforce MobileFirst security both on resources that run on MobileFirst Server, as shown in this diagram, and on resources that run on any external resource server as explained in tutorial [Using MobileFirst Server to authenticate external resources \(../using-mobilefirst-server-authenticate-external-resources/\)](#).

### Protecting MFP resources

RESTful adapters are protected by OAuth-based security.

1. Client sends a request with the authorization header (token).
2. Validation module validates the token.
3. Validation module proceeds to adapter invocation.



## Authorization entities

You can protect resources such as adapters from unauthorized access by specifying a **scope** or **scope token** that contains zero or more **SecurityCheck**.

A **SecurityCheck** defines the process to be used to authenticate users. It is often associated with a **SecurityCheckConfiguration** that defines properties to be used by the SecurityCheck.

SecurityChecks are instantiated by **Security Adapters**.

The same SecurityCheck can be used to protect several resources.

The client application needs to implement a **challenge handler** to handle challenges sent by the SecurityCheck.

## SecurityCheck

A **SecurityCheck** is an object responsible for obtaining credentials from a client and validate them.

### securityCheckDefinition

Security checks are defined inside adapters. Any adapter can theoretically define a SecurityCheck. An adapter can either be a *resource* adapter (meaning it serves resources, content, to send to the client), a *SecurityCheck* adapter, or **both**. However it is recommended to define your *SecurityCheck* in a separate adapter.

In your **adapter.xml**, add an XML element called `securityCheckDefinition`. For example:

```
<securityCheckDefinition name="otp" class="com.ibm.mfp.OTPSecurityCheck">
  <property name="successExpirationSec" defaultValue="60"/>
  <property name="failureExpirationSec" defaultValue="60"/>
  <property name="maxAttempts" defaultValue="3"/>
</securityCheckDefinition>
```

- The name attribute will be the name of your SecurityCheck
- The class attribute specifies the implementation of the SecurityCheck
- Some SecurityChecks can be configured with a list of property elements.

## SecurityCheck implementation

The class file of your SecurityCheck is where all of the logic happens. Your implementation should extend one of the provided base classes. The parent class you choose will determine the balance between customization and simplicity.

SecurityCheckWithUserAuthentication

TODO

SecurityCheckWithAttempts

TODO

SecurityCheckWithExternalization

TODO

SecurityCheck

TODO

## SecurityCheckConfiguration

Each SecurityCheck implementation class can use a SecurityCheckConfiguration that defines properties available for that SecurityCheck. Each base SecurityCheck class comes with a matching SecurityCheckConfiguration class. You can create your own implementation that extends one of the base SecurityCheckConfiguration classes and use it for your custom SecurityCheck.

For example, SecurityCheckWithUserAuthentication's createConfiguration method returns an instance of SecurityCheckWithAuthenticationConfig.

```
public abstract class SecurityCheckWithUserAuthentication extends SecurityCheck
WithAttempts {
    @Override
    public SecurityCheckConfiguration createConfiguration(Properties properties
) {
        return new SecurityCheckWithAuthenticationConfig(properties);
    }
}
```

SecurityCheckWithAuthenticationConfig enables a property called rememberMeDurationSec. ``java public class SecurityCheckWithAuthenticationConfig extends SecurityCheckWithAttemptsConfig {

```
public int rememberMeDurationSec;

public SecurityCheckWithAuthenticationConfig(Properties properties) {
    super(properties);
    rememberMeDurationSec = getIntProperty("rememberMeDurationSec", properties,
0);
}
```

} ``

Those properties can be configured at several levels:

adapter.xml

TODO

application xml?

TODO

console?

TODO

## Built-in Security Checks

TODO List here some of the out-of-the-box security features such as authenticity, direct update, etc. Probably link to the relevant tutorial.

## Scope

A **scope** is a space-separated list of **Scope Elements**. A scope is used to protect a resource (see later).

## Scope Element

By default, the scope elements you write in your *scope* are matched to a **SecurityCheck** with the same name.

Optionally, at the application level, you can also map a **scope element** to a different SecurityCheck. Specifically, you can map it to a list of zero or more SecurityChecks. This can be useful if you want to protect a resource differently depending on which application is trying to access it.

## Protecting resources

### Java adapters

You can specify the *scope* of a Java adapter by using the `@OAuthSecurity` annotation. java

```
@DELETE
@Path("/{userId}")
@OAuthSecurity(scope="deletePower")
//This will serve: DELETE /users/{userId}
public void deleteUser(@PathParam("userId") String userId){
    ...
}
```

In this example, the `deleteUser` procedure uses the annotation

`@OAuthSecurity(scope="deletePower")`, which means that it is protected by a **scope** containing the **scope element** `deletePower`.

A scope can be made of several **scope elements**, space-separated: `@OAuthSecurity(scope="element1 element2 element3")`.

If you do not specify the `@OAuthSecurity` annotation, the procedure is protected by the MobileFirst default security scope. That means that only a registered mobile app that is deployed on the same MobileFirst Server instance as the adapter can access this resource. Any security test protecting the application also applies here.

If you want to disable MobileFirst default security, you can use: `@OAuthSecurity(enabled=false)`.

You can use the `@OAuthSecurity` annotation also at the resource class level, to define a scope for the entire Java class.

## JavaScript adapters

TODO

## External resources

TODO

## Configuring Authentication from the MobileFirst Console

## Further Reading