

Creating a Security Check

fork and edit tutorial (<https://github.ibm.com/MFPSamples/DevCenter/tree/master/tutorials/en/foundation/8.0/authentication-and-security/creating-a-security-check/index.md>) | report issue (<https://github.ibm.com/MFPSamples/DevCenter/issues/new>)

Overview

A security check is an object responsible for obtaining credentials from a client and validate them.

Security checks are defined inside **an adapter** and are implemented in Java code. 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**.

Prerequisites: Familiarize yourself with the MobileFirst Platform Foundation authentication framework before continuing.

Read the Authentication concepts (./authentication-concepts/) tutorial.

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Defining a Security Check

Create a Java or JavaScript adapter (./../adapters/creating-adapters/) or use an exiting one.

When creating a Java adapter, the default template assumes the adapter will serve **resources**. It is the developer's choice to bundle security checks and resources in the same adapter, or to separate them into distinct adapters.

To remove the default **resource** implementation, delete the files **[AdapterName]Application.java** and **[AdapterName]Resource.java**. Remove the `<JAXRSApplicationClass>` element from **adapter.xml** as well.

In the Java adapter's adapter.xml file, add an XML element called `securityCheckDefinition`. For example:

```
<securityCheckDefinition name="sample" class="com.sample.sampleSecurityCheck">
  <property name="successStateExpirationSec" defaultValue="60"/>
  <property name="failureStateExpirationSec" defaultValue="60"/>
  <property name="maxAttempts" defaultValue="3"/>
</securityCheckDefinition>
```

- The `name` attribute will be the name of your security check.
- The `class` attribute specifies the implementation Java class of the security check. You need to create this class.
- Some `SecurityChecks` can be configured with a list of `property` elements.

Security Check Implementation

Create the security check's **Java class**. The implementation should extend one of the provided base classes, below.

The parent class you choose will determine the balance between customization and simplicity.

Security Check

`SecurityCheck` is a Java **interface**, defining the minimum required methods to represent the server-side state of a security check. Using this interface alone does not provide any implementation code and it is the sole responsibility of the implementor to handle each scenario.

ExternalizableSecurityCheck

This abstract class implements a basic version of the security-check interface.

It provides, among other options: externalization as JSON, inactivity timeout, expiration countdown and more.

Subclassing this class leaves a lot of flexibility in your Security Check implementation.

Learn more in the `ExternalizableSecurityCheck` user documentation topic.

CredentialsValidationSecurityCheck

This abstract class extends `ExternalizableSecurityCheck` and implements most of its methods to simplify usage. Two methods are required to be implemented: `validateCredentials` and `createChallenge`.

The `CredentialsValidationSecurityCheck` class is meant for simple flows to need to validate arbitrary credentials in order to grant access to a resource. Also provided is a built-in capability to block access after a set number of attempts.

Learn more in the `CredentialsValidationSecurityCheck` (../credentials-validation/) tutorials.

UserAuthenticationSecurityCheck

This abstract class extends `CredentialsValidationSecurityCheck` and therefore inherits all of its features.

In addition, the `UserAuthenticationSecurityCheck` class provides the MobileFirst framework an `AuthenticatedUser` object which represents the logged-in user. Methods that are required to be implemented are `createUser`, `validateCredentials` and `createChallenge`.

Also provided is a built-in capability to optionally enable a "Remember Me" login behavior.

Learn more in the UserAuthentication security check (../user-authentication/) tutorials.

Security Check Configuration

Each security-check implementation class can use a `SecurityCheckConfiguration` class that defines properties available for that security check. 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 security check.

For example, `UserAuthenticationSecurityCheck`'s `createConfiguration` method returns an instance of `UserAuthenticationSecurityCheckConfig`.

```
public abstract class UserAuthenticationSecurityCheck extends CredentialsValidationSecurityCheck {
    @Override
    public SecurityCheckConfiguration createConfiguration(Properties properties) {
        return new UserAuthenticationSecurityCheckConfig(properties);
    }
}
```

`UserAuthenticationSecurityCheckConfig` enables a property called `rememberMeDurationSec` with a default of `0`.

```
public class UserAuthenticationSecurityCheckConfig extends CredentialsValidationSecurityCheckConfig {

    public int rememberMeDurationSec;

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

}
```

These properties can be configured at several levels:

adapter.xml

In the Java adapter's `adapter.xml` file, inside `<securityCheckDefinition>`, you can add one or more `<property>` elements.

The `<property>` element takes the following attributes:

- **name**: The name of the property, as defined in the configuration class.
- **defaultValue**: Overrides the default value defined in the configuration class.
- **displayName**: A friendly name to be displayed in the console.

Example:

```
<property name="maxAttempts" defaultValue="3" displayName="How many attempts are allowed"/>
```

MobileFirst Operations Console - Adapter

In the MobileFirst Operations Console → **[your adapter]** → **Security Check tab**, you will be able change the value of any property defined in the `adapter.xml`.

Note that **only** the properties defined in `adapter.xml` appear on this screen; properties defined in the configuration class won't appear here automatically.

The screenshot shows the MobileFirst Operations Console interface. On the left, a sidebar contains navigation links: Dashboard, Runtimes, mfp, Applications (with a 'New' button), PinCodeSwift, Adapters (with a 'New' button), PinCodeAttempts (selected), ResourceAdapter, Settings, Devices, and Error Log. The main content area shows the breadcrumb 'Home > mfp > PinCodeAttempts' and a 'PinCodeAttempts' title. Below the title are tabs for Configurations, Resources, Security Check (active), and Configuration Files. The Security Check section contains four form fields: 'The valid PIN code *' (value: 1234, Default Value: 1234), 'How many attempts are allowed *' (value: 3, Default Value: 3), 'How long before the client can try again (seconds) *' (value: 60, Default Value: 60), and 'How long is a successful state valid for (seconds) *' (value: 60, Default Value: 60). At the bottom are 'Save', 'Cancel', and 'Restore Default Values' buttons.

MobileFirst Operations Console - Application

Property values can also be overridden at the application level.

In the MobileFirst Console → **[your application]** → **Security tab**, under the **Security Check Configurations** section, you can modify the values defined in each security check available.

The screenshot shows the MobileFirst Operations Console interface for the 'PinCodeSwift' application (iOS v 1.0 | com.sample.PinCodeSwift). The left sidebar shows the navigation path: mfp > Applications > PinCodeSwift > Platform > iOS > 1.0. The main content area has tabs for Management, Authenticity, Security (active), Log Filters, and Configuration Files. A modal dialog titled 'Configure Security Check Parameters' is open, showing a 'Security Check *' dropdown menu with the text 'Select a security check'. Below the dropdown are 'OK' and 'Cancel' buttons. The background content is dimmed, showing instructions to 'Configure one or more authentications required in order to get proper permissions for running the application' and a 'Create New' button. A message at the bottom states 'You didn't create security check configuration yet' and 'Get started by clicking "Create New"'. There are also 'Create New' buttons in the top right and bottom right of the main content area.

Predefined Security Checks

Also available are these predefined security checks:

- Application Authenticity (../application-authenticity/)
- Direct Update (../using-the-mfpf-sdk/direct-update)
- LTPA

Tutorials to follow next

Continue reading about security checks in the following tutorials.

Remember to deploy your adapter when you're done developing or making changes.

- [Implementing the CredentialsValidationSecurityCheck \(../credentials-validation/\)](#).
- [Implementing the UserAuthenticationSecurityCheck \(../user-authentication/\)](#).
- [Learn about additional MobileFirst Platform Foundation authentication and security features \(../\)](#).