

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 a 'Dashboard' link and a 'Runtimes' section with a sub-link for 'mfp'. Under 'mfp', there are links for 'Applications' (with a 'New' button), 'Adapters' (with a 'New' button), 'Settings', 'Devices', and 'Error Log'. The 'Applications' link is selected, showing a list of applications: 'PinCodeSwift' and 'PinCodeAttempts'. The 'PinCodeAttempts' application is selected, and its configuration page is displayed. The page has a breadcrumb trail: 'Home > mfp > PinCodeAttempts'. The main content area is titled 'PinCodeAttempts' and has tabs for 'Configurations', 'Resources', 'Security Check' (which is active), and 'Configuration Files'. The 'Security Check' tab contains four configuration fields: 'The valid PIN code *' (with a text input '1234' and 'Default Value: 1234'), 'How many attempts are allowed *' (with a text input '3' and 'Default Value: 3'), 'How long before the client can try again (seconds) *' (with a text input '60' and 'Default Value: 60'), and 'How long is a successful state valid for (seconds) *' (with a text input '60' and 'Default Value: 60'). At the bottom of the configuration area 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. The breadcrumb trail is 'Home > mfp > PinCodeSwift > iOS 1.0'. The main content area is titled 'PinCodeSwift' and has tabs for 'Management', 'Authenticity', 'Security' (which is active), 'Log Filters', and 'Configuration Files'. The 'Security' tab contains a section titled 'Configure one or more authentications required in order to get proper permissions for running the application. This can include out-of-the-box security checks or scope elements mapped to security checks.' Below this text is a 'Create New' button. A modal dialog titled 'Configure Security Check Parameters' is open in the foreground. The dialog has a 'Security Check *' label and a dropdown menu with the text 'Select a security check'. Below the dropdown are 'OK' and 'Cancel' buttons. In the background, the 'Security' tab also shows a 'You didn't create security check configuration yet' message and a 'Get started by clicking "Create New"' instruction.

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 \(../\)](#).