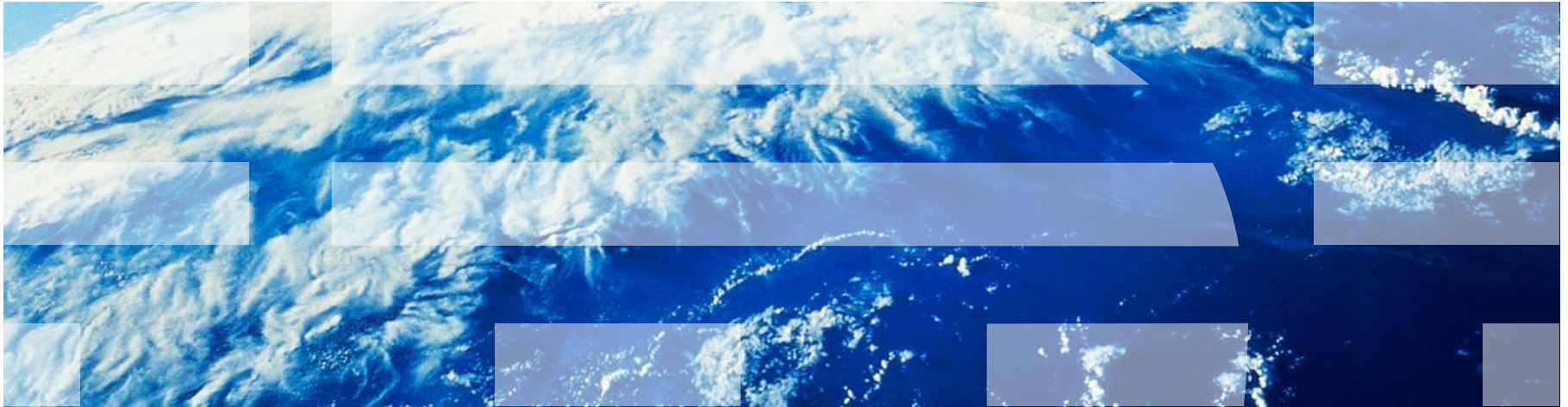


# ***IBM Worklight Foundation V6.2.0*** ***Getting Started***

## **Adapter-based authentication in native Android applications**



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# Agenda

- Introduction to adapter-based authentication
- Configuring the authenticationConfig.xml file
- Creating the server-side authentication components
- Creating the client-side authentication components
- Examining the result
- Exercise

## ***Introduction to adapter-based authentication***

- Adapter-based authentication is the most flexible type of authentication to implement and contains all the benefits of the Worklight® Server authentication framework.
- When you use adapter-based authentication, you can implement the entire authentication logic, including validation of the credentials, an adapter by using plain JavaScript™.
- Nevertheless, you can also use any login module as an extra authentication layer.
- In this module, you implement an adapter-based authentication mechanism that relies on a user name and a password.

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## Configuring the `authenticationConfig.xml` file

- Add an authentication realm to the `<realms>` section of the **`authenticationConfig.xml`** file.

```
<realm loginModule="AuthLoginModule" name="NativeAdapterBasedAuthRealm">
  <className>
    com.worklight.integration.auth.AdapterAuthenticator
  </className>
  <parameter name="login-function"
    value="NativeAdapterBasedAdapter.onAuthRequired"/>
  <parameter name="logout-function"
    value="NativeAdapterBasedAdapter.onLogout"/>
</realm>
```

- This realm uses the `AuthLoginModule` login module, which is defined later.
- Using the `com.worklight.integration.auth.AdapterAuthenticator` class means that the server-side part of the authenticator is defined in the adapter.

## Configuring the authenticationConfig.xml file

```
<parameter name="login-function"  
value="NativeAdapterBasedAdapter.onAuthRequired"/>  
  
<parameter name="logout-function"  
value="NativeAdapterBasedAdapter.onLogout"/>
```

- Whenever the Worklight authentication framework detects an attempt to access a protected resource, an adapter function that is defined in a **login-function parameter** is called automatically.
- When logout is detected (explicit or session timeout), a **logout-function** is called automatically.
- In both cases, the parameter value syntax is `adapterName.functionName`.

## Configuring the `authenticationConfig.xml` file

- Add a login module to the `<loginModules>` section of the **`authenticationConfig.xml`** file and call it `AuthLoginModule`.

```
<loginModule name="AuthLoginModule">  
  <className>com.worklight.core.auth.ext.NonValidatingLoginModule</className>  
</loginModule>
```

- Using a `NonValidatingLoginModule` class name means that no additional validation is performed by the Worklight platform, and the developer takes responsibility for the validation of credentials within the adapter.
- Because all authentication-related actions are done in the adapter code, using `NonValidatingLoginModule` is mandatory for adapter-based authentication.



## Configuring the authenticationConfig.xml file

- Add a security test to the `<securityTests>` section of the **authenticationConfig.xml** file.
- You must use this security test to protect the adapter procedure, so use the `<customSecurityTest>` element.

```
<customSecurityTest name="NativeAdapterBasedSecurityTest">  
    <test isInternalUserID="true" realm="NativeAdapterBasedAuthRealm"/>  
</customSecurityTest>
```

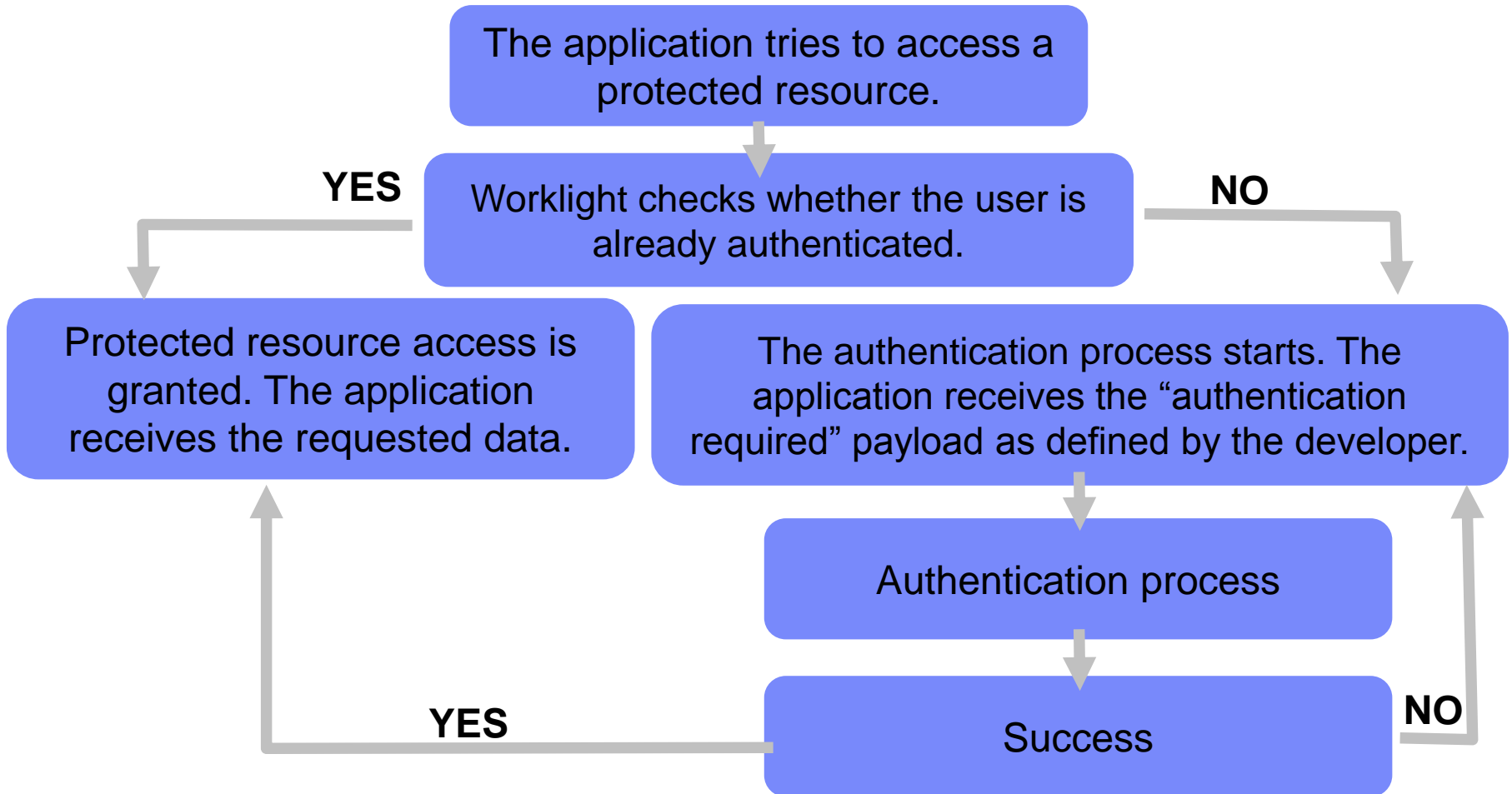
- Remember the security test name; you must use it in subsequent slides.

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# Creating the server-side authentication components

- The following diagram illustrates the adapter-based authentication process:



## *Creating the server-side authentication components*

- Create an adapter that takes care of the authentication process. Name it **NativeAdapterBasedAdapter**.
- **NativeAdapterBasedAdapter** includes the following two procedures:

```
<procedure name="submitAuthentication"/>
```

```
<procedure name="getSecretData"  
  securityTest="NativeAdapterBasedSecurityTest"/>
```

- The `submitAuthentication` procedure takes care of the authentication process and authentication is not required to call it.
- The second procedure, however, is available to authenticated users only.

# Creating the server-side authentication components

- The following diagram shows the flow to implement:



## Creating the server-side authentication components

- Whenever the Worklight framework detects an unauthenticated attempt to access a protected resource, the `onAuthRequired` function is called, as defined in the **authenticationConfig.xml** file).

```
function onAuthRequired(headers, errorMessage) {  
    errorMessage = errorMessage ? errorMessage : null;  
    return {  
        authRequired: true,  
        errorMessage: errorMessage  
    };  
}
```

This object is a custom challenge object that is sent to the application.

- This function receives the response headers and an optional `errorMessage` parameter. The object that is returned by this function is sent to the client application.
- Note the `authRequired: true` property. You use this property in a challenge handler to detect that the server is requesting authentication.

## Creating the server-side authentication components

- The `submitAuthentication` function is called by a client application to validate the user name and password.

```
function submitAuthentication(username, password){  
    if (username==="worklight" && password === "12345"){  
  
        var userIdentity = {  
            userId: username,  
            displayName: username,  
            attributes: {  
                foo: "bar"  
            }  
        };  
  
        WL.Server.setActiveUser("NativeAdapterBasedAuthRealm", userIdentity);  
  
        return {  
            authRequired: false  
        };  
    }  
  
    return onAuthRequired(null, "Invalid login credentials");  
}
```

The user name and password are received from the application as parameters.

## Creating the server-side authentication components

- The `submitAuthentication` function is called by a client application to validate the user name and password.

```
function submitAuthentication(username, password){  
    if (username=="worklight" && password === "12345"){  
        var userIdentity = {  
            userId: username,  
            displayName: username,  
            attributes: {  
                foo: "bar"  
            }  
        };  
        WL.Server.setActiveUser("NativeAdapterBasedAuthRealm", userIdentity);  
        return {  
            authRequired: false  
        };  
    }  
    return onAuthRequired(null, "Invalid login credentials");  
}
```

In this sample, the credentials are validated against some hardcoded values, but any other validation mode is valid, for example by using SQL or web services.



## Creating the server-side authentication components

- The `submitAuthentication` function is called by a client application to validate the user name and password.

```
function submitAuthentication(username, password){  
    if (username==="worklight" && password === "12345"){  
  
        var userIdentity = {  
            userId: username,  
            displayName: username,  
            attributes: {  
                foo: "bar"  
            }  
        };  
  
        WL.Server.setActiveUser("NativeAdapterBasedAuthRealm", userIdentity);  
  
        return {  
            authRequired: false  
        };  
    }  
    return onAuthRequired(null, "Invalid login credentials");  
}
```

If the validation passed successfully, the `WL.Server.setActiveUser` method is called to create an authenticated session for the realm, with user data stored in a `userIdentity` object. You can add your own custom properties to the user identity attributes.

## Creating the server-side authentication components

- The `submitAuthentication` function is called by a client application to validate the user name and password.

```
function submitAuthentication(username, password){
  if (username==="worklight" && password === "12345"){

    var userIdentity = {
      userId: username,
      displayName: username,
      attributes: {
        foo: "bar"
      }
    };

    WL.Server.setActiveUser("NativeAdapterBasedAuthRealm", userIdentity);

    return {
      authRequired: false
    };
  }

  return onAuthRequired(null, "Invalid login credentials");
}
```

An object is sent to the application, stating that the authentication screen is no longer required.

## Creating the server-side authentication components

- The `submitAuthentication` function is called by a client application to validate the user name and password.

```
function submitAuthentication(username, password){  
  if (username==="worklight" && password === "12345"){  
  
    var userIdentity = {  
      userId: username,  
      displayName: username,  
      attributes: {  
        foo: "bar"  
      }  
    };  
  
    WL.Server.setActiveUser("NativeAdapterBasedAuthRealm", userIdentity);  
  
    return {  
      authRequired: false  
    };  
  }  
  return onAuthRequired(null, "Invalid login credentials");  
}
```

If the credentials validation fails, an object that is built by the `onAuthRequired` function is returned to the application with a suitable error message.

## Creating the server-side authentication components

- For training purposes, the `getSecretData` function returns a hardcoded value. Keep in mind that `getSecretData` is protected by a security test, as defined in the adapter XML.
- The `onLogout` function is defined in the **authenticationConfig.xml** file to be called automatically on logout, for example to perform a cleanup.

```
7  
8 function getSecretData(){  
1   return {  
2     secretData: "A very very very very secret data"  
3   };  
4 }  
5  
6 function onLogout(){  
7   WL.Logger.debug("Logged out");  
8 }  
9
```

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## Creating the client-side authentication components (1 of 5)

1. Create a native Android application and add the Worklight native APIs as explained in the documentation.
2. Add an Activity, `LoginAdapterBasedAuth`, which will handle and present the login form.
  - *Remember to add this Activity to the `AndroidManifest.xml` file, too.*
3. Create a `MyChallengeHandler` class as a subclass of `ChallengeHandler`.  
`MyChallengeHandler` should implement 2 main methods:
  - `isCustomResponse`
  - `handleChallenge`

In the sample, the `submitLogin` method is added to present and handle the data that is received from the form.

## Creating the client-side authentication components (2 of 5)

- The `isCustomResponse` method

```
public boolean isCustomResponse(WLResponse response) {
    String strResponse = response.toString();
    if(strResponse.indexOf("\"authRequired\":true")>-1){
        return true;
    }
    return false;
}
```

- This method checks every custom response from Worklight Server to verify whether that is the expected challenge.

## Creating the client-side authentication components (3 of 5)

- The `handleChallenge` method

```
public void handleChallenge(WLResponse response){  
    cachedResponse = response;  
    Intent login = new Intent(parentActivity, LoginAdapterBasedAuth.class);  
    parentActivity.startActivityForResult(login, 1);  
}
```

- This method is called after the `isCustomResponse` method returns `true`. Here this method is used to present the login form.



## Creating the client-side authentication components (4 of 5)

- The `submitLogin` method

```
public void submitLogin(int resultCode, String userName, String password, boolean back){
    if (resultCode != Activity.RESULT_OK || back) {
        submitFailure(cachedResponse);
    } else {
        Object[] parameters = new Object[]{userName, password};
        WLProcedureInvocationData invocationData = new
WLProcedureInvocationData("NativeAdapterBasedAdapter", "submitAuthentication");
        invocationData.setParameters(parameters);
        WLRequestOptions options = new WLRequestOptions();
        options.setTimeout(30000);
        submitAdapterAuthentication(invocationData, options);
    }
}
```

- If the user asked to abort this action, the `submitFailure` method is called. Otherwise, the `submitAdapterAuthentication` method calls the adapter authentication procedure.

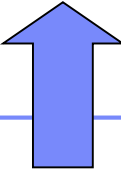
## Creating the client-side authentication components (5 of 5)

- In the Main Activity class, connect to Worklight Server, register your challengeHandler, and invoke the protected adapter procedure.

```
final WLClient client = WLClient.createInstance(this);
client.connect(new MyConnectionListener());

challengeHandler = new AndroidChallengeHandler(this, realm);
client.registerChallengeHandler(challengeHandler);

invokeBtn = (Button) findViewById(R.id.invoke);
invokeBtn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        WLProcedureInvocationData invocationData = new
WLProcedureInvocationData("DummyAdapter", "getSecretData");
        WLRequestOptions options = new WLRequestOptions();
        options.setTimeout(30000);
        client.invokeProcedure(invocationData, new MyResponseListener(), options);
    }
});
```

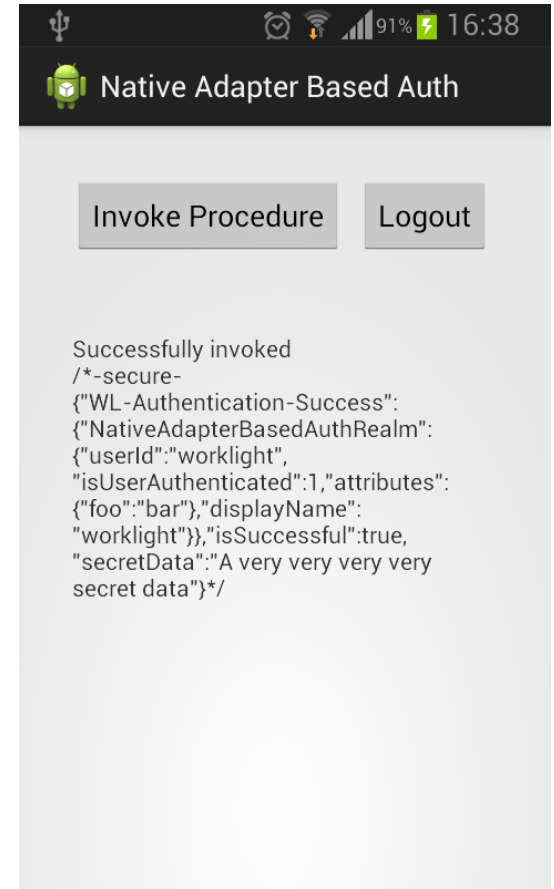
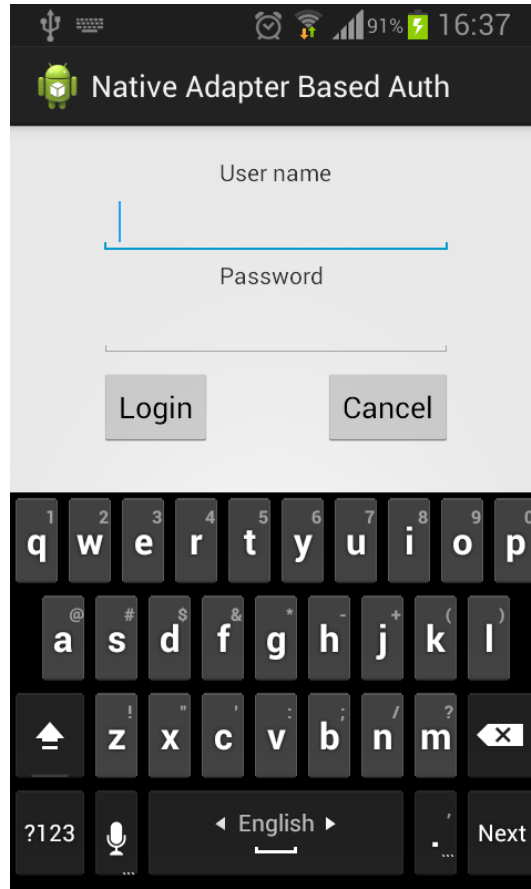
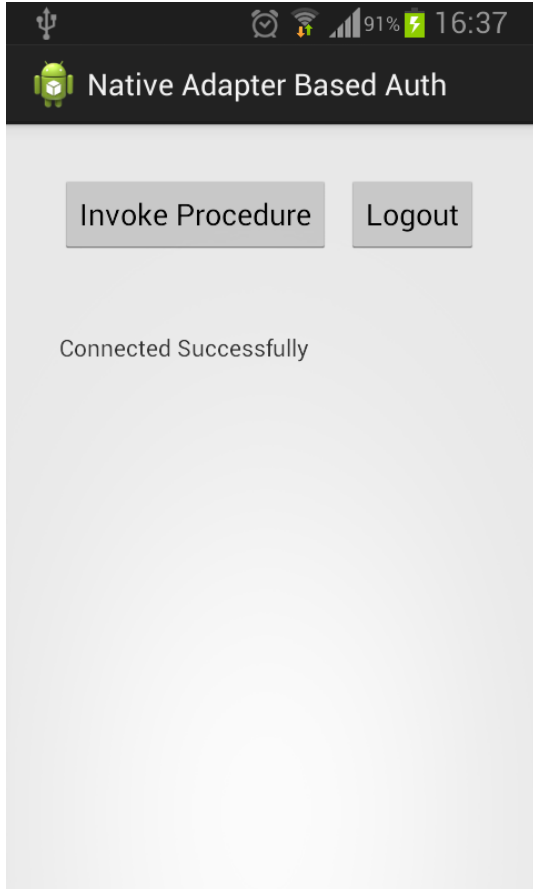


- The call to the procedure triggers Worklight Server to send a challenge that triggers the custom challengeHandler.

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- Creating the client-side authentication components
- **Examining the result**
- Exercise

# Examining the result



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- **Exercise**

## ***Exercise***

- Implement the adapter authentication as described in this training module.
- You can find the sample for this training module in the **Getting Started** page of the IBM® Worklight® Foundation sdocumentation website at <http://www.ibm.com/mobile-docs>.

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