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# Developer Guide: Migrating to Sybase Mobile SDK 2.2 SP04

# Sybase Unwired Platform 2.2 SP04

# Contents

# Migrate Your Artifacts

(Audience: application developers) Migrate your applications to the latest version of Sybase® Unwired Platform 2.2 to take advantage of new features.

The upgrade to Sybase Unwired Platform 2.2 is performed in place, which means you can continue to run 2.1 ESD #3 applications without migrating them. You might need to perform some migration tasks to take advantage of new features and system improvements. See *Best Practices for Migrating Applications* on page 1 for additional information.

After you install and upgrade your Unwired Server instances, migrate your mobile business objects (MBOs), projects, and applications as needed. These instructions are for migrating from Unwired Platform 2.1 ESD #3 to 2.2.

**Note:** References to 2.2 include support packages; specific support packages are identified only if there is a significant change in the support package. Sybase recommends you always install the latest support package available.

If you upgraded from a version earlier than 2.1 ESD #3 (including 2.1, 2.1 ESD #1, and 2.1 ESD #2), refer to *Release Bulletin 2.1 ESD #3*, and its updates, for additional application migration information: *http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc00835.0213/doc/html/title.html*.

For supporting information, see:

- *New Features*
- *Supported Hardware and Software*

## Best Practices for Migrating Applications

Use information to formulate best practices for migrating applications.

When you upgrade to the latest version of Sybase Unwired Platform, client applications continue to run without migrating them. In some cases, adjustments are required to ensure the application runs correctly; and in cases where the client application is based on mobile business objects, the project needs to be started in the Mobile Application Diagram to automatically trigger project migration steps. But overall, the client application continues to run and can synchronize with its enterprise information system. Any exceptions are noted in the documentation.

A client application is compiled code that is based on its data model, and consists of a binary piece, and an Unwired Server piece. This enables the application to execute on devices and in the server. Over time, features are added and improvements made to the SDK and Unwired Server. To take advantage of these improvements, you need to upgrade your server, or implement a more recent SDK version.

If you rely only on in-place migration, after multiple server upgrades your client application may cease to work efficiently or at all. A best practice is to recompile your client application code after a major release, so that the binary and Unwired Server versions are the latest. One strategy is to wait several weeks to ensure the upgraded environment is stable, and then recompile.

## Migrate Mobile Business Objects

No steps are required to migrate 2.1 ESD #3 mobile business objects (MBOs) to version 2.2 SP02; however, you may need to perform some migration steps to take advantage of new features.

If you are migrating from a version earlier than 2.1 ESD #3, see *Release Bulletin 2.1 ESD #3* on Product Documentation, the *Mobile Business Object* section: *http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc00835.0213/doc/html/jwo1333684770287.html*.

### *Migrate Mobile Business Objects to 2.2 SP02*

- In versions earlier than Unwired Platform version 2.2 SP02, Sybase Unwired WorkSpace allowed mapping of operations with multiple MBO arguments ('Filled from Attribute', client parameter, and personalization key) at the same time, even though it might not work properly on the device application during runtime.
  With version 2.2 SP02, when adding a mapping of an operation argument, Sybase Unwired WorkSpace now allows only one of the three sources (MBO attribute, client parameter, personalization key) to map into the operation argument at one time; that is, the argument value sources are mutually exclusive.
  However, when migrating the Mobile Application project from earlier versions, Sybase Unwired WorkSpace preserves the original MBO operation argument value assignment choices the developer made, to retain backward compatibility with the project in the earlier version. Sybase Unwired WorkSpace does not remove any mappings when migrating a project.
  In a migrated project, if an operation argument is mapped to a client parameter as well as an attribute or personalization key, this warning appears:

  ```
  Client parameter parameterName might not be used,  as the mapped
  argument has 'Fill from Attribute' or 'Personalization Key'
  specified.
  ```

  The developer must adjust the MBO model so that an operation argument maps to only one source.

  **Note:** The developer can provide a default value for the operation argument, regardless of how the argument is mapped.

**Note:** In releases prior to 2.2 SP02, Sybase Unwired WorkSpace automatically created client parameters definition and mapped them to the related operation arguments. After migration, those client parameters and mapping would stay. But when the user creates a new MBO operation, the client parameter and its mapping to operation argument will not be automatically created. In case the users want to have the client parameters and the mappings to the operation arguments, they can drag and drop an operation argument to the Client Parameters folder in the Input mapping page from the MBO operation wizard or Properties view's Input tab.

# Migrate Object API Applications

No steps are required to migrate 2.1 ESD #3 applications to version 2.2 SP02; however, you may need to perform some migration steps to take advantage of new features.

If you are migrating from a version earlier than 2.1 ESD #3, see *Release Bulletin 2.1 ESD #3* on Product Documentation, the *Required Changes for Object API Applications* section for your platform: *http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc00835.0213/doc/html/aro1360961280513.html*.

## Native Client Version Compatibility Matrix

*Native Client Object API and Unwired Server Version Compatibility*

| | Unwired Server 2.1 | Unwired Server 2.1 ESD #1 | Unwired Server 2.1 ESD #2 | Unwired Server 2.1 ESD #3 | Unwired Server 2.2 SP02 |
|---|---|---|---|---|---|
| Native Client Object API 2.1 | Yes | Yes | Yes | Yes | Yes |
| Native Client Object API 2.1 ESD #1 | No | Yes | Yes | Yes | Yes |
| Native Client Object API 2.1 ESD #2 | No | No | Yes | Yes | Yes |
| Native Client Object API 2.1 ESD #3 | No | No | No | Yes | Yes |

| | Unwired Server 2.1 | Unwired Server 2.1 ESD #1 | Unwired Server 2.1 ESD #2 | Unwired Server 2.1 ESD #3 | Unwired Server 2.2 SP02 |
|---|---|---|---|---|---|
| Native Client Object API 2.2 SP02 | No | No | No | No | Yes |

**Note:**

- Yes – the client application built in this SDK version is supported in the server version (minor adjustments may be necessary to ensure the application runs correctly; see the migration details for the appropriate application type, if any).
- No – the client application built in this SDK version is not supported in the server version.
- Server version – refers to the server version to which an original package is migrated, and not a newly deployed package. For the example of "Native Client Object API 2.1" vs. "server 2.3", the application package that runs on "server 2.3" may not always be newly created and deployed from MobileSDK2.3; it may have been originally created from MobileSDK2.1 and deployed to 2.1 server, and then migrated to 2.3 server.

## Migration Paths for Android

Paths available to migrate Android object API applications from earlier versions to the current version.

| Application is Built with SDK Version | Migration Tasks |
|---|---|
| 2.1.1<br>2.1.2<br>2.1.3 | Migrate your application to the current version. See the migration instructions:<br>• *Migrating Android Applications to 2.2* on page 4 |
| 2.2<br>2.2 SP01<br>2.2 SP02 | No migration changes are required. |

### Migrating Android Applications to 2.2

These changes are required to migrate Android applications to 2.2.

Afaria library changes require you to modify and recompile your applications.

1. Access the Android Afaria client library and JAR files that are available in: `SUP_HOME\MobileSDK<X.X>\ObjectAPI\Android`

**Note:** Alternatively, navigate to the Mobile Enterprise Technical Support website at *http://frontline.sybase.com/support/downloads.aspx* (registration required).

Download the appropriate Android Afaria client (see *Supported Hardware and Software*).

2. Import the Android Afaria client using information in *Developer Guide: Android Object API Applications*. See *Importing Libraries and Code* (in either the *Development Task Flow for Object API Applications* section, or the *Development Task Flow for DOE-based Object API Applications* section as appropriate).

## Migration Paths for BlackBerry

Paths available to migrate BlackBerry object API applications from earlier versions to the current version.

| Application is Built with SDK Version | Migration Tasks |
|---|---|
| 2.1<br>2.1.1 | Migrate your application to the current version. See the migration instructions:<br>• *Migrating BlackBerry Applications to 2.1 ESD #2* on page 8<br>• *Migrating BlackBerry Applications to 2.2* on page 5 |
| 2.1.2 | Migrate your application to the current version. See the migration instructions:<br>• *Migrating BlackBerry Applications to 2.2* on page 5 |

### Migrating BlackBerry Applications to 2.2

No migration changes are required for BlackBerry Object API applications; however, you may need to perform some migration steps to take advantage of new features in 2.2.

- **Client library changes –** for BlackBerry:
  - The `sup_client2.jar` client is now shipped as a library, with no separate `sup_client2.cod` and `sup_client2.alx` files. This requires a change to how you develop BlackBerry projects:
    - **Eclipse projects –** export `sup_client2.jar` into the build path configuration.
    - **BlackBerry JDE projects –** create a library project including `sup_client2.jar`.
  - Several client files have been deleted in version 2.2 SP02: `CommonClientLib`, `MessagingClientLib`, `MocaClientLib files`, and `MCL.jar` substitutes. However, `MCL.jar` packages and classes are shipped into `sup_client2.jar`, so

change your application to reference `sup_client2.jar` and `UltraliteJ12.jar`

For information and examples for migrating existing BlackBerry applications to 2.2 SP02 implementing these changes, see *Migrating BlackBerry Applications (Eclipse Project)* on page 6 and *Migrating BlackBerry Applications (JDE Project)* on page 7.

- **API changes –** a new `setApplicationIdentifier(String value, String signerId)` API is available to replace the old signing implementation. It is based on BlackBerry Password Based Code Signing Authority.

  To learn more about the BlackBerry Password Based Code Signing Authority on which the API is based, and about the parameter `signerId`: *http://supportforums.blackberry.com/t5/Java-Development/Protect-persistent-objects-from-access-by-unauthorized/ta-p/524282*.

  To download the BlackBerry signing tool used with this new API: *https://swdownloads.blackberry.com/Downloads/entry.do?code=D82118376DF344B0010F53909B961DB3*.

  For information and examples for migrating existing BlackBerry applications to 2.2 SP02 implementing this change, see *Migrating BlackBerry Applications (Eclipse Project)* on page 6 and *Migrating BlackBerry Applications (JDE Project)* on page 7.

  **Note:** With this change, the `setApplicationIdentifier(String value)` API is deprecated and will be removed in a future release.

## Migrating BlackBerry Applications (Eclipse Project) to 2.2

Migrate BlackBerry Object API applications from 2.1 ESD #3 to version 2.2 using an Eclipse project.

These steps use an example that demonstrates the new BlackBerry signing API method.

To learn more about the BlackBerry Password Based Code Signing Authority on which the API is based, and about the parameter `Signer Id`: *http://supportforums.blackberry.com/t5/Java-Development/Protect-persistent-objects-from-access-by-unauthorized/ta-p/524282*

1. Download the BlackBerry signer tool, and install it in your development environment: *https://swdownloads.blackberry.com/Downloads/entry.do?code=D82118376DF344B0010F53909B961DB3*.
2. After installing the signer tool, generate a new key file (for example: `suptest.key`).
3. Create the BlackBerry project in Eclipse:
   a) Navigate to **Configure Build Path** > **Libraries** tab, and reference:
      - `sup_client2.jar`
      - `UltraliteJ12.jar`

   b) Navigate to the **Order and Export** tab, and check to make sure the `sup_client2.jar` file is included in your application JAR file.

4. Copy the generated key file (for example, `suptest.key`) to the project `src` folder.
5. In your application source code, set the new key file (`suptest` in this example):

   ```
   com.sybase.mobile.Application.getInstance().setApplication
   Identifier(end2end.test.Const.ApplicationIdentifier,
   "suptest");
   ```
6. Build your project, and run the application on a simulator to test it.
7. When you are ready to run the application on a real device, sign the .cod files using the signature tool (**BlackBerry > Sign**). After you sign the .cod files with the BlackBerry signature tool, use the File Signer that you installed in step 1 to sign the .cod file again.
8. Install the cod files on the device using provisioning procedures, and run the application.

## Migrating BlackBerry Applications (JDE Project) to 2.2

Migrate BlackBerry Object API applications from 2.1 ESD #3 to version 2.2 using a BlackBerry JDE project.

These steps use an example that demonstrates the new BlackBerry signing API method.

To learn more about the BlackBerry Password Based Code Signing Authority on which the API is based, and about the parameter `Signer Id`: *http://supportforums.blackberry.com/t5/Java-Development/Protect-persistent-objects-from-access-by-unauthorized/ta-p/524282*

1. Download the BlackBerry signer tool, and install it in your development environment: *https://swdownloads.blackberry.com/Downloads/entry.do?code=D82118376DF344B0010F53909B961DB3*.
2. After installing the signer tool, generate a new key file (for example: `suptest.key`).
3. Create a BlackBerry library project in the IDE, add `sup_client2.jar` to the project, and then build it.
4. Create an empty BlackBerry project in the IDE:
   a) Navigate to **Configure Build Path**, and import JAR files:
      - `UltraliteJ12.jar`
      - `ULjDatabaseTransfer.jar`

   b) Navigate to the **Project Dependencies** tab, and check the library project.
5. Copy the generated key file (for example, `suptest.key` to the project root folder.
6. In your application source code, set the new key file (`suptest` in this example):

   ```
   com.sybase.mobile.Application.getInstance().setApplication
   Identifier(end2end.test.Const.ApplicationIdentifier,
   "suptest");
   ```
7. Build your project, and run the application on a simulator to test it.
8. When you are ready to run the application on a real device, sign the .cod files using the signature tool. After you sign the .cod files with the BlackBerry signature tool, use the File Signer that you installed in step 1 to sign the .cod file again.

9. Install the cod files on the device using provisioning procedures, and run the application.

## Migrating BlackBerry Applications to 2.1 ESD #2

These changes are required to migrate BlackBerry applications to 2.1 ESD #2.

Update your application:

1. The Application APIs (in the `Application` class) are required for managing application registrations, connections, and context. Rewrite the initialization code in your application to use the Application APIs.

   For information on the `Application` interface, search for *Application APIs* in the Developer Guide for your platform.
2. Callbacks related to application events are contained in a separate `ApplicationCallback` interface. Rewrite your application code to use this interface.

   For information on the `ApplicationCallback` interface, search for *Callback and Listener APIs* in the Developer Guide for your platform.
3. Replication-based synchronization clients require two data channels: a data channel for data synchronization, and a messaging channel for sending registration and push notifications to the client. Update your port configuration for both channels. See *Sybase Control Center for Sybase Unwired Platform* > *Administer* > *Unwired Server* > *Server Properties*.
4. To continue using server-initiated synchronization, you must write code for handling notifications. If change notifications are enabled for synchronization groups, you can implement the `onSynchronize` callback method to monitor this condition, and either allow or disallow default background synchronization.

```
public int onSynchronize(ObjectList groups,
SynchronizationContext context)
{
  int status = context.getStatus();
  if (status == SynchronizationStatus.STARTING_ON_NOTIFICATION)
  {
    // There is changes on the synchronization group
    if (busy)
    {
      return SynchronizationAction.CANCEL;
    }
    else
    {
      return SynchronizationAction.CONTINUE;
    }
  }

  // return CONTINUE for all other status
  return SynchronizationAction.CONTINUE;
}
```

5. Rebuild your application as described in *Migrating BlackBerry Applications (Eclipse Project)* or *Migrating BlackBerry Applications (JDE Project)*.

## Migration Paths for iOS

Paths available to migrate iOS object API applications from earlier versions to the current version.

| Application is Built with SDK Version | Migration Tasks |
|---|---|
| 2.1<br>2.1.1 | Migrate your application to the current version. See the migration instructions:<br>• *Transitioning Applications to Release 2.1 ESD #2* on page 11<br>• *Transitioning MBS Applications to the Current Release (2.1 ESD #3 or Later)* on page 14 |
| 2.1.2 | Migrate your application to the current version. See the migration instructions:<br>• *Transitioning MBS Applications to the Current Release (2.1 ESD #3 or Later)* on page 14 |

## Migrating iOS Native Custom Applications

Understand the strategies and steps to follow when you transition applications to the current release.

### *Migration Strategies*

Your strategy for transitioning MBS-based iOS applications to the current release depends on your current installation configuration, upgrade plans, and the data model changes in the application to be transitioned. Follow the guidance in the scenario that fits your installation configuration and upgrade plan.**Scenario 1**

- Current Installation - 2.1 ESD #2 or earlier MBS client application on 2.1 ESD #2 or earlier Unwired Server
- Upgrade Plan - Upgrade only Unwired Server to the current version, and maintain the existing MBS client application

Your MBS client application should continue to work without error after server upgrade, though some RBS features will not be available for your MBS client application. See *Maintaining MBS Client Applications* on page 14

**Scenario 2**

- Current Installation - 2.1 ESD #2 or earlier MBS client application on 2.1 ESD #2 or earlier Unwired Server

- Upgrade Plan - Upgrade both Unwired Server and client application to the current version. Upgrade the client application to an RBS-based application.
- No Data Model Changes in the application

Recommended Steps:

1. Instruct application users to submit all pending data to the Unwired Server using the existing MBS client application before you migrate to the new RBS application, and coordinate the upgrade. This is an important step as it will ensure that application users do not lose any modified data during your migration. With MBS, once **submitPending** is invoked, the modified data is wrapped as an operation replay message to be sent as soon as connectivity with the server is available. If the application user does not invoke **submitPending** prior to migration, all of their data changes will be lost once migration begins. For this reason, you will need to instruct the application users to use the appropriate UI control exposed by the MBS application to invoke **submitPending** before you migrate the application.
2. Follow the steps included in *Transitioning MBS Client Applications* on page 14 to convert the MBS application to the new RBS application, creating a different application name for the new RBS application on the device. Include explicit screens/message popups within the application to alert the application user to follow these steps:
   a. Submit all pending data from the MBS client application to the Unwired Server.
   b. Confirm that the pending data has been submitted, delete the MBS application, and then begin using the new RBS application.

      **Note:** Once the application user acknowledges and confirms that pending data from the old application has been submitted, do not display the popup/screen messages again.
   c. Subscribe and synchronize the new RBS application with the upgraded Unwired Server.

**Note:** You need to use a different Application Name to avoid an accidental update of the MBS application before the application user has a chance to submit their changes. However, you *can* use the same Application ID for both the new RBS application and for the existing MBS application.

For more in depth steps to transition your MBS client application to RBS, see *Transitioning MBS Client Applications* on page 14

**Scenario 3**

- Current Installation - 2.1 ESD #2 or earlier MBS client application on 2.1 ESD #2 or earlier Unwired Server
- Upgrade Plan - Upgrade both Unwired Server and client application to the current version. Upgrade the client application to an RBS-based application.
- Data Model Changes in the application or MBO project

Recommended Steps:

1. Instruct application users to submit all pending data to the Unwired Server using the existing MBS application before you migrate to the new RBS-based application, and coordinate the upgrade. This is an important step as it will ensure that application users do not lose any modified data during your migration. With MBS, once **submitPending** is invoked, the modified data is wrapped as an operation replay message to be sent as soon as connectivity with the server is available. If the application user does not invoke **submitPending** prior to migration, all of their data changes will be lost once migration begins. For this reason, you will need to instruct the application users to use the appropriate UI control exposed by the MBS application to invoke **submitPending** before you migrate the application.
2. Deploy the new package with data model changes to the server using a new Application ID. Create a new application connection in the Sybase® Control Center.
3. Follow the steps included in *Transitioning MBS Client Applications to the Current Release* on page 14 to convert the MBS application to the new RBS application, creating a different application name and application id for the new RBS application on the device. Include explicit screens/message popups within the application to alert the user to follow these steps:
   a. Submit all pending data from the MBS client to the Unwired Server.
   b. Confirm that the pending data has been submitted, delete the MBS application, and then begin using the new RBS application.

      **Note:** Once the application user acknowledges and confirms that pending data from the old application has been submitted, do not display the popup/screen messages again.
   c. Subscribe and synchronize the new RBS application with the upgraded Unwired Server.

For more in depth steps to transition your MBS client application to RBS, see *Transitioning MBS Applications to the Current Release (2.1.3 ESD #3 or Later)* on page 14

**Note:** For Scenario 2 and 3, there is no data transitioning solution when migrating MBS applications to RBS applications. After the application is converted to RBS, the application user must synchronize the application with the Unwired Server. The new application will not use the data residing in the device database for the old application so the application user will need to delete the old application from the device. If the old application is not removed from the device, the database for the old application will continue to reside on the device; this may double the space consumed on the device when the new application downloads records to the new database.

## Transitioning Applications to Release 2.1 ESD #2

Transition applications to release 2.1 ESD #2 by making changes to application registration.

### *Making Changes to Application Registration*

This task is not required if your application is built with SDK version 2.1 ESD #2. For applications built with SDKs prior to 2.1 ESD #2, make changes to the application to allow it to register.

1. The Application APIs (`SUPApplication` class) are required for managing application registrations, connections, and context. Rewrite the initialization code in your application to use the Application APIs. For information on the `Application` interface, search for *Application APIs* in the Developer Guide for your platform.
   For iOS applications, the Messaging Client API has been removed. Replace references in your application to the Messaging Client API (`SUPMessage` class) with the appropriate use of the Application APIs (`SUPApplication`).
2. Callbacks related to application events are now contained in a separate `ApplicationCallback` interface. Rewrite your application code to use this interface. For information on the `ApplicationCallback` interface, search for *Callback and Listener APIs* in the Developer Guide for your platform.
3. Complete application registration through an automatic or manual process. See the *Application and User Management Overview* topic group in *Sybase Control Center for Sybase Unwired Platform*.
   Use the `SUPApplicationCallback` APIs to check that the application successfully registered and the messaging client connection is established.

The following is sample code from the SUP101 project for `ApplicationCallbackHandler`.

```
#import "SUPApplicationDefaultCallback.h"

// These strings will be used to send out NSNotifications.
#define ON_CONNECTING  @"SUPConnecting"
#define ON_CONNECT_FAILURE @"SUPConnectFailure"
#define ON_CONNECT_DISCONNECT @"SUPConnectDisconnect"
#define ON_CONNECT_SUCCESS @"SUPConnectSuccess"
#define ON_REGISTER_SUCCESS @"SUPRegisterSuccess"
#define ON_REGISTER_FAILURE @"SUPRegisterFailure"

@interface ApplicationCallbackHandler :
SUPApplicationDefaultCallback
{

}

+ (ApplicationCallbackHandler*)getInstance;
@end
#import "ApplicationCallbackHandler.h"



@implementation ApplicationCallbackHandler

+ (ApplicationCallbackHandler*)getInstance
```

```
{
   ApplicationCallbackHandler* _me_1 = [[ApplicationCallbackHandler 
alloc] init];
    [_me_1 autorelease];
    return _me_1;
}


- (void)notify:(NSNotification *)notification
{
     [[NSNotificationCenter defaultCenter] 
postNotification:notification];
}

- (void)onConnectionStatusChanged:
(SUPConnectionStatusType)connectionStatus :(int32_t)errorCode :
(NSString*)errorMessage
{
    NSLog(@"=================================================");
    NSLog(@"onConnectionStatusChanged: status = %d, code = %d, 
message = %@",connectionStatus,errorCode,errorMessage);
    NSLog(@"=================================================");
    NSString *notification = nil;
    switch(connectionStatus)
    {
        case SUPConnectionStatus_CONNECTING:
            notification = ON_CONNECTING;
            break;
        case SUPConnectionStatus_CONNECTION_ERROR:
            notification = ON_CONNECT_FAILURE;
            break;
        case SUPConnectionStatus_CONNECTED:
            notification = ON_CONNECT_SUCCESS;
            break;
        default:
            // Ignore all other status changes for this example.
            break;
    }

    if (notification != nil)
    {
         NSNotification *n = [NSNotification 
notificationWithName:notification object:nil];
         [self performSelectorOnMainThread:@selector(notify:) 
withObject:n waitUntilDone:NO];
    }

}


- (void)onRegistrationStatusChanged:
(SUPRegistrationStatusType)registrationStatus :(int32_t)errorCode :
(NSString*)errorMessage;
{
    NSLog(@"=================================================");
    NSLog(@"onRegistrationStatusChanged: status = %d, code = %d, 
message = %@",registrationStatus,errorCode,errorMessage);
    NSLog(@"=================================================");

    if (registrationStatus ==
SUPRegistrationStatus_REGISTRATION_ERROR)
    {

        NSNotification *n = [NSNotification
notificationWithName:ON_REGISTER_FAILURE object:nil];
        [self performSelectorOnMainThread:@selector(notify:)
withObject:n waitUntilDone:NO];
    }

    if (registrationStatus == SUPRegistrationStatus_REGISTERED)
    {

        NSNotification *n = [NSNotification
notificationWithName:ON_REGISTER_SUCCESS object:nil];
        [self performSelectorOnMainThread:@selector(notify:)
withObject:n waitUntilDone:NO];
    }

}

@end
```

## Maintaining MBS Client Applications

To continue to use your existing MBS client applications, continue to use an earlier version of the SDK.

When you upgrade your Sybase Mobile SDK, the installation does not overwrite earlier versions of the SDK. Instead, the installation coexists with the earlier version of the SDK, and retains full backward compatibility with applications developed in the earlier version. However, features available in 2.1 ESD #3 or later versions of the SDK may not be available for applications developed in earlier versions of the SDK.

The following replication-based synchronization features are unavailable for messaging-based synchronization applications:

- Asynchronous upload of operation replay results
- Push synchronization APIs for sending change notifications to devices
- Change log APIs to allow a client to retrieve entity changes from the back end

For information on support of earlier SDKs with a 2.1 ESD #3 or later server, see the *Installation Guide for Sybase Mobile SDK > Getting Started > Backward Compatibility*.

For information on messaging-based synchronization applications, see the *Developer Guide: iOS Object API Applications* from 2.1 ESD #2.

## Transitioning MBS Applications to the Current Release (2.1 ESD #3 or Later)

(Not applicable to DOE based applications) iOS applications built with earlier versions of the SDK use messaging-based synchronization (MBS) for data delivery. Applications built using

SDK version 2.1 ESD #3 or later use replication-based synchronization (RBS) for data delivery to reduce synchronization time.

This task flow shows you how to transition your messaging-based application to the current release as a replication-based application. The tasks include setting up the project, updating the application, and testing the application.

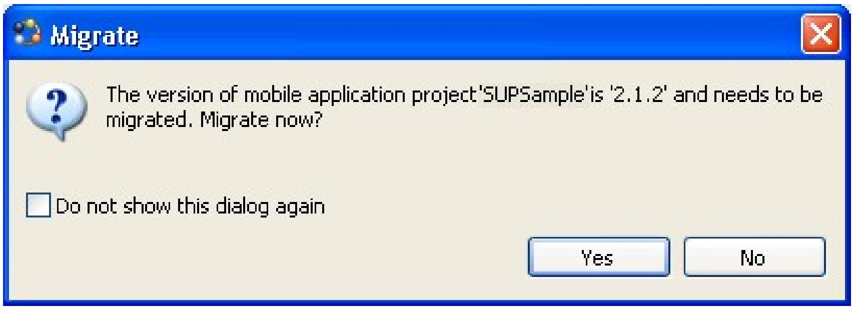
**Note:** The code samples in this task flow are from the SUP101 project from the *Tutorial: iOS Object API Application Development*.

### Migrating the Project and Generating Code

Migrate the existing project to the current version of sdk-name, and generate new RBS object API code.

**Important:** Upgrade to the current version of sdk-name prior to migrating your project.

1. Export the existing mobile application project from the earlier version of tooling-name.
2. In the current version of tooling-name, import your existing application project.
3. Right-click the project and select **Open in Diagram Editor**.
4. Select **Yes** to migrate the project to the current version of the SDK.


Migrate

The version of mobile application project'SUPSample'is '2.1.2' and needs to be migrated. Migrate now?

Do not show this dialog again

5. Right-click the project and select **Generate Code** to generate code that supports replication-based synchronization.

For more information on code generation options, see *Developer Guide: iOS Object API Applications > Developer Task Flow for Object API Applications > Generating Objective-C Object API Code*.

### Setting Up the Xcode Project

Set up the Xcode project with the generated code and libraries required in the current version of the SDK.

**Important:** Install the Xcode version required for the current version of sdk-name prior to setting up the Xcode project. See *Supported Hardware and Software*

1. In the Xcode project, open your existing application.
2. Remove the existing generated code and add the new generated code.

   To remove the existing generated code:

   a. In the Xcode tree view, right-click the `Generated Code` folder and select **Delete**.
   b. In the confirmation dialog, select **Delete**.
   c. In Finder, go to the Xcode project folder. Delete the empty `Generate Code` physical folder to ensure that the new generated code gets imported correctly by Xcode.

3. Remove all of the libraries that you added from the `SUP_HOME\MobileSDK\ObjectAPI\iOS\Libraries\` folder when you created the application in an earlier version of the SDK.
4. Add all of the libraries from the `SUP_HOME\MobileSDK<version>\ObjectAPI\iOS\RBS\Libraries\` folder in the current version of the SDK.
5. Remove the existing `\includes` header files and add the new ones from `SUP_HOME\MobileSDK<version>\ObjectAPI\iOS\RBS\includes\`

   To remove the existing files:

   a. In the Xcode tree view, right-click the `includes` folder and select **Delete**.
   b. In the confirmation dialog, select **Delete**.
   c. In Finder, go to the Xcode project folder. Delete the empty `includes` physical folder to ensure that the new generated code gets imported correctly by Xcode.

## *Making Changes to Application Initialization*

Make changes to the application to allow it to initialize as required in 2.1 ESD #3.

1. Set the login credentials for login and database synchronization.

```
SUPConnectionProfile *sp = [SUPSampleSUPSampleDB
getSynchronizationProfile];
[sp setUser:@"supAdmin"];
[sp setPassword:@"supPwd"];
```

2. After you complete the registration, the server exchanges settings from the application connection template with the device. In most circumstances, you do not need to set additional properties for the application in the synchronization profile. If you need to override some of the properties from the template you can do so through the synchronization profile.

```
[sp setServerName:@"relayservername.com"];
[sp setNetworkProtocol:@"networkProtocol"];
[sp setPortNumber:portNumber];
```

3. Login and subscribe to the server using the credentials set up in step 1. In an MBS application, `subscribe` causes data to be pushed to the client from the server. For RBS, it allows the server to clean up client-specific information proactively (for example, synchronization parameters when they are no longer required). The server is typically configured to remove inactive artifacts after a certain period of time. With an RBS `subscribe`, no data is pushed to the device, it is only used for administrative purposes.

```
[SUP101SUP101DB onlineLogin];
[SUP101SUP101DB subscribe];
```

4. Determine the mode of synchronization to exchange data with the server. In RBS, you can perform synchronization synchronously or asynchronously. Synchronous means that the

calling thread is blocked until the synchronization is complete whereas asynchronous synchronization leverages a background thread. Synchronization consists of upload (sending up the operation replay) and download (pulling down the new/changed data) phases. If you invoke the asynchronous API to perform synchronization, the appropriate callbacks are invoked to inform you of its completion.

```
[SUP101SUP101DB synchronize];  // synchronous API
[SUPSampleSUPSampleDB beginSynchronize];  // asynchronous API
```

**5.** Determine the mode of operation replay. As with synchronization, operation replay can be processed by the server in a synchronous or asynchronous manner.Synchronous means that the synchronization session that uploads the operation replay waits for its completion before initiating the download phase to pull down data, including the result and status of the operation replay. Asynchronous replay means the synchronization session immediately goes to the download phase after the operation replay is successfully queued.

For an MBS application migrating to RBS, asynchronous replay is closer in behavior. You can implement this behavior in the synchronization API that has an `uploadOnly` parameter. By setting this parameter to true, the synchronization session skips the download phase, and only the operation replay is sent to the server. However, that is not to say that you should always use asynchronous replay. You should make the decision based on the business use case instead of the behavior of the previous implementation.

You only need to set the asynchronous replay flag once.

```
[sp setAsyncReplay:NO];  // Synchronous replay
[SUP101SUP101DB synchronize];  // Synchronous synchronization
```

When the `synchronize` method returns, the operation replay has completed and the data/result is on the client side database. You can also use the asynchronous synchronization API:

```
[sp setAsyncReplay:NO];  // Synchronous replay
[SUP101SUP101DB beginSynchronize];  // Asynchronous
synchronizaiton
```

The `onSynchronize` callback with a `SUPSynchronizationStatus_FINISHING` status is fired when the synchronization has completed. At this point, the operation replay has completed and the data/result is on the client side database. To leverage asynchronous replay, use the API that supports the `uploadOnly` parameter.

```
[sp setAysncReplay:YES];  // Asynchronous replay
[SUP101SUP101DB beginSynchronize:syncGroups
withContext:userContext withUploadOnly:YES];
```

With the `AsyncReplay` flag turned on, the client object API calls the `onSynchronize` callback method with an `SUPSynchronizationStatus_ASYNC_REPLAY_UPLOADED` status after the upload phase, followed by an `SUPSynchronizationStatus_FINISHING` status. No data is pulled down to the device database as there is no download phase.

**Note:** Control returns immediately, without the replay results synchronized to the client. The `beginSynchronize` method is a nonblocking call. The following callback from the `SUPDefaultCallbackHandler` is invoked as the synchronization session progresses.

```
(SUPSynchronizationActionType)onSynchronize:
(SUPObjectList*)syncGroupList withContext:
(SUPSynchronizationContext *)context
```

**Note:** In later versions of the Mobile SDK, the `uploadOnly` parameter is available with the synchronous API.

It is not recommended to initiate synchronization without the `uploadOnly` parameter set to YES due to a race condition. You cannot predict if the download phase pulls down data/results pertaining to the operation replay. If there are multiple operation replays being uploaded, some may complete and get downloaded. When the batch of uploaded operation replays is completed, the server sends a notification triggering the `onSynchronize` callback with `SUPSynchronizationStatus_ASYNC_REPLAY_COMPLETED`. A synchronization is automatically initiated to pull down the data/result. You can allow this synchronization to continue or abort it by returning CANCEL to the `onSynchronize` callback associated with this synchronization. This `onSynchronize` callback has `SUPSynchronizationStatus_STARTING`.

In some use cases, you may perform a full (upload and download) synchronization.

6. Handle the callbacks associated with the completed operation replay if appropriate. Typically, you use these callbacks in your application to signal to the UI layer that the data/result are now available or pending status is to be turned off.
   - `- (void)onReplayFailure:(id)entityObject`
   - `- (void)onReplaySuccess:(id)entityObject`

### *Connecting Through a Relay Server*

An iOS RBS client that connects through a Relay Server needs two different farm IDs: one for a messaging client connection to register the application, and the RBS connection for database synchronization.

In your iOS application, set up the messaging client and database connection through Relay Server. Note that, in most cases, the application template already contains settings for the RBS connection so you do not need to set any properties. The settings from the template are downloaded to the client after registration is completed. However, it may be necessary in a development environment to directly manipulate the settings.

1. To set up a messaging client connection, use:

```
SUPApplication * app = [SUPApplication getInstance];

// should be same as application id from SCC
[app setApplicationIdentifier:@"appId"];
SUPConnectionProperties* props = app.connectionProperties;
[props setServerName:serverName];
```

```
[props setPortNumber:80]; // or 443 for HTTPS
[props setNetworkprotocol:@"http"]; // or https for secure
connection
[props setUrlSuffix:@""];
[props setFarmId:@"farmIDMBS"];
SUPLoginCredentials* login = [SUPLoginCredentials getInstance];
login.username = @"userName"; // same as in Application Connection
login.password = nil;
props.loginCredentials = login;
props.activationCode = @"123"; // same as in Application
Connection
props.securityConfiguration = @"admin";
```

**2.** To set up a database connection:
   - If the application connection template on SCC is configured with all the required Relay Server information, application code only needs to do:

     ```
     SUPConnectionProfile *sp = [SUP101SUP101DB
     getSynchronizationProfile];
     [sp setUser:@"supAdmin"];
     [sp setPassword:@"password"];
     [sp setAsyncReplay:NO];
     ```
   - Otherwise, application code needs to fill all the Relay Server information before doing data synchronization:

     ```
     SUPConnectionProfile *sp = [SUP101SUP101DB
     getSynchronizationProfile];
     [sp setUser:@"supAdmin"];
     [sp setPassword:@"password"];
     [sp setAsyncReplay:NO];

     [sp setServerName:@"relayServerHostName"];
     [sp setPortNumber:443]; // or 80 for http
     [sp setNetworkProtocol:@"https"];
     // certificateName: this should come from the relay server and
     should be
     // included in the Resource folder of the XCode project
     [sp
     setNetworkStreamParams:@"trusted_certificates=certificateName;
     compression=zlib;url_suffix=urlSuffixRBS"];
     ```

     **Note:** `urlSuffixRBS` needs to match the exact string of Relay Server RBS url_suffix configuration.

The above code should be done before doing any data synchronization (including subscribe/onlineLogin).

## *Setting Up Callbacks*

Update your application to use callbacks available in SDK version 2.1 ESD #3 or later.

All callback methods are included in the `SUPCallbackHandler` protocol, and you must implement them in any class that directly implements the protocol without subclassing the default implementation in `SUPDefaultCallbackHandler`.

1. If you have directly implemented the `SUPCallbackHandler` protocol, you must implement all methods. In replication-based synchronization, there are several methods in the protocol that are specific to messaging-based synchronization, and will never be called.

   If you have created your callback handler as a subclass of `SUPDefaultCallbackHandler`, you can safely remove the following messaging-based synchronization callbacks, as the `SUPDefaultCallbackHandler` has empty implementations of all the required methods.

   - `beforeImport`, `onImport`, and `onImportSuccess`
   - `onLoginSuccess`
   - `onSubscribeFailure`, and `onSubscribeSuccess`
   - `onSuspendSubscriptionFailure`, and `onSuspendSubscriptionSuccess`
   - `onResumeSubscriptionFailure`, and `onResumeSubscriptionSuccess`
   - `onUnsubscribeFailure`, and `onUnsubscribeSuccess`
   - `onMessageException`
   - `onTransactionCommit`, and `onTransactionRollback`
   - `onRecoverFailure`, and `onRecoverSuccess`

   For a complete list of callbacks you can implement in your application, see *Developer Guide: iOS Object API Applications* > *Client Object API Usage* > *Callback and Listener APIs*. If the application uses `onImport` to generate a notification on instance creation and modification, you must change to use the `ChangeLog` facility in RBS. By default, `ChangeLog` is disabled and you can enable it using the generated database class. Once enabled, the server creates a change log record to identify each updated and deleted instance. Due to a limitation of RBS, the change log record only contains two operation types: update and delete. An update is actually an upsert (update/insert). Generating change logs can be expensive if you are downloading a large amount of data. For that reason, it is recommended that you disable the change log facility for initial or large delta synchronization. See *Generating Change Logs*.
2. If your application uses `SUPApplicationCallback`, update it to use these methods:

   Old method:

   ```
   - (void)onConnectionStatusChanged:(SUPInt)connectionStatus :
   (SUPInt)errorCode :(SUPNullableString)errorMessage;
   ```

   New method:

   ```
   - (void)onConnectionStatusChanged:
   (SUPConnectionStatusType)connectionStatus :(int32_t)errorCode :
   (NSString*)errorMessage;
   ```

   Old method:

   ```
   - (void)onRegistrationStatusChanged:(SUPInt)registrationStatus :
   (SUPInt)errorCode :(SUPNullableString)errorMessage;
   ```

New method:

```
- (void)onRegistrationStatusChanged:
(SUPRegistrationStatusType)registrationStatus :
(int32_t)errorCode :(NSString*)errorMessage;
```

Old method:

```
- (void)onDeviceConditionChanged :(SUPInt)condition;
```

New method:

```
- (void)onDeviceConditionChanged :
(SUPDeviceConditionType)condition;
```

## *Generating Change Logs*

Use the Change Log API to generate change logs that are sent to the client after the synchronization.

In MBS, the application can use the information in the change logs to update its UI tables with new records and deletions. To do in the same in RBS, enable change logs in your application before synchronizing.

```
[SUP101SUP101DB enableChangeLog];
```

This method notifies you of all changes including the initial synchronization records. You may want to set a flag to indicate when the initial synchronization is done so you do not update the UI for all these initial records.

To set a flag, use code similar to this in your callback `onSynchronize` (`isCompleteSynchronize` is an application variable, set to true after the first synchronization is complete):

```
- (SUPSynchronizationActionType)onSynchronize:
(SUPObjectList*)syncGroupList withContext:
(SUPSynchronizationContext*)context
{
  if (context.status == SUPSynchronizationStatus_ERROR)
  {
      MBOLogError(@"onSynchronize failed for context %@ with
exception %@", context.userContext, [context.exception reason]);
  } else if (context.status == SUPSynchronizationStatus_FINISHING)
  {

      if (self.isCompleteSynchronize)
      {
          // Handle change log
         SUPObjectList *changeLogs = (SUPObjectList *)[SUP101SUP101DB
getChangeLogs:[SUPQuery getInstance]];
          if([changeLogs size] > 0)
          {
              [changeLogs retain];

              // delete these so we don't do updates later on these.
              [SUP101SUP101DB deleteChangeLogs];
              for (id<SUPChangeLog> cl in changeLogs)
              {
                  MBOLogDebug(@"Changelog: %@['%c', %ld]\n",
                              [SUP101SUP101DB getEntityName:[cl
entityType]],
                             [cl operationType], [cl surrogateKey]);

                // If your UI needs to find the actual object you can
                  // convert the entity name to a class.
                  Class entityClass =
NSClassFromString([SUP101SUP101DB  getEntityName:[cl entityType]]);
                  if (entityClass)
                  {
                   // You can either use the surrogate key or change
to the "keyToString" equivalent.
                      NSString *primaryKey = [SUPStringUtil
                                              toString_long:[cl
surrogateKey]];
                      NSString *type = ([cl operationType] == 'D'
                                        ) ? @"delete" : @"update";

                      // Notify your UI with NSNotification...
                  } //entityClass
                }
              [changeLogs release];
          }
      }
  }

  return SUPSynchronizationAction_CONTINUE;
}
```

*Creating, Updating, or Deleting Records*

In SDK version 2.1 ESD #2 applications, after creating, updating or deleting records, you called the `save` method to save the change to the local database, and called `submitPending` to send the change to the server. In SDK version 2.1 ESD #3 applications, after updating or creating records, you call the `save` and `submitPending` methods, and call `synchronize` to send the changes to the server.

1. In the 2.1 ESD #2 *Tutorial: iOS Object API Application Development*, locate this code:

   ```
   [newCustomer save];
   ```

   ```
   [newCustomer submitPending];
   ```

   **Note:** In MBS, the generated operation from `submitPending` is automatically sent to the Unwired Server. In your RBS applications, you must instead invoke the `synchronize` method to send the record to the Unwired Server.

2. Add the following new code. You call `synchronize` to send the update or new record to the server. The call can be either synchronous or asynchronous.

   ```
   @try {
     [SUP101SUP101DB synchronize];
   }
   @catch (NSException *exception) {
   ```

```
  MBOLogError(@"%@: %@", [exception name], [exception reason]);
}
```

The above code examples synchronize the default group. Alternatively, you can synchronize based on the synchronization group the MBO belongs to.

```
NSString *customer_sg = [customer
metaData].synchronizationGroup;
[db synchronize:customer_sg];
```

**Note:** Unlike MBS, the `submitPending` method in RBS is a client-side only operation, but is still required before calling the database class's `synchronize` method, which sends the changes to the server.

### *Testing the Application*

After you have transitioned your application to SDK version 2.1 ESD #3, test the application to ensure that it can establish messaging and database connections to the Unwired Server, perform an initial synchronization, and update the database.

**Note:** There is no data-transitioning solution. The data residing in the old device database is not used after the application is converted to RBS. The application users should submit all pending data to the Unwired Server using the existing MBS client application before the migration to the new 2.1 ESD #3 RBS application. See *Migration Strategies for 2.1 ESD #3* in *Migrating iOS Native Custom Applications* on page 9 After all the pending changes are synchronized to the Unwired Server, the application user needs to remove the old application and/or the older existing database on the device. If the old application is not removed from the device, the database for the old application will continue to reside on the device; this may double the space consumed on the device when the new application downloads records to the new database.

Start and test the client application:

1. Verify that no exceptions have been received from the code that subscribes to the database. If an exception has been received, check the connection profile.

   If no exception has been received, you have successfully established the connection to the database.
2. Verify that no exceptions have been received from the code that performs initial synchronization. If an exception has been received, check for any server-side issues in the server log. Also ensure that there is no incompatibility in versions between the deployed package on the server and the generated code.

   If no exception has been received, you have successfully performed an initial synchronization.
3. Verify that no exceptions have been received from the code that creates or updates a record. Also verify that you can view the update on the server.

## Migration Paths for Windows and Windows Mobile Applications

Paths available to migrate Windows and Windows Mobile object API applications from earlier versions to the current version.

| Application is Built with SDK Version | Migration Tasks |
|---|---|
| 2.1<br>2.1.1 | Migrate your application to the current version. See the migration instructions:<br>• *Migrating Windows and Windows Mobile Applications to 2.1 ESD #2* on page 25<br>• *Migrating Windows and Windows Mobile Applications to 2.1 ESD #3* on page 24<br>• *Migrating Windows and Windows Mobile Applications to 2.2* on page 24 |
| 2.1.2 | Migrate your application to the current version. See the migration instructions:<br>• *Migrating Windows and Windows Mobile Applications to 2.1 ESD #3* on page 24<br>• *Migrating Windows and Windows Mobile Applications to 2.2* on page 24 |

### Migrating Windows and Windows Mobile Applications to 2.2

No migration changes are required for BlackBerry Object API applications; however, you may need to perform some migration steps to take advantage of new features.

A client library name change requires you to modify and recompile your Windows Mobile and Win32 applications. The version number is appended to the file name: `CMessagingClient.dll` has been renamed to `CMessagingClient2.2.2.dll`.

### Migrating Windows and Windows Mobile Applications to 2.1 ESD #3

These changes are required for Windows and Windows Mobile applications being migrated from a version earlier than 2.1 ESD #3.

In 2.1 ESD#3, there are two new required libraries for Windows clients.

Rebuild your project to include additional references to the new libraries:

1. Add the following new libraries as items in the Visual Studio project. Set the "Build Action" to **Content** and "Copy to Output Directory" to **Copy always**.

  - For Windows:
    - libeay32.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\`.
    - ssleay32.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\`.

2. Verify that you have added all required references to your client projects as described in *Developer Guide: Windows and Windows Mobile Object API Applications* > *Development Task Flow for Object API Applications* > *Creating a Project* > *Adding References to a Mobile Application Project*.

See *Developer Guide: Windows and Windows Mobile Object API Applications* for information on developing your application.

## Migrating Windows and Windows Mobile Applications to 2.1 ESD #2

These changes are required for Windows and Windows Mobile applications being migrated from a version earlier than 2.1 ESD #2.

Update and rebuild your application:

1. The Application APIs (in the `Application` class) are required for managing application registrations, connections, and context. Rewrite the initialization code in your application to use the Application APIs.

   For information on the `Application` interface, search for *Application APIs* in the Developer Guide for your platform.
2. Callbacks related to application events are now contained in a separate `ApplicationCallback` interface. Rewrite your application code to use this interface.

   For information on the `ApplicationCallback` interface, search for *Callback and Listener APIs* in the Developer Guide for your platform.
3. Replication-based synchronization clients require two data channels: a data channel for data synchronization, and a messaging channel for sending registration and push notifications to the client. Update your port configuration for both channels. See *Sybase Control Center for Sybase Unwired Platform* > *Administer* > *Unwired Server* > *Server Properties*.
4. To continue using server-initiated synchronization, you must write code for handling notifications. If change notifications are enabled for synchronization groups, you can implement the `onSynchronize` callback method to monitor this condition, and either allow or disallow default background synchronization.

```
public int OnSynchronize(GenericList<ISynchronizationGroup>
groups, SynchronizationContext context)
{
  int status = context.Status;
  if (status == SynchronizationStatus.STARTING_ON_NOTIFICATION)
  {
    // There is changes on the synchronization group
    if (busy)
    {
      return SynchronizationAction.CANCEL;
    }
    else
    {
      return SynchronizationAction.CONTINUE;
    }
  }

  // return CONTINUE for all other status
  return SynchronizationAction.CONTINUE;
}
```

5. In 2.1 ESD #2, the new location of the required libraries is `<UnwiredPlatform_InstallDir>\UnwiredPlatform\MobileSDK\ObjectAPI`.

   Rebuild your project as follows:

   a. Reset the references of the following libraries for the appropriate device platform in the Visual Studio project according to the new location:
      - For Windows Mobile:
        - sup-client.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM`.
        - iAnywhere.Data.UltraLite.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM\Ultralite`.
        - iAnywhere.Data.UltraLite.resources.dll (several languages are supported) – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM\Ultralite\<language>`.
      - For Windows:
        - sup-client.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32`.
        - iAnywhere.Data.UltraLite.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\Ultralite`.
        - iAnywhere.Data.UltraLite.resources.dll (several languages are supported) – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\Ultralite\<language>`.

   b. Remove the following libraries for the appropriate device platform as items in the Visual Studio project. The libraries are no longer required.
      - For Windows Mobile:
        - ulnet11.dll
        - mlcrsa11.dll (if HTTPS protocol is used)
        - PUtilTRU.dll
      - For Windows:
        - ulnet11.dll

        - mlcrsa11.dll (if HTTPS protocol is used)
        - mlczlib11.dll (if using compression)

    c. Add the following libraries for the appropriate device platform as items in the Visual Studio project. Set the "Build Action" to **Content** and "Copy to Output Directory" to **Copy always**.
    - For Windows Mobile:
        - ulnet12.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM\Ultralite`.
        - mlcrsa12.dll (if HTTPS protocol is used) – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM\Ultralite`.
        - mlczlib12.dll (if HTTPS protocol is used) – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM\Ultralite`.
        - CMessagingClient.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\WM\<DeviceType>`. `<DeviceType>` can be Pocket PC or Smartphone as applicable.
    - For Windows:
        - ulnet12.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\Ultralite`.
        - mlcrsa12.dll (if HTTPS protocol is used) – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\Ultralite`.
        - mlczlib12.dll (if using compression) - from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32\Ultralite`.
        - CMessagingClient.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32`.
        - ECTrace.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32`.
        - TravelerLib.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32`.
        - zlib1.dll – from `<UnwiredPlatform_InstallDir>\MobileSDK\ObjectAPI\Win32`.

## Object API Changes in SDK Version 2.2 SP02

There are several changes in the Object API for SDK 2.2 SP02.

### *Write to the Database During Synchronization*

Connection API changes enable you to write to the database during synchronization.

**Table 1. New Connection Method**

| Method | Description |
|---|---|
| `allowConcurrentWrite` | Sets the property to true to allow multiple concurrent writer threads. |

Documented in: *Developer Guide: <Device Platform> Object API Applications*, see *Setting Up the Connection Profile*

*Synchronization Parameter Enhancements*

Subscription API changes let you more easily read or update synchronization parameter names or values for all active synchronization parameter sets; and add synchronization parameters before performing an initial synchronization.

**Table 2. New Subscription Methods**

| Method | Description |
|---|---|
| `GenericList([mbo]Subscription > GetSubscriptions()` | Returns all subscription information. For list type synchronization parameters, the MBO class should use this method to get all default subscriptions. |
| `AddSubscription([mbo]Subscription subscription)` | Adds a subscription. |
| `RemoveSubscription([mbo]Subscription subscription)` | Removes a subscription. |

Documented in: *Developer Guide: <Device Platform> Object API Applications*, see *Managing Synchronization Parameters*

*Native Push Notification*

Use the new `addPushNotificationListener` API to register the push notification listener object, and implement a new PushNotificationListener protocol definition to receive push notifications. When a native push notification is received, the listener's `onPushNotification` method is invoked.

**Table 3. New Push Notification Method**

| Method | Description |
|---|---|
| `addPushNotificationListener` | Enables push notification. |

Documented in: *Developer Guide: <Device Platform> Object API Applications*, see:

- *Native Notification APIs*
- *Callback and Listener APIs*

### *KPI Tracking*

A new Object API client interface enables iOS, Android, and BlackBerry to access performance libraries for tracing or collecting key performance indicators (KPIs).

**Table 4. New PerformanceAgentService Methods**

| Method | Description |
|---|---|
| `startInteraction()` | The service starts collecting metrics. |
| `stopInteraction()` | Metrics collection stops and a summary is sent to a reporting target. |

Documented in: *Developer Guide: <Device Platform> Object API Applications* (Android, BlackBerry and iOS), see *Tracking KPI*

### *End to End Trace*

New API enables you to provide code in client applications so end users can enable trace from the device to the enterprise information system (EIS).

**Table 5. New End to End Trace Classes**

| Class | Platform |
|---|---|
| • `com.sybase.mobile.util.e2etrace.E2ETraceService`<br>• `com.sybase.mobile.util.e2etrace.E2ETraceLevel`<br>• `com.sybase.mobile.util.e2etrace.impl.E2ETraceServiceImpl`<br>• `com.sybase.mobile.util.e2etrace.impl.E2ETraceMessage` | Android |

| Class | Platform |
|---|---|
| • `SUPE2ETraceService`<br>• `SUPE2ETraceLevel`<br>• `SUPE2ETraceServiceImpl`<br>• `SUPE2ETraceMessage` | iOS |

Documented in: *Developer Guide: <Device Platform> Object API Applications* (Android and iOS), see *End to End Trace*

### *Customization Resource Bundles*

A new Application API method is available for customization resource bundles.

**Table 6. New Application API Method**

| Method | Platform |
|---|---|
| `beginDownloadCustomizationBundle()` | Android, BlackBerry, iOS, Windows, Windows Mobile |

Documented in: *Developer Guide: <Device Platform> Object API Applications*, see *beginDownloadCustomizationBundle()*

### *New BlackBerry Application Signing API*

A new BlackBerry application signing API is available for `com.sybase.mobile.Application.getInstance().setApplicationIdentifier(String value)`, which is based on the BlackBerry Password Based Code Signing Authority.

**Table 7. New BlackBerry Application Signing API**

| Method | Description |
|---|---|
| `setApplicationIdentifier(String value, signerId)` | Identifies the signed key file used by the application. The key file is used with the BlackBerry Password Based Code Signing Authority. |

**Table 8. Deprecated BlackBerry API**

| Method | Description |
|---|---|
| `setApplicationIdentifier(String value)` | This method set will be removed in a future release. |

Documented in: *Developer Guide: BlackBerry Object API Applications*, see *Signing*

## Migrate Hybrid Web Container Projects

No steps are required to migrate 2.1 ESD #3 Hybrid Web Container projects to version 2.2; however, you may need to perform some migration steps to take advantage of new features.

If you are migrating from a version earlier than 2.1 ESD #3, see *Release Bulletin 2.1 ESD #3* on Product Documentation, the *Migrating Mobile Workflow Projects* section for your platform: *http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc00835.0213/doc/html/vhu1317418586580.html*.

**Note:** Prior to 2.2, Hybrid Web Container was known as Mobile Workflow.

### Hybrid Web Container Compatibility Matrix

Compatibility between versions of the Hybrid Web Container and server, and Hybrid Web Container and Hybrid App applications.

*Hybrid Web Container and Unwired ServerCompatibility*

| Client/ Hybrid Web Container | Unwired Server 2.1 | Unwired Server 2.1 ESD #2 | Unwired Server 2.1 ESD #3 | Unwired Server 2.2 SP02 |
|---|---|---|---|---|
| Hybrid Web Container 2.1 | Yes | Yes | Yes | Yes |
| Hybrid Web Container 2.1 ESD #2 | No | Yes | Yes | Yes |
| Hybrid Web Container 2.1 ESD #3 | No | Yes | Yes | Yes |
| Hybrid Web Container 2.2 SP02 | No | Yes | Yes | Yes |

There was no 2.1 ESD #1 Hybrid Web Container; 2.1 ESD #1 shipped with 2.1 Mobile Workflow clients.

**Note:**

- Yes – the client application built in this SDK version is supported in the server version (minor adjustments may be necessary to ensure the application runs correctly; see the migration details for the appropriate application type, if any).

- No – the client application built in this SDK version is not supported in the server version.
- Server version – refers to the server version to which the original package is migrated, not the newly deployed package.

*Hybrid Web Container and Hybrid App Compatibility*

| Client/ Hybrid Web Container | Hybrid App 2.1 | Hybrid App 2.1 ESD #2 | Hybrid App 2.1 ESD #3 | Hybrid App 2.2 SP02 |
|---|---|---|---|---|
| Hybrid Web Container 2.1 | Yes | No | No | No |
| Hybrid Web Container 2.1 ESD #2 | Yes | Yes | No | No |
| Hybrid Web Container 2.1 ESD #3 | Yes | Yes | Yes | No |
| Hybrid Web Container 2.2 SP02 | Yes | Yes | Yes | Yes |

There was no 2.1 ESD #1 Hybrid Web Container; 2.1 ESD #1 shipped with 2.1 Mobile Workflow clients.

**Note:**

- Yes – the client application built in this SDK version is supported in the server version (minor adjustments may be necessary to ensure the application runs correctly; see the migration details for the appropriate application type, if any).
- No – the client application built in this SDK version is not supported in the server version.
- Server version – refers to the server version to which the original package is migrated, not the newly deployed package.

## Migrate Hybrid Web Containers

Migration changes may be required to take advantage of new Hybrid Web Container features.

### *Migrate Hybrid Web Container from 2.1 ESD #3 to 2.2*

- Sybase Unwired Platform 2.2 Hybrid Web Container embeds the latest Cordova 2.0 library (previously known as PhoneGap). Any 2.1 ESD #3 Hybrid App that uses PhoneGap 1.4.1 is incompatible with 2.2 Hybrid Web Container unless you upgrade the Hybrid App.

**Note:** Sybase Unwired Platform 2.1 ESD #3 shipped the Android and iOS Hybrid Web Container with the PhoneGap 1.4.1 library embedded. After PhoneGap 1.4.1, backward compatibility was broken, and the name changed to Cordova.

- Update any native PhoneGap plug-in to use the new Cordova interface names.
- BlackBerry Hybrid Web Container has been changed to a standalone application. The 2.2 BlackBerry Hybrid Web Container can coexist only with the 2.1 ESD #3 version. Coexist means the application is not upgraded; instead, multiple versions of the applications exist.
- Windows Mobile Hybrid Web Container has been changed to a standalone application. The 2.2 Windows Mobile Hybrid Web Container can coexist only with the 2.1 ESD #3 version (no upgrade).

## Migrate Hybrid Apps

Migration changes may be required to take advantage of new Hybrid App features.

### *Migrate Hybrid Apps from 2.1 ESD #3 to 2.2*

A Hybrid App developed in an earlier release (such as 2.0, 2.1, 2.1 ESD #2, and 2.1 ESD #3) should be compatible in a 2.2 Hybrid Web Container unless it uses PhoneGap 1.4.1 functionality (PhoneGap broke backward compatibility with its release of the new and renamed Cordova 2.0 library).

To use new 2.2 Hybrid Web Container functionality, manually reconstruct the Hybrid App to use the new JavaScript API files shipped in the folder: `SUP_HOME\MobileSDK22\HybridApp\API\Container`.

The Designer in Sybase Unwired Platform 2.2 SP02 generates code using the new JavaScript API. Earlier versions did not use the new JavaScript API to generate code, and generated 2.1 ESD #3 compatible Hybrid Apps instead.

Additional notes for in-place upgrades:

- The 2.2 Android Hybrid Web Container is an in-place upgrade from 2.1 ESD #3, if you built it from a template source keeping the same “Application id.” In other words, Hybrid Apps that are already deployed remain intact on the device after the upgrade, and the old binaries are replaced with the 2.2 Android Hybrid Web Container binaries. See the Android matrix in *Hybrid Web Container Migration Paths for Android* on page 47.
- The 2.2 BlackBerry Hybrid Web Container is not upgraded but coexists with other versions. See the BlackBerry matrix in *Hybrid Web Container Migration Paths for BlackBerry* on page 48.
- The 2.2 iOS Hybrid Web Container is an in-place upgrade from any earlier version, if you built it from template source keeping the same “bundle id.”. In other words, Hybrid Apps that are already deployed remain intact on the device after the upgrade, and the old binaries are replaced with the 2.2 iOS Hybrid Web Container binaries. See the iOS matrix in *Hybrid*

*Web Container Migration Paths for iOS* on page 49 (the Applications Build from Source Code section).
- The 2.1 ESD #3 to 2.2 iOS Hybrid Web Container from the Apple App Store is an in-place upgrade. See the iOS matrix in *Hybrid Web Container Migration Paths for iOS* on page 49 (Applications Downloaded from Apple's App Store).
- The 2.2 Windows Mobile Hybrid Web Container coexists. See the Windows Mobile matrix in *Hybrid Web Container Migration Paths for Windows Mobile* on page 50.

`HttpAuthDCNServlet` no longer uses the "admin" security profile to authenticate users when an application user name does not include a security configuration name. Instead, if the user name includes a security configuration, `HttpAuthDCNServlet` uses it. For Workflow DCN, where the user name may not include a security profile, `HttpAuthDCNServlet` uses the value of the requested "security parameter" to authenticate the user. This should not affect your Hybrid Apps, but is useful to know if you are developing Hybrid Apps that take advantage of DCN updates.

**See also**
- *Hybrid Web Container Migration Paths for Android* on page 47
- *Hybrid Web Container Migration Paths for BlackBerry* on page 48
- *Hybrid Web Container Migration Paths for iOS* on page 49
- *Hybrid Web Container Migration Paths for Windows Mobile* on page 50

## Migrate Hybrid Apps to JavaScript API

There have been some ongoing changes to the JavaScript API for Hybrid Apps to accommodate new Hybrid Web Container functionality, and make it more flexible and easy to use. These changes were first made available in version 2.2, and became the default generation method in version 2.2 SP02.

Existing applications can still use the older generated JavaScript API; if you want to use the new Hybrid Web Container functionality or the new API, there are certain steps you must perform to successfully migrate existing applications.

The new JavaScript API includes:

- New Hybrid Web Container functionality
- Access to third-party frameworks and designers by generating fewer Hybrid App-specific files
- Use of a global namespace-style variable to help resolve naming conflicts
- A more logical file layout
- Naming change from Workflow to Hybrid App

Although the new files were available for 2.2 SP01, they were not used as the default generation option. Beginning with 2.2 SP02, the Hybrid App Designer began to directly support the new Hybrid Web Container functionality, and therefore the new JavaScript API became the default in the generation wizard.

In this way, the Hybrid App Designer could move forward with the updated JavaScript API, while still allowing previously written apps to successfully migrate without changes, giving developers the choice to generate the backward-compatible API from earlier versions.

**Note:** When you generate an application that was developed using the older API, be sure to enable the **Use backwards-compatible API for generation (deprecated)** option, under the Advanced Options section of the generation wizard.

## Manual Migration Tasks

Migrating a Hybrid App or Workflow to the new JavaScript API requires the developer to perform a few manual steps.

### *API.js & Utils.js*

Reapply any custom changes made to `API.js` and `Utils.js` in the previous Hybrid App to the new Hybrid App.

### *Method Calls in Custom Code*

Some methods used in previous versions may have been deprecated, renamed, removed, or relocated within the "hwc" global namespace. In your custom code, resolve any calls to these methods.

A new `Custom.js` file is automatically generated, but it will be empty. Move any functionality from the previous version of `Custom.js` to the new file, paying attention to any method name changes.

### *Customized Files*

Move any custom CSS, JavaScript, image, or other files in the generated folder of the previous Hybrid App or Workflow to the generated folder for the new Hybrid App.

**Table 9. Generated Folder and File Name Changes**

| Generated Folder Name | 2.1 ESD #3 (old) | Starting with 2.2 SP02, and 2.3 (new) |
|---|---|---|
| `html/css` | No changes | No changes |
| `html/css/bb` | No changes | No changes |
| `html/css/bb/img` | No changes | No changes |
| `html/css/iphone` | No changes | No changes |
| `html/css/iphone/images` | No changes | No changes |

| Generated Folder Name | 2.1 ESD #3 (old) | Starting with 2.2 SP02, and 2.3 (new) |
|---|---|---|
| `html/css/jquery` | `jquery.mobile-1.0.css` (removed) | `jquery.mobile-1.1.0.css` (added) |
| `html/css/jquery/images` | | `ajax-loader.gif` (added) |
| `html/js` | `json2.js` (removed) | `datajs-1.0.3.js` (new)<br>`hwc-api.js` (new)<br>`hwc-comms.js` (new)<br>`hwc.utils.js` (new)<br>`HybridApp.js` (replaces `Workflow.js`)<br>`PlatformIdentification.js` (new) |
| `html/js/android` | `Phonegap-1.4.1.javascript` (removed) | `cordova-2.0.0.javascript` (added) |
| `html/js/ios` | `Phonegap-1.4.1.javascript` (removed) | `cordova-2.0.0.javascript` (added) |
| `html/js/jquery` | `jquery-1.6.4.js` (removed)<br>`jquery.mobile-1.0.js` (removed) | `jquery-1.7.1.js` (added)<br>`jquery.mobile-1.1.0.js` (added) |

| Generated Folder Name | 2.1 ESD #3 (old) | Starting with 2.2 SP02, and 2.3 (new) |
|---|---|---|
| `html/js/widgets` | `sy.ui.iphone.iscroll.js` (removed) | `sy.ui.iphone.iscroll4Lite.js` (added)<br>`sy.ui.iphone.picker.js` (added)<br>`sy.ui.iphone.signature.js` (added)<br>`sy.ui.iphone.util.js` (added)<br>`sy.ui.js` (added) |
| `html/css/makit` | N/A | New directory added for 2.2 SP02 |
| `html/images/makit` | N/A | New directory added for 2.2 SP02 |
| `html/js/makit` | N/A | New directory added for 2.2 SP02 |
| `html/js/wm` | N/A | New directory added for 2.2 SP02 |
| `html/js/blackberry` | N/A | New directory added for 2.2 SP02 |

*Check for Output Message*

During project and application generation, check for messages in the console; these messages provide valuable tips related to migrating your application.

## Generated Application Differences

There are some important differences and concepts that have changed from the earlier (often called "legacy") API and the new API. Use this background information to successfully migrate your own applications.

See *Migrating Hybrid Apps to JavaScript API* on page 43 for an example procedure that migrates a customized application into the new API.

### Output Directories

The generated output directory has changed.

Earlier versions generated the files into:

```
\Generated Workflow\project_name\html\...
```

The current version generates the files into:

```
\Generated Hybrid App\project_name\html\...
```

## The "hwc" Namespace

The Sybase Unwired Platform JavaScript API implementation emulates the namespace concept.

JavaScript does not use the concept of a true namespace, but you can achieve the same result by placing functions and objects with a new function. (This is often called a "JavaScript Namespace" for simplicity). The Sybase Unwired Platform implementation uses the JavaScript "Immediately-Invoked Function Expression" (IIFE—pronounced "iffy" like in "jiffy") pattern to contain the Sybase Unwired Platform API in the global object named "hwc". The "hwc" object provides a lexical scope, which is the JavaScript shorthand for what other languages term a "namespace".

This lexical scope isolates the Sybase Unwired Platform API (in the same way as a namespace) and provides tools for minification and other processes. This change is reflected throughout the code. A few JavaScript functions have proxy versions in the global namespace; however SAP® recommends that you use the versions in the "hwc" namespace.

We have attempted to not move code around unnecessarily, to facilitate developers using "difference scans" to identify changes, and to understand where to place their existing customizations.

In many cases, you need only wrap the entire contents of a file with the "hwc" object definition. The files that have more extensive changes are described in later topics.

## Name Changes

Several coding-level name changes have been implemented.

### *Workflow Changed to HybridApp*

The phrase `Workflow` has been replaced with `HybridApp`, both in the directory name, as well as in the function code.

- `onWorkflowLoad()` is now `hwc.onHybridAppLoad()`
- `customBeforeWorkflowLoad()` is now `hwc.customBeforeHybridAppLoad()`
- `customAfterWorkflowLoad()` is now `hwc.customAfterHybridAppLoad()`

**Note:** Although the change from `Workflow` to `HybridApp` occurs in many places, it is not pervasive. The following in particular:

- The file and type `WorkflowMessage`.
- The global variable `workflowMessage` in the file `Utils.js`.

#### *Workflow Expanded to Data Message*

The meaning "workflow" message has been expanded to a generic "data"' message.

- `getWorkflowMessage()` is now `hwc.getDataMessage()`.
- `processWorkflowMessage()` now includes the namespace `hwc.processDataMessage()`.

  Custom implementations that override `processWorkflowMessage()` must now override `hwc.processDataMessage()`.

  **Note:** For a better understanding of this change, examine the implementation in `hwc-comms.js`.
- `customBeforeProcessWorkflowMessage()` is now `hwc.customBeforeProcessDataMessage()`.
- `customAfterProcessWorkflowMessage()` is now `hwc.customAfterProcessDataMessage()`.

#### *Debug Logging*

`logToWorkflow()` is now `hwc.log()`.

**Note:** The legacy global name still exists.

#### *Closing Applications*

`closeWorkflow()` is now `hwc.close()`.

**Note:** The legacy global name still exists.

### New Files

In the new API, many functions have been split into new files. This change helps to both isolate functionality, and localize areas of engagement.

The new files are:

- `html/js/PlatformIdentification.js` – the device and platform identification logic like `hwc.isIOS()`.
- `html/js/hwc-comms.js` – the functions that communicate with the container, and often ultimately to Unwired Server.
- `html/js/hwc-api.js` – the functions that work with application query, and control of the container itself. Use these functions to restyle container behavior.
- `html/js/hwc-utils.js` – various utility functions used by both the container and application.

Compare old and new HTML files, and update file source references to point to these new files.

## Files and Functions: Platform Identification

The routines that handle platform identification, like `isIOS()`, have been moved from `API.js` into `PlatformIdentification.js`.

These routines are now evaluated only once at application start-up, which gives the application an overall performance boost.

The routines retain the legacy API version, in the global namespace, along with the new API version in the "hwc" namespace. Even though Sybase recommends a scoped routine like `hwc.isIOS()`, the global routine `isIOS()` is still available.

## Files and Functions: Container API

To separate functionality between layers, the container-oriented parts of the API have been moved into separate files. This has also split up some functions that provided communication between the Hybrid Web Container and the JavaScript application.

The container-oriented files use an "hwc" prefix, and include:

- **hwc-api.js** – public API for any Hybrid Web Container application.
- **hwc-comms.js** – communications support for Hybrid Web Container applications.
- **hwc-utils.js** – miscellaneous support routines, including both internal worker functions, and other routines that are available for Hybrid Web Container applications.

In cases where a function has been split between a HybridApp aspect and a container-specific aspect, the suffix "_CONT" has been added to the container-specific function. The commonly used function **hwc.doOnlineRequest()** first performs HybridApp-specific processing, such as custom callbacks, then delegates **hwc.doOnlineRequest_CONT()** for the actual container-side HTTP call. This same technique applies to these routines:

- **onWorkflowLoad()** has been replaced by:
  - **hwc.onHybridAppLoad ()** in **Utils.js**, which delegates to:
  - **hwc.onHybridAppLoad_CONT()** in **hwc-utils.js**.
- **addNativeMenuItemsForScreen ()** has been replaced by:
  - **hwc.addNativeMenuItemsForScreen()** in **Utils.js**, which delegates to:
  - **hwc.addNativeMenuItem_CONT()** in **hwc-utils.js**.
- **handleCredentialChange()** has been replaced by:
  - **hwc.handleCredentialChange()** in **Utils.js**, which delegates to:
  - **hwc.handleCredentialChange_CONT()** in **hwc-utils.js**.
- **doOnlineRequest()** has been replaced by:
  - **hwc.doOnlineRequest()** in **API.js**, which delegates to:
  - **hwc.doOnlineRequest_CONT()** in **hwc-comms.js**.
- **doOnlineRequest()** has been replaced by:
  - **hwc.doOnlineRequest()** in **API.js**, which delegates to:
  - **hwc.doOnlineRequest_CONT()** in **hwc-comms.js**.

- **doSubmitWorkflow()** has been replaced by:
  - **hwc.doSubmitWorkflow()** in **API.js**, which delegates to:
  - **hwc.doSubmitWorkflow_CONT()** in **hwc-comms.js**.
- **setScreenTitle()** has been replaced by:
  - **hwc.setScreenTitle()** in **API.js**, which delegates to:
  - **hwc.setScreenTitle_CONT()** in **hwc-comms.js**.
- **addMenuItem()** has been replaced by:
  - **hwc.addMenuItem()** in **API.js**, which delegates to:
  - **hwc.addMenuItem_CONT()** in **hwc-comms.js**.
- **showAttachmentContents()** has been replaced by:
  - **hwc.showAttachmentContents()** in **API.js**, which delegates to:
  - **hwc.showAttachmentContents_CONT()** in **hwc-comms.js**.
- **showAttachmentFromCache()** has been replaced by:
  - **hwc.showAttachmentFromCache()** in **API.js**, which delegates to:
  - **hwc.showAttachmentFromCache_CONT()** in **hwc-comms.js**.
- **doAttachmentDownload()** has been replaced by:
  - **hwc.doAttachmentDownload()** in **API.js**, which delegates to:
  - **hwc.doAttachmentDownload_CONT()** in **hwc-comms.js**.
- **doActivateWorkflow()** has been replaced by:
  - **hwc.doActivateWorkflow()** in **API.js**, which delegates to:
  - **hwc.doActivateWorkflow_CONT()** in **hwc-comms.js**.
- **doCredentialsSubmit()** has been replaced by:
  - **hwc.doCredentialsSubmit()** in **API.js**, which delegates to:
  - **hwc.doCredentialsSubmit_CONT()** in **hwc-comms.js**.

## processWorkflowMessage()

There are some changes to consider if you override the global **processWorkflowMessage()** routine, which is required in many use cases.

In the older version, the global **processWorkflowMessage()** routine (in **Utils.js**), included either inline code changes, or customizations in the **customBefore…()** and **customAfter…()** callback routines. In the new API, inline code changes reside in the **hwc.processDataMessage()** routine (also in **Utils.js**). The callback routines still have similar names.

Old API:

- **processWorkflowMessage()** – in old file **Utils.js**
- **customBeforeProcessWorkflowMessage()** – in old file **custom.js**
- **customAfterProcessWorkflowMessage()** – in old file **custom.js**

New API:

- **hwc.processDataMessage()** – in file **Utils.js**
- **hwc.customBeforeProcessDataMessage ()** – in file **custom.js**
- **hwc.customAfterProcessDataMessage ()** – in file **custom.js**

## Custom Callback Handlers

The file and techniques outlined in **js/Custom.js** are all still applicable. However, all the routines have been placed into the "hwc" namespace.

At a high level, all the routines have been wrapped in the "hwc" object (using JavaScript Immediately-Invoked Function Expression, or IIFE). Then the changes from `Workflow` to `HybridApp` have been applied. Function names have been retained except:

| Old Global API | New API |
|---|---|
| **customBeforeWorkflowLoad()** | **hwc.customBeforeHybridAppLoad()** |
| **customAfterWorkflowLoad()** | **hwc.customAfterHybridAppLoad()** |
| **customBeforeProcessWorkflowMessage()** | **hwc.customBeforeProcessDataMessage()** |
| **customAfterProcessWorkflowMessage()** | **hwc.customAfterProcessDataMessage()** |

## Miscellaneous Changes

Several procedural changes have been implemented in the new API.

Applications must call:

- **hwc.setLoggingCurrentLevel()**
- **hwc.setLoggingAlertDialog()**
- **hwc.setReportErrorFromNativeCallback()**

These calls are already handled in the **hwc.onHybridAppLoad()** function, in the new **Utils.js** file. This fragment code example from the **hwc.onHybridAppLoad()** function shows the change; you may need to make changes if you customized the original function:

```
logLevel = hwc.getURLParam("loglevel");
hwc.setLoggingCurrentLevel( logLevel );        // store the log level

// set the preferred user alert dialog
hwc.setLoggingAlertDialog( hwc.showAlertDialog );

// the preferred native error callback function
hwc.setReportErrorFromNativeCallback( reportErrorFromNative );
if (logLevel >= 4) { hwc.log("entering onHybridAppLoad()", "DEBUG",
false); }
```

### Variable Name Change

Some variable names have been changed to make their use more clear.

**Table 10. Renamed Variable**

| Old Name | New Name |
|---|---|
| `previousScreenName[]` | `hwc.previousScreenKeyStack[]` |

## Migrating Hybrid Apps to JavaScript API

Migrate a customized legacy workflow or Hybrid App from 2.1.*x* to the new JavaScript API, available starting in 2.2 SP02.

Keep in mind that customizations vary, so these steps cannot be specific for every situation. Use the migration concepts and reference material in previous topics to make migration and customization decisions.

1. *Preparing to Migrate*

   Prepare to migrate your legacy workflow or Hybrid App.
2. *Regenerating the Application (Old API)*

   Regenerate the application using the old API. This creates a clean version of the project that you can use for comparison when you integrate customizations.
3. *Regenerating the Application (New API)*

   Regenerate the application using the new API. This creates a clean version of the project that you can use when you integrate customizations.
4. *Integrating Customizations*

   Integrate customizations into the clean version of the project generated with the new API. This example suggests a migration approach; adapt this method to your unique customizations.

### Preparing to Migrate

Prepare to migrate your legacy workflow or Hybrid App.

#### Prerequisites

Sybase recommends these tools:

- Directory-wide comparison program, such as Beyond Compare (*http://www.scootersoftware.com/*); ideally, a version that supports both comparison and merging.
- JavaScript syntax checking environment, such as Eclipse-JEE; or the Chrome or FireFox debug console into which you can load the HTML (which brings in all the JavaScript files).

Such a tool can help you identify typing errors, and errors arising from the "hwc" namespace identifier changes.

### Task

1. Back up any customized JavaScript and CSS files. For example, save the files to `\myCustomizedApplication`.

   This directory should have the subdirectories `\html` and `\html\js`, just like what is generated by Hybrid App Designer.
2. Make sure the generated output directory is empty: `\Generated Hybrid App \`*`project_name`*.

## Regenerating the Application (Old API)

Regenerate the application using the old API. This creates a clean version of the project that you can use for comparison when you integrate customizations.

1. Use your Sybase Unwired Platform project (including the MBOs and Hybrid App Designer XBW files) to generate a new Hybrid App package. You need not deploy the package to Unwired Server.

   In the generation wizard, use these defaults:
   - Output directory – use the default location to help prevent confusion.
   - Under Advanced Options, Use backwards-compatible API for generation (deprecated) – by default, this option is enabled, which generates a clean version of the project using the old API. The wizard does not create a new directory for this project.
2. Rename the newly populated, generated output directory for later comparison, for example, `\Generated Hybrid App\`*`project_name`*`_OLD`.

## Regenerating the Application (New API)

Regenerate the application using the new API. This creates a clean version of the project that you can use when you integrate customizations.

Use your Sybase Unwired Platform project (including the MBOs and Hybrid App Designer XBW files) to generate a new Hybrid App package. You need not deploy the package to Unwired Server.

In the generation wizard, use these defaults:

- Output directory – the default location is `\Generated Hybrid App \`*`project_name`*. Using the default location helps prevent further confusion.
- Under Advanced Options, Use backwards-compatible API for generation (deprecated) – by default, this option is not enabled. Because you renamed the project when you generated it using the old API, you can use the default option now to create a clean project version using the new API.

## Integrating Customizations

Integrate customizations into the clean version of the project generated with the new API. This example suggests a migration approach; adapt this method to your unique customizations.

### Prerequisites

Verify there are three copies of the application (the directory names for your application may vary):

- Original customized version in `\myCustomizedApplication`
- Legacy API version in `\Generated Hybrid App\`*`project_name`*`_OLD`
- New API version in `\Generated Hybrid App\`*`project_name`*

### Task

1. Compare the original, customized application with the legacy API version of the application just generated, and compile a list of areas on which to focus the migration effort.

   A typical scenario includes many changes in the standard customization file, **Custom.js**, new CSS files, some new JS files, and some customizations in **API.JS** and **Timezone.js**.
2. Copy the CSS files and new JS files from the original directory into the new API directory, and edit the HTML file or JS module loaders for the file references. Use the same procedure you used for your original additions.
3. Use a directory-wide comparison program to compare all the files in the original and legacy directories. This means comparing the two directories:

   - Original, customized version in:
     ```
     \myCustomizedApplication
     ```
   - Clean legacy API version in:
     ```
     \Generated Hybrid App\project_name_OLD
     ```

   Differences should include only:
   - The Sybase Unwired Platform bug fixes between your last version and the current version of Sybase Unwired Platform.
   - The code changes originating from your own modifications to the legacy API.

     As described above, differences are most likely to be in **Custom.js**, with some changes in **API.js** and **Timezone.js**. There will be other differences throughout the files, some from your customizations, and some Sybase Unwired Platform evolutionary changes and Service Pack bug fixes.
4. Open another session of the directory-wide comparison program, ideally a version that allows both comparison and merging. Open your original version, and the new but still clean API version to compare the two directories:

- Original, customized version in:

  ```
  \myCustomizedApplication
  ```
- New API version in:

  ```
  \Generated Hybrid App\project_name
  ```

You might see many differences, however the important ones are the same as those identified in the legacy API comparison (step 3).

5. Make the appropriate changes in **Custom.js**, and merge the changes function by function.

   The order and most of the function signatures have been retained in the new API, which should simplify this process. Keep in mind that:
   - The new API functions are in the "hwc" namespace. This affects any code that uses the API functions; any such code must use the "hwc." namespace identifier.
   - All other changes, such as the `Workflow` to `HybridApp` name change, must also be addressed.
6. In the **Timezone.js** file, make the appropriate changes, including any evolutionary changes, and your customizations. Keep in mind that a Service Pack fix might have corrected a bug that you fixed using a different approach.
7. Make any appropriate changes in the **API.js** file.

   Any customizations you have made to this file will be challenging, due to both the size of the file, and to separating the "container communication" aspect into **hwc-comms.js**. The new API keeps functions in the same general order, which should make migrating from an older code line more efficient.
8. Address any other differences in your legacy API comparison, and migrate them into the new API version.
9. Launch the application in an environment you can monitor, such as FireFox or Chrome (or even the Android Emulator); test the application and fix any errors.

   Set the logging level all the way up, and continue the process of finding any missed "‘hwc"’ references and any other missed items. During this process, examine the server logs for enter/exit function notifications, to help find errors.

   Once the application is migrated to the new API, it should:
   - Run faster, due to caching device data like in **PlatformIdentification.js**.
   - Be smaller and more efficient, due to better minification and runtime engine optimizations from the localization and compartmentalization.
   - Use fewer global variables and functions, and use a cleaner global namespace.
   - More easily integrate with third-party packages, because of the cleaner global namespace.
   - Be easier to maintain and extend, due to separation of the container API and the application level API functions.

## Android

No migration changes are required for Android Hybrid Apps; however, you might need to make some changes to take advantage of new features, or when you modify an application.

*Migrate Hybrid Web Container from 2.1 ESD #3 to 2.2*
Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.

## Hybrid Web Container Migration Paths for Android

Supported Hybrid Web Container (HWC) migration paths on Android.

**Table 11. Android Migration Paths**

| | 2.1 HWC | 2.1 ESD #2 HWC | 2.1 ESD #3 HWC | 2.2 SP02 HWC |
|---|---|---|---|---|
| 2.1 HWC | N/A | In-place upgrade | Coexist | Coexist |
| 2.1 ESD #2 HWC | N/A | N/A | Coexist | Coexist |
| 2.1 ESD #3 HWC | N/A | N/A | N/A | In-place upgrade |
| 2.2 SP02 HWC | N/A | N/A | N/A | N/A |

**Note:** *There was no 2.0 or 2.1 ESD #1 Android Hybrid Web Container.

- N/A – not applicable.
- Coexist – the application is not upgraded; multiple versions of the application can coexist.
- In-place upgrade – the application is upgraded to the new version (you must modify the application to add new features).

**See also**

- *Migrate Hybrid Apps* on page 33

## BlackBerry

No migration changes are required for BlackBerry Hybrid Apps; however, you might need to make some changes to take advantage of new features, or when you modify an application.

*Migrate Hybrid Web Container from 2.1 ESD #3 to 2.2*

Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.

## Hybrid Web Container Migration Paths for BlackBerry

Supported Hybrid Web Container (HWC) migration paths on BlackBerry.

**Table 12. BlackBerry Migration Paths**

| | 2.1 HWC | 2.1 ESD #2 HWC | 2.1 ESD #3 HWC | 2.2 SP02 HWC |
|---|---|---|---|---|
| 2.1 HWC | N/A | In-place upgrade | In-place upgrade | Coexist |
| 2.1 ESD #2 HWC | N/A | N/A | In-place upgrade | Coexist |
| 2.1 ESD #3 HWC | N/A | N/A | N/A | Coexist |
| 2.2 SP02 HWC | N/A | N/A | N/A | N/A |

**Note:** There was no 2.0 ESD #1 or 2.1 ESD #1 for BlackBerry Hybrid Web Container.

- N/A – not applicable.
- Coexist – the application is not upgraded; multiple versions of the application can coexist.
- In-place upgrade – the application is upgraded to the new version (you must modify the application to add new features).

### See also

- *Migrate Hybrid Apps* on page 33

## iOS

No migration changes are required for iOS Hybrid Apps; however, you might need to make some changes to take advantage of new features, or when you modify an application.

*Migrate Hybrid Web Container from 2.1 ESD #3 to 2.2*

Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.

## Hybrid Web Container Migration Paths for iOS

Supported Hybrid Web Container migration paths on iOS, including paths for applications downloaded from the Apple App Store and those built from source code.

*iOS Migration Paths (Applications Downloaded from Apple App Store)*

This matrix identifies the supported Hybrid Web Container migration or the iOS container downloaded from Apple App store.

| | 2.1 HWC | 2.1 ESD #2 HWC | 2.1 ESD #3 HWC | 2.2 SP02 HWC |
|---|---|---|---|---|
| 2.1 HWC | N/A | Coexist | Coexist | Coexist |
| 2.1 ESD #2 HWC | N/A | N/A | In-place upgrade | In-place upgrade |
| 2.1 ESD #3 HWC | N/A | N/A | N/A | In-place upgrade |
| 2.2 SP02 HWC | N/A | N/A | N/A | N/A |

**Note:** There was no 2.1 ESD #1 Hybrid Web Container.

- N/A – not applicable.
- Coexist – the application is not upgraded; multiple versions of the application can coexist.
- In-place upgrade – the application is upgraded to the new version (you must modify the application to add new features).

*iOS Migration Paths (Applications Built from Source Code)*

This matrix identifies the supported Hybrid Web Container migration for the iOS container that one builds from the supplied source code while keeping the same "bundle ID" between versions.

| | 2.1 HWC | 2.1 ESD #2 HWC | 2.1 ESD #3 HWC | 2.2 SP02 HWC |
|---|---|---|---|---|
| 2.1 HWC | N/A | In-place upgrade | In-place upgrade | In-place upgrade |
| 2.1 ESD2 HWC | N/A | N/A | In-place upgrade | In-place upgrade |
| 2.1 ESD3 HWC | N/A | N/A | N/A | In-place upgrade |
| 2.2 SP02 HWC | N/A | N/A | N/A | N/A |

**Note:** There was no 2.1 ESD #1 Hybrid Web Container.

**See also**

- *Migrate Hybrid Apps* on page 33

## Windows Mobile

No migration changes are required for Windows Mobile Hybrid Apps; however, you might need to make some changes to take advantage of new features, or when you modify an application.

*Migrate Hybrid Web Container from 2.1 ESD #3 to 2.2*

1. Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.
2. If you plan to run two different versions of the Windows Mobile Hybrid Web Container on the same device (such as version 2.1 ESD #3 and version 2.2), you must assign a unique App ID with custom code. See *Using Multiple Hybrid Web Containers on the Same Windows Mobile Device* on page 51.

## Hybrid Web Container Migration Paths for Windows Mobile

Supported Hybrid Web Container (HWC) migration paths on Windows Mobile.

**Table 13. Windows Mobile Migration Paths**

| | 2.1 HWC | 2.1 ESD #2 HWC | 2.2 SP02 HWC |
|---|---|---|---|
| 2.1 HWC | N/A | In-place upgrade | Coexist |
| 2.1 ESD #2 HWC | N/A | N/A | Coexist |

| | 2.1 HWC | 2.1 ESD #2 HWC | 2.2 SP02 HWC |
|---|---|---|---|
| 2.2 SP02 HWC | N/A | N/A | N/A |

**Note:** There was no new 2.1 ESD #1 or 2.1 ESD #3 for Windows Mobile Hybrid Web Container; 2.1 ESD #3 shipped with 2.1 ESD #2 Windows Mobile clients.

- N/A – not applicable.
- Coexist – the application is not upgraded; multiple versions of the application can coexist.
- In-place upgrade – the application is upgraded to the new version (you must modify the application to add new features).

**See also**

- *Migrate Hybrid Apps* on page 33

## Using Multiple Hybrid Web Containers on the Same Windows Mobile Device

You can configure two or more Hybrid Web Containers on a Windows Mobile device.

Each container can be installed separately on the same device, can connect to a different server, and can be used independently.

1. Create a Visual Studio project for each container.
2. For each container, edit the project's `config.properties` file and specify a unique AppID property for your container.
   For example: `AppID="HWC1"`.

   **Note:** Do not change the AppID property at runtime.
3. Rebuild the project, as described in *Building the Windows Mobile Hybrid Web Container Using the Provided Source Code*.
4. Configure the container's CAB build. In each project, edit the `OneBridge_ppc.inf` file and customize these properties:

   **AppName –** provide a unique name for each container.

   **InstallDir –** enter the path where the container is to be installed on the device. Each container must have a different path.

   **Shortcuts –** declare a shortcut that launches the container application. Users can change shortcut names. Shortcut names do not have to be unique.

   Here are sample customized lines in `OneBridge_ppc.inf`:

   ```
   [CEStrings]
   AppName = "HWC"
   InstallDir=%CE1%\Sybase\%AppName%
   ...
   ```

```
[Shortcuts.All]
Hybrid Web Container,0,HWCA.exe,%CE11%
```

5. Build the CAB file for each container, as described in *Packaging a CAB File*.

## Hybrid Web Container API Changes in Version 2.2

Changes in the Hybrid Web Container API include refactored JavaScript API names and new JavaScript APIs.

### *JavaScript APIs Available in Designer*

JavaScript APIs are now available from the Hybrid App Designer. Hybrid App Designer now generates Hybrid Apps that use the new JavaScript APIs from Hybrid Web Container.

**Note:** This means version 2.1 ESD #3 APIs are deprecated; use version 2.2 JavaScript APIs.

You can access generated API documents from *Developer Guide: Hybrid Apps*, via a link in *Hybrid Web Container and Hybrid App JavaScript API Reference*.

- **Hybrid Web Container –** the files where the Hybrid Web Container JavaScript APIs are defined are located in `SUP_HOME\UnwiredPlatform\MobileSDK<version>\HybridApp\API\Container`.
- **Hybrid App –** the files where the Hybrid App JavaScript APIs are defined are located in `SUP_HOME\UnwiredPlatform\MobileSDK<version>\HybridApp\API\AppFramework`.

### *Hybrid Web Container JavaScript Name Changes*

Some JavaScript API names have been refactored. The JavaScript APIs are now in the "hwc" namespace and the word "Workflow" has been replaced with "HybridApp". The updated API can be found in the installation directory: `SUP_HOME\MobileSDK22\HybridApp\API`.

### *Hybrid App Framework*

This release provides an optional application framework that you can use on top of the core Hybrid Web Container APIs to manage data and user interface exchange. JavaScript APIs are now provided in the installation directory.

**Table 14. Refactored Hybrid App JavaScript Classes**

| Classes | Description |
|---|---|
| `API.js` | Functions that users typically call from within a function in `Custom.js` (or in a function contained in a different `.js` file called by a function in `Custom.js`). Roughly categorized into utility functions, message data functions, user interface functions, native functions, and validation functions. |
| `Custom.js` | Entry point where user-supplied code is added. Typical examples of methods include `customBeforeMenuItemClick`, `customAfterDataReceived`, and `customBeforeShowScreen`. |
| `Utils.js` | Functions included in the application framework that the Hybrid App invokes directly. |
| `WorkflowMessage.js` | JavaScript objects and methods that provide an in-memory object hierarchy representation of messages being sent between the Hybrid App and the Unwired Server. |
| `Resource.js` | Access localized string resources. |

**Table 15. New JavaScript Methods**

| Methods | Description |
|---|---|
| `hwc.CustomIcon` | Indexes custom icons; defined in `hwc-api.js`. |
| • `doOnlineRequest`<br>• `asynchronous`<br>• `cachePolicy` | Makes online request calls. |

Documented in generated developer documentation, and available from *Developer Guide: Hybrid Apps, Hybrid Web Container and Hybrid App JavaScript APIs*.

### *Access OData Sources*

JavaScript APIs that enable a Hybrid App to access OData enterprise information system (EIS) data sources.

**Table 16. New OData SDK Access**

| Classes | Description |
|---|---|
| `Data.js` | Open source API shipped with Unwired Platform |

Documented in:

- *Developer Guide: Hybrid Apps*, see *Develop OData-based Hybrid Apps*

# Migrate OData Applications Using Refactored Libraries

No steps are required to migrate 2.1 ESD #3 applications to version 2.2; however, you may need to perform some migration steps to take advantage of new features.

Before using Sybase Mobile SDK 2.2, explicitly migrate OData applications built on 2.1 ESD # 3 or earlier releases to 2.2 using the migration guidelines for Android, BlackBerry, and iOS applications. The OData SDK APIs in Unwired Platform 2.2 have been refined and enhanced for better usage. When you add the Unwired Platform 2.2 OData SDK into your existing application, the application encounters compilation errors that you must resolve programatically, using the APIs and signature.

## OData Client Compatibility Matrix

*OData SDK Client and Unwired Server Version Compatibility*

| OData SDK Client | Unwired Server 2.1 | Unwired Server 2.1 ESD #1 | Unwired Server 2.1 ESD #2 | Unwired Server 2.1 ESD #3 | Unwired Server 2.2 SP02 |
|---|---|---|---|---|---|
| OData SDK Client 2.1 | Yes | Yes | Yes | Yes | Yes |
| OData SDK Client 2.1 ESD #1 | No | Yes | Yes | Yes | Yes |
| OData SDK Client 2.1 ESD #2 | No | Yes | Yes | Yes | Yes |

| OData SDK Client | Unwired Server 2.1 | Unwired Server 2.1 ESD #1 | Unwired Server 2.1 ESD #2 | Unwired Server 2.1 ESD #3 | Unwired Server 2.2 SP02 |
|---|---|---|---|---|---|
| OData SDK Client 2.1 ESD #3 | No | Yes | Yes | Yes | Yes |
| OData SDK Client 2.2 SP02 | No | Yes | Yes | Yes | Yes |

**Note:**

- Yes – the client application built in this SDK version is supported in the server version (minor adjustments may be necessary to ensure the application runs correctly; see the migration details for the appropriate application type, if any).
- No – the client application built in this SDK version is not supported in the server version.
- Server version – refers to the server version to which the original package is migrated, not the newly deployed package.

*REST SDK Client and Unwired Server Version Compatibility*

| REST SDK Client | Unwired Server 2.1.3 | Unwired Server 2.2 SP01 | Unwired Server 2.2 SP02 | Unwired Server 2.2 SP03 |
|---|---|---|---|---|
| REST Client 2.2 SP03 | No | Yes | Yes | Yes |

**Note:**

- Yes – the client application built in this SDK version is supported in the server version (minor adjustments may be necessary to ensure the application runs correctly; see the migration details for the appropriate application type, if any).
- No – the client application built in this SDK version is not supported in the server version.
- Server version – refers to the server version to which the original package is migrated, not the newly deployed package.

## Android

No migration changes are required for OData Android applications; however, you might need to make some changes to take advantage of new features, or when you modify an application.

*Migrate OData SDK Version 2.1 ESD #3 to 2.2*

- For information and examples for migrating existing 2.1 ESD #3 Android applications to 2.2, see *Migrating Android Applications* on page 56.
- Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.
- Any device applications that implement Afaria libraries need to be recompiled to use standalone Afaria libraries, and reprovisioned.
  1. Download the latest Afaria libraries from: *http://frontline.sybase.com/support/downloads.aspx* (registration required).
  2. Copy the libraries to a new location.
  3. Relink the libraries in your development environment. See *Developer Guide: OData SDK*, *Downloading the Latest Libraries* (Android section).

### Migrating Android Applications

Migrate Android Online Data Proxy applications from 2.1 ESD #3 (and earlier) to 2.2.

These steps use an example scenario that includes before and after code snippets, removed code snippets, and additional information.

1. Modify user registration code, and all APIs related to registration. Error handling that used exceptions in 2.1 ESD #3 and earlier uses standard error objects in 2.2.

   Before:

```
try {
     LiteUserManager.initInstance(getContext(), helper.APP_NAME);
      LiteUserManager lum = LiteUserManager.getInstance();
      lum.clearServerVerificationKey();
      LiteUserManager.enableHTTPS(true);

      LiteMessagingClient.setODPHTTPAuthChallengeListener(this);

      lum.setConnectionProfile(Helper.SEVERIP,
                            Helper.SERVERPORT, helper.COMPANYID);
      lum.registerUser(Helper.USERNAME, Helper.ACT_CODE);

    }  catch (MessagingClientException oe)
    {      // Exception handling
    }
```

After:

```
try {
        ODPUserManager.initInstance(getContext(), 
Helper.APP_NAME);
        ODPUserManager oum = null;
        oum = ODPUserManager.getInstance();
        ODPClientConnection.clearServerVerificationKey();
        ODPUserManager.enableHTTPS(true);

       ODPClientConnection.setODPHTTPAuthChallengeListener(this);
        oum.setConnectionProfile(Helper.SEVERIP, 
        Helper.SERVERPORT,  Helper.COMPANYID);
        lum.registerUser(Helper.USERNAME, Helper.ACT_CODE, true);
    } catch (ODPException oe)
    {     // Exception Handling
    }
```

Removed: all asynchronous method calls, and the method call that takes in the vault API.

2. Modify data fetch-related code.

   Before:

```
ISDMConnectivitiyParameters params = new 
SDMConnectivityParameters();
  params.setLanguage("en");
  params.setUserName(backendUsername);
  params.setUserPassword(backendPassword);
  params.setBaseUrl(url);

SDMPreferences preference = new SDMPreferences();
  requestManager  = new SDMRequestManager(
               new SDMLogger(preference), preference, params, 2);

  final ISDMRequest request = new SDMBaseRequest();
  Hashtable headers = new Hashtable();
  headers.put("X-CSRF-Token", "fetch");
  request.setHeaders(headers);
  request.setPriority(ISDMRequest.PRIORITY_HIGH);
  request.setRequestMethod(ISDMRequest.REQUEST_METHOD_GET);
  request.setRequestUrl(url);
  request.setListener(listener);

requestManager.makeRequest(request);
```

   After:

```
ISDMConnectivitiyParameters params = new 
SDMConnectivityParameters();
  params.enableXsrf(true);
  params.setLanguage("en");
  params.setUserName(backendUsername);
  params.setUserPassword(backendPassword);
  params.setBaseUrl(url);
```

```
SDMPreferences preference = new SDMPreferences();
  requestManager  = new SDMRequestManager(
               new SDMLogger(preference), preference, params, 2);
  final ISDMRequest request = new SDMBaseRequest();

  request.setPriority(ISDMRequest.PRIORITY_HIGH);
  request.setRequestMethod(ISDMRequest.REQUEST_METHOD_GET);
  request.setRequestUrl(url);
  request.setListener(listener);

requestManager.makeRequest(request);
```

Removed: no method calls have been removed from the request interface.

3. Modify user deletion code, and related API code.

   Before:

   ```
   LiteUserManager lum = LiteUserManager.getInstance();
   lum.deleteUser();
   ```

   After:

   ```
   ODPUserManager oum = ODPUserManager.getInstance();
   oum.deleteUser();
   ```

   Removed: nothing has been removed from the interface.

4. Modify native and online push notification. For Android, 2.1 ESD #3 and earlier supported online push only via the messaging channel, and did not support native notifications. In 2.2, a new message call has been added for registering native notifications.

   Before:

   ```
   UserManager.setPushListener(ISDMNetListener listener);
   ```

   After:

   ```
   ODPClientConnection. registerForPayloadPush(ISDMNetListener
   listener);
   ODPClientConnection.
   registerForNativePush(IODPPushNotificationListenerlistener);
   ```

   Removed: nothing has been removed in the interface.

5. Modify certificate management API code sections.

   Before:

   ```
   Vector v = CertificateStore.listAvailableCertificatesFromStore();
   String certificate getSignedCertificateFromStore(v.elementAt(0));
   ```

   After:

   ```
   Vector v =
   ODPCertificateManager.listAvailableCertificatesFromStore();
   String certificate getSignedCertificateFromStore(v.elementAt(0));
   ```

Removed: the `getSignedCertificateFromStore()` API has been removed along with the Afaria method calls.

6. Make modifications to implement additional changes and new features, then recompile your code if required.

   Since Afaria is a standalone, separately consumable library in 2.2, no methods related to Afaria are exposed as a part of the ODP interface. Application developers must consume the Afaria JARs directly.

## BlackBerry

No migration changes are required for OData BlackBerry applications; however, you might need to make some changes to take advantage of new features, or when you modify an application.

### *Migrate OData SDK Version 2.1 ESD #3 to 2.2*

- For information and examples for migrating existing 2.1 ESD #3 BlackBerry applications to 2.2, see *Migrating BlackBerry Applications* on page 59.
- Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.
- Afaria does not support BlackBerry, so no project or client changes are required for BlackBerry migration from 2.1 ESD #3 to 2.2.

## Migrating BlackBerry Applications

Migrate BlackBerry Online Data Proxy applications from 2.1 ESD #3 to 2.2.

These steps use an example scenario that includes before and after code snippets, removed code snippets, and additional information.

1. Modify user registration code, and all APIs related to registration. Error handling has been changed from exceptions in 2.1 ESD #3 and earlier to standard error objects in 2.2.

   Before:

```
try {
         UserManager. clearServerVerificationKey();
         UserManager.initialize(HomeScreen.appID);

UserManager.setConnectionProfile(serverIP,serverPort,farmID);
         UserManager.registerUser(userName, activationCode);
         UserManager.addUserRegistrationListener(this);
         UserManager. setODPHTTPAuthChallengeListener(this);
         UserManager. setODPHttpErrorListener(this);
```

```
    }  catch (MessagingClientException oe) {
    }
```

After:

```
try {
         ODPClientConnection.clearServerVerificationKey();
         ODPUserManager.initInstance(HomeScreen.appID);
         oum = ODPUserManager.getInstance();
         oum.setConnectionProfile(serverIP, serverPort, farmID);
         oum.registerUser(userName,activationCode,true);
         oum. setUserRegistrationListener(this);
         ODPClientConnection. setODPHTTPAuthChallengeListener
(this);
         ODPClientConnection. setODPHttpErrorListener(this);

    }  catch (ODPException oe) {
    }
```

Removed: nothing has been removed from the interface.

**2.** Modify data fetch-related code.

Before:

```
ISDMConnectivitiyParameters params = new
SDMConnectivityParameters();
    params.setLanguage("en");
    params.setUserName(backendUsername);
    params.setUserPassword(backendPassword);
    params.setBaseUrl(url);
  SDMPreferences preference = new SDMPreferences();
    requestManager  = new SDMRequestManager(
      new SDMLogger(preference), preference, params, 2);
    final ISDMRequest request = new SDMBaseRequest();
    Hashtable headers = new Hashtable();
  headers.put("X-CSRF-Token", "fetch");
    request.setHeaders(headers);
    request.setPriority(ISDMRequest.PRIORITY_HIGH);
    request.setRequestMethod(ISDMRequest.REQUEST_METHOD_GET);
    request.setRequestUrl(url);
    request.setListener(listener);
  requestManager.makeRequest(request);
```

After:

```
ISDMConnectivitiyParameters params = new
SDMConnectivityParameters();
    params.enableXSRF(true);
    params.setLanguage("en");
    params.setUserName(backendUsername);
    params.setUserPassword(backendPassword);
    params.setBaseUrl(url);
  SDMPreferences preference = new SDMPreferences();
    requestManager  = new SDMRequestManager(
      new SDMLogger(preference), preference, params, 2);
    final ISDMRequest request = new SDMBaseRequest();
    request.setPriority(ISDMRequest.PRIORITY_HIGH);
    request.setRequestMethod(ISDMRequest.REQUEST_METHOD_GET);
    request.setRequestUrl(url);
    request.setListener(listener);
  requestManager.makeRequest(request);
```

Removed: nothing has been removed from the interface.

3. Modify user deletion code, and related API.

   Before:

   ```
   UserManager. deleteUser();
   ```

   After:

   ```
   ODPUserManager.initInstance(HomeScreen.appID);
   oum = ODPUserManager.getInstance();
   oum.deleteUser();
   ```

   Removed: nothing has been removed from the interface.

4. Modify native notification (push) code, and related API.

   Before:

   ```
   UserManager.setPushListener(ISDMNetListener listener);
   ```

   After:

   ```
   ODPClientConnection. registerForPayloadPush(ISDMNetListener
   listener);
   ODPClientConnection.
   registerForNativePush(IODPPushNotificationListenerlistener);
   ```

   Removed: nothing has been removed from the interface.

5. Make modifications to implement additional changes and new features, then recompile your code if required.

## iOS

No migration changes are required for OData iOS applications; however, you might need to make some changes to take advantage of new features, or when you modify an application.

### *Migrate OData SDK Version 2.1 ESD #3 to 2.2*

- For information and examples for migrating existing 2.1 ESD #3 iOS applications to 2.2, see *Migrating iOS Applications* on page 62.
- Scale-out nodes take requests only from messaging clients (OData SDK, Hybrid Web Container) and HTTP clients (REST APIs). For these clients to connect to the scale-out node, clients must be built with Unwired Platform version 2.2. Only 2.2 clients can fully support HTTP cookies. You must migrate existing clients to version 2.2 if you want to

connect to scale-out nodes. For details about cookie support, see the corresponding *Developer Guide* for your client type.

- Any device applications that implement Afaria libraries need to be recompiled to use standalone Afaria libraries, and reprovisioned.
  1. Download the latest Afaria libraries.
  2. Copy the libraries to a new location.
  3. Relink the libraries in your development environment. See *Developer Guide: OData SDK*, *Downloading the Latest Libraries* (iOS section).

## Migrating iOS Applications

Migrate iOS Online Data Proxy applications from 2.1 ESD #3 (or earlier) to 2.2.

These steps use an example scenario that includes before and after code snippets, removed code snippets, and additional information.

1. Modify user registration code, and all APIs related to registration.

   In the following before and after code examples, which show an automatic registration scenario:
   - The user manager class is renamed to comply with Sybase Unwired Platform naming standards.
   - Error handling has been changed from exceptions in 2.1 ESD #3 or earlier to standard error objects in 2.2.
   - With 2.2, asynchronous user registration follows the delegation design pattern of iOS, that is, the application developer implements an `ODPUserManagerDelegate` to receive failure or success notifications, compared to the behavior in earlier versions, where application-defined selectors were assigned for success and failure callbacks.
   - The asynchronous registration call has been merged with the normal registration call, and a simple Boolean determines whether the call is synchronous.

   Before:

```
@try
{
    if ([LiteSUPAppSettings isSUPKeyProvisioned]) {
        [LiteSUPUserManager clearServerVerificationKey];
    }
    LiteSUPUserManager* userManager = [LiteSUPUserManager
getInstance:@"NewFlight"];

    [ODPClientListeners
setCertificateChallengeListenerDelegate:self];
    [ODPClientListeners
setHTTPAuthChallengeListenerDelegate:self];
    [ODPClientListeners setHTTPErrorListenerDelegate:self];

    [userManager setDelegate:self];
    [userManager
setDidFailToRegisterUser:@selector(registrationSuccessful:)];
    [userManager
setDidSuccessfulUserRegistration:@selector(registrationFailed:)];

    [userManager setConnectionProfile:@"10.53.138.119"
withSupPort:5001 withServerFarmID:@"0"];
    [userManager registerUser:@"supuser"
withSecurityConfig:@"HttpAuth" withPassword:@"s3puser"];
}
@catch (NSException *exception)
{
    NSLog(@"%@", [exception reason]);
}
```

After:

```
    if ([ODPAppSettings isServerKeyProvisioned]) {
        [ODPClientConnection clearServerVerificationKey];
    }
ODPUserManager* userManager = [ODPUserManager
getInstance:@"com.sap.NewFlight"];
[ODPClientListeners
setCertificateChallengeListenerDelegate:self];
[ODPClientListeners setHTTPAuthChallengeListenerDelegate:self];
[ODPClientListeners setHTTPErrorListenerDelegate:self];

[userManager setDelegate:self];

[userManager setConnectionProfileWithHost:@"10.53.138.119" port:
5001 farm:@"0" error:nil];
NSError* regError = nil;
[userManager registerUser:@"supuser" securityConfig:@"SSO"
password:@"s3puser" error:&regError isSyncFlag:NO];

if (regError) {
    NSLog(@"%@", regError);
}
```

Removed:

```
[userManager registerUser:@"user" withSecurityConfig:@"sec"
withPassword:@"pwd" withVaultPassword:@"vaultpwd"];
[userManager registerUserAsynchronousWithUserName:@"user"
activationCode:@"code"];
[userManager registerUserAsynchronousWithUserName:@"user"
securityConfig:@"sec" password:@"pwd"];
[userManager registerUserAsynchronousWithUserName:@"user"
securityConfig:@"sec" password:@"pwd" vaultPassword:@"vaultpwd"];
[userManager setConnectionProfileFromAfaria:url
appUrlScheme:urlScheme];
NSMutableDictionary* settings = [userManager
getSettingsFromAfariaWithUrl:url UrlScheme:urlScheme];
```

**2.** Modify data fetch-related code.

There are no major differences in using the `SDMRequesting` interface with Sybase Unwired Platform 2.2. All basic API code remains the same. The renaming of the ODP request call is abstracted by the `SDMRequestBuilder` and does not affect the application. In the following before and after example for data fetch code:

- One major difference is XCSRF handling for the client. With 2.2, clients are responsible for token persistence during the session. Enable XCSRF handling by calls to a simple method in the `SDMRequesting` interface. In 2.1 ESD #3 and earlier, fetching the token and passing it in subsequent update calls was handled by the application itself.
- The new get Endpoint call method returns an error in case of failure when fetching the endpoint. You can write your application to receive the error or not. This holds true for the push Endpoint method as well.

Before:

```
id<SDMRequesting> request = [SDMRequestBuilder requestWithURL:
[NSURL URLWithString: [LiteSUPAppSettings
getApplicationEndPoint]];
[request setUsername:@"user"];
[request setPassword:@"pwd"];
[request setDelegate:self];
[request setRequestMethod:@"GET"];
[request addRequestHeader:@"X-CSRF-Token" value:@"Fetch"];
[request setDidFailSelector:@selector(requestFailed:)];
[request setDidFinishSelector:@selector(requestFinished:)];
[request startAsynchronous];

NSString* xCsrfToken = [[request responseHeaders]
objectForKey:@"X-CSRF-TOKEN"];
```

After:

```
[SDMRequestBuilder enableXCSRF:YES];
id<SDMRequesting> request = [SDMRequestBuilder requestWithURL:
[NSURL URLWithString: [ODPAppSettings
getApplicationEndpointWithError:nil]]];
[request setUsername:@"user"];
[request setPassword:@"pwd"];
[request setDelegate:self];
[request setRequestMethod:@"GET"];
[request setDidFailSelector:@selector(requestFailed:)];
[request setDidFinishSelector:@selector(requestFinished:)];
[request startAsynchronous];
```

Removed: nothing has been removed from the `SDMRequesting` interface.

**3.** Modify user deletion code, and related API code.

The difference here is the restructuring of classes. The message to stop the client has been renamed and grouped under a different class, and exception handling has been replaced with error handling using the standard error object.

Before:

```
@try {
    LiteSUPUserManager* userManager = [LiteSUPUserManager
getInstance:@"NewFlight"];
```

```
    [userManager shutDown];
    [userManager deleteUser];
}
@catch (NSException *exception) {
    NSLog(@"%@", [exception reason]);
}
```

After:

```
ODPUserManager* userManager = [ODPUserManager
getInstance:@"com.sap.NewFlight"];
ODPClientConnection* clientConnection = [ODPClientConnection
getInstance:@"com.sap.NewFlight"];
[clientConnection stopClient];
NSError* error = nil;
[userManager deleteUserWithError:&error];
```

Removed: nothing has been removed from the interface.

**4.** Modify APNS code, and related API code.

This section discusses the client-side API, which gets the device token and passes it to Unwired Server. The only major change is renaming the class that holds these methods.

Before:

```
[LiteSUPMessagingClient setupForPush:app];
[LiteSUPMessagingClient deviceTokenForPush:app
deviceToken:token];
[LiteSUPMessagingClient pushNotification:app
notifyData:dataDict];
[LiteSUPMessagingClient pushRegistrationFailed:app
errorInfo:error];
```

In version 2.1 ESD #3, online push with payload was achieved with `setDelegate` calls. Also, a new delegate `SDMSUPPushDelegate` has been adapted, and its method `pushNotificationReceived:` implemented.

```
 [SUPUtilities setDelegate:self];
```

The delegates for these methods have remained the same; the information has not been repeated here.

After:

```
[ODPClientConnection setupForPush:app];
[ODPClientConnection deviceTokenForPush:app deviceToken:token];
[ODPClientConnection pushNotification:app notifyData:dataDict];
[ODPClientConnection pushRegistrationFailed:app errorInfo:error];
```

In version 2.2, the online push with payload calls were adapted to the delegate `ODPPushDelegate`, and its method `pushNotificationReceived:` implemented.

```
[ODPClientConnection registerForPayloadPush:self];
```

Removed: nothing has been removed from the interface.

5. Modify certificate management API code sections.

   Before:

   ```
   LiteSUPCertificateStore* store = [LiteSUPCertificateStore
   getInstance];
   NSString* base64string = [store
   getSignedCertificateFromFile:filePath
   withCertificatePassword:password];
   ```

   After:

   ```
   NSString* base64string = [ODPCertificateManager
   getSignedCertificateFromFile:filePath
   withCertificatePassword:password];
   ```

   Removed:

   ```
   LiteSUPCertificateStore* store = [LiteSUPCertificateStore
   getInstance];
   [store getSignedCertificate:cert
   withCertificatePassword:password];
   [store getSignedCertificateFromAfariaForURL:url
   withUsername:username withPassword:password];
   [store getSignedCertificateFromAfariaForURLScheme:urlScheme
   withUsername:username withPassword:password];
   [store getSignedCertificateFromServer:server
   withPassword:password withCertificatePassword:passCert];
   ```

   **Note:** These methods were deprecated in 2.1 ESD #3, and have been removed in 2.2.

6. Make modifications needed to implement additional changes and new features, then recompile your code if required.

   Since Afaria is a standalone, separately consumable library in version 2.2, no methods related to Afaria are exposed as a part of the Online Data Proxy interface. Application developers must consume the Afaria library directly.

## OData SDK API Changes in Version 2.2

The HTTP REST client libraries are available for OData applications in 2.2 SP03. Previous changes in 2.2 SP02 included Afaria, DataVault, refactored ODP class names, and introduction of ODPException.

### *HTTP REST Client Libraries in 2.2 SP03*

The HTTP REST client libraries are available with 2.2 SP03, which enable you to implement REST services in OData applications (Android and iOS). The REST SDK libraries enable consumption of Sybase Unwired Platform REST services with pure HTTP (by default in on-premise) connectivity. The REST SDK provides simplified APIs for registration, exchange settings between client and server, and end-to-end tracing. The SDK also supports native push notifications.

**Table 17. New HTTP REST Classes for OData**

| Classes | Platform |
|---|---|
| • `ClientConnection`<br>• `UserManager`<br>• `AppSettings` | Android |
| • `SMPClientConnection`<br>• `SMPUserManager`<br>• `SMPAppSettings` | iOS |

Documented in: *Developer Guide: OData SDK*, see *REST SDK API Reference* (Android and iOS)

### *Afaria APIs*

Afaria APIs are no longer packaged with the OData SDK API, but are now available directly from the standalone Afaria library: *http://frontline.sybase.com/support/downloads.aspx* (registration required).

**Table 18. Afaria Methods Removed from OData SDK**

| Methods | Platform |
|---|---|
| • `setConnectionProfileFromAfaria()`<br>• `getSettingsFromAfaria()`<br>• `getSignedCertificateFromAfaria()` | Android |
| • `setConnectionProfileFromAfaria()`<br>• `getSettingsFromAfaria()`<br>• `getSignedCertificateFromAfaria()` | BlackBerry |
| • `setConnectionProfileFromAfariaForUrl`<br>• `getSettingsFromAfariaForUrl`<br>• `getSignedCertificateFromAfaria` | iOS |

Related topics or references have been removed from *Developer Guide: OData SDK*.

### *DataVault API*

DataVault APIs are no longer packaged with the OData SDK API, but are now available from the standalone DataVault library that is packaged with the Sybase Mobile SDK.

**Table 19. Deleted DataVault Methods**

| Methods | Platform |
|---|---|
| `LiteDataVault` | Android |
| `SUPDataVault` | BlackBerry |
| `LiteSUPDataVault` | iOS |

Related topics or references have been removed from *Developer Guide: OData SDK*.

### *ODP Class Name Changes*

Some API class names have been refactored to keep naming conventions consistent across all platforms. APIs are logically grouped in the corresponding refactored classes. Also for consistency, some new classes have been added.

**Table 20. Changed (Refactored) Class Names**

| Methods | Platform |
|---|---|
| • `ODPAppSettings` – refactored from `LiteAppSettings`.<br>• `ODPCertificateManager` – refactored from `LiteCertificateStore`.<br>• `ODPUserManager` – refactored from `LiteUserManager`.<br>• `ODPException` – new class.<br>• `ODPClientConnection` – refactored from `LiteMessagingClient`. | Android |
| • `ODPAppSettings` – refactored from `AppSettings`.<br>• `ODPCertificateManager` – refactored from `CertificateStore`<br>• `ODPUserManager` – refactored from `UserManager`.<br>• `ODPException` – new class.<br>• `ODPClientConnection` – APIs moved into this class for logical grouping. | BlackBerry |

| Methods | Platform |
|---|---|
| • `ODPAppSettings` – refactored from `AppSettings`.<br>• `ODPCertificateManager` – refactored from `CertificateStore`.<br>• `ODPUserManager` – refactored from `UserManager`. | iOS |

See *Developer Guide: OData SDK*, the *ODP SDK API Usage* topic (iOS, Android, and BlackBerry sections).

*ODPException API*
Error codes thrown by ODP APIs are defined in the `ODPException` class.

See *ODPException class* (Android and BlackBerry) documentation in Javadoc.

## Migrate OData Applications to REST API

Migrate messaging-based (sometimes called iMO-based) OData applications to REST API-based, to take advantage of REST services capabilities. This enables you to run mobile applications on-premise and in the cloud.

### Prerequisites

- Import the new REST client libraries from the OData SDK into your Android or iOS development environment.
- Arrange access to a test environment for both on-premise and cloud testing.

### Task

1. In your development environment, modify the messaging-based (sometimes called iMO) application logic to use REST-based services.

   Some areas you may need to address:
   - Registration
   - Settings exchange
   - Request response
   - End-to-end tracing
   - Native push notifications
   - For the cloud, the application may support CAPTCHA if required.

   For supporting information:

- For information related to migrating OData applications to REST API, see *Guidelines for On Premise and Cloud Applications*.
- For API information for all of the above, which are different for the REST SDK, see *Developer Guide: OData SDK*:
  - *Development Task Flow Using REST SDK (HTTP Channel) – iOS section*
  - *Development Task Flow Using REST SDK (HTTP Channel) – Android section*
- For new API information, see *OData SDK API Changes in Version 2.2*. Previous changes in 2.2 SP02 included Afaria, Data Vault, refactored ODP class names, and introduction of ODP Exception.

**2.** Recompile the application.

**3.** Test the application in a device simulator or emulator, and in the test environment (both on-premise and cloud configurations). Make modifications as needed.

For useful information for testing:

- **iOS applications –**
  - *Developer Guide: OData SDK* (iOS section):
    - *Testing Applications*
    - *Deploying Applications to Devices*
  - *Tutorial: iOS OData Application Development with REST Services*, *Deploying the Device Application on iPhone Simulator*
- **Android applications –**
  - *Developer Guide: OData SDK* (Android section), *Deploying Applications to Devices*
  - *Tutorial: Android OData Application Development with REST Services*, *Running your Android OData Application*

**4.** Deploy the application to the production environment.

## Guidelines for On Premise and Cloud Applications

Consider these on-premise and cloud guidelines when migrating OData applications to REST API. The guidelines may require coding changes to your application.

- A cloud application may support CAPTCHA if required. If CAPTCHA is enabled, the application must be able to process the CAPTCHA challenge.
- Applications that support both on-premise and cloud must incorporate logic to determine the system to which the application should connect. This may extend to user interface elements that prompt the user to identify the correct system. You can set up an application to determine the system via the provided Server URL, but you must implement the logic for this.
- New versions of resource bundles on the server are not automatically pushed to the applications in the cloud scenario. You must add application logic to request new resource bundles from the server if needed.

- Security Configuration HTTP Headers are not supported, and are ignored by the cloud.
- The cloud always uses HTTPS, whereas it is optional in on-premise scenarios.
- Application connection registration is required in the cloud, whereas it is optional for on-premise scenarios.
- Domains are not supported in the cloud.
- Application connection templates are not supported in the cloud.
- A subset of the Sybase Unwired Platform PUSH registration settings is available for the cloud scenario, from the full set available for the on premise scenario.
- Since the cloud enables for cross-site request forgery (XSRF) attacks, applications used in the cloud must include XSRF token handling logic, if the back-end service demands it.

# Migrate REST API Applications

No migration changes are required for REST API applications.

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