



# **BlackBerry Dynamics Launcher Framework Development Guide**

12.0



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# About the BlackBerry Dynamics Launcher Library

The BlackBerry Dynamics Launcher is the blue BlackBerry icon located in your BlackBerry Dynamics apps. It allows you to perform the following actions:

- Quickly switch between the BlackBerry Dynamics app that is currently open and any other BlackBerry Dynamics apps on your device
- Move between BlackBerry Work Mail, Calendar, Contacts, and Docs
- Access your work apps catalog
- Access Quick Create tools for email, contacts, and calendar events
- Launch browser-based web clips and non-BlackBerry Dynamics apps installed on your device (This feature requires admin permission and the UEM Client. Launching browser-based web clips requires BlackBerry UEM server version 12.7 or later. Launching non-BlackBerry Dynamics apps requires BlackBerry UEM server version 12.7 MR1 or later.)
- Search for BlackBerry Dynamics Launcher items (iOS only)
- Access settings

You can use the BlackBerry Dynamics Launcher Library to enable your BlackBerry Dynamics apps so that they are displayed in the Launcher. The library consists of header files and a compiled library for Objective-C for iOS and Java for Android.

This guide describes how to integrate the Launcher Library in your apps. It does not describe how to enable them so that they appear in the Launcher. Features are enabled in BlackBerry UEM or Good Control. For more information on how to add an app to the BlackBerry Dynamics Launcher in BlackBerry UEM, see [Create an app shortcut for iOS, macOS, and Android devices](#) in the BlackBerry UEM Administration content.

For iOS, if you plan to switch to the BlackBerry Dynamics Launcher dylib framework starting in version 3.2, integrate the “BlackBerryLauncher” dylib.

# Server requirements

To take advantage of advanced features that do not require programming, the BlackBerry Dynamics Launcher and the Launcher Library require the following servers:

| Item                                  | Requirement   |
|---------------------------------------|---|
| Management solution                   | <p>To allow the app to be displayed in the BlackBerry Dynamics Launcher, you must have one of the following:</p> <ul style="list-style-type: none"><li>• BlackBerry UEM version 12.6 MR1 or later</li><li>• Good Control version 2.3 or later, Good Proxy version 2.3 or later</li></ul>  |
| BlackBerry Enterprise Mobility Server | <p>To create custom icons, see user profile information and presence status, and display BlackBerry Dynamics Launcher apps' policy-enabled sections, you must have the following:</p> <ul style="list-style-type: none"><li>• BlackBerry Enterprise Mobility Server 2.4 and later</li></ul> <p><b>Note:</b> The Launcher Library does not strictly require the BlackBerry Enterprise Mobility Server. Without it, your app still has the default BlackBerry icon and the IT administrator can add other app icons to the Launcher, but you will not have the features of policy-based sections in the Launcher (like docs or RSA SecurID), BEMS-Presence, or users' profile photos.</p> |

# Compatibility updates for version 12.0.x

- Support for BlackBerry Dynamics SDK version 12.x
- Android SDK API level 29 or later is required
- BlackBerry Dynamics Launcher now supports building and debugging BlackBerry Dynamics apps on an Apple M1 Mac Xcode iOS simulator. This can only be done for BlackBerry Dynamics apps using the BlackBerry Dynamics dynamic library

# BlackBerry Dynamics SDK and Launcher Library version requirements

The following information only applies if you use the BlackBerry Dynamics Launcher as a front-end to your apps.

- The Launcher Library works on top of the BlackBerry Dynamics SDK.
- The BlackBerry Dynamics SDK and the Launcher Library are mutually dependent. Make sure that you have installed the latest BlackBerry Dynamics SDK for your platform that corresponds to this release of the Launcher Library and make sure that you have installed the version of the Launcher Library that corresponds to your installed version of the BlackBerry Dynamics SDK.

Specifically for this release, BlackBerry Dynamics SDK version 12.0 corresponds with Launcher Library version 12.0.x.

**Important:** If you do not ensure that you are using the corresponding versions of the BlackBerry Dynamics SDK and the Launcher Library, your apps will crash.

# Integrating the Launcher Library for display on Android devices

The BlackBerry Dynamics Launcher Library can be integrated like any Android library project. After the library is integrated into the build system (Gradle/Ant) or into your favorite IDE, there are few basic steps you need to follow to integrate Launcher functionality into your apps.

**Note:** The BlackBerry Dynamics Launcher Library supports AndroidX.

## Set up the sample app in Gradle and Android Studio for sample app

The sample app for the BlackBerry Dynamics Launcher Library is based on the RSS Reader sample app delivered with the BlackBerry Dynamics SDK. Apps that rely on the BlackBerry Dynamics Launcher Library must use Android support library `com.android.support:support-v13`. This is already configured in the Android sample app's `build.gradle` file, but you must add these dependencies in any new project. You must upgrade the Android SDK to API level 28.

1. Download and unzip the BlackBerry Dynamics SDK release .zip distribution package.
2. Download and unzip the BlackBerry Dynamics Launcher Library release .zip distribution package.
3. Go to `GoodLauncherLibrary/SampleLauncherApp/app/build.gradle` file and modify maven url to point to your locally downloaded BlackBerry Dynamics SDK folder, for example: 

```
maven { url '<dynamics-sdk-root-folder>/m2repository' }
```

## Configure an existing Android project

These steps assume you have a project already created and a `libs` directory in that project. The `libs` directory must not be at the top level of your project. It must be at the same level as your `build.gradle` file.

1. Download and unzip the BlackBerry Dynamics SDK release .zip distribution package.
2. Download and unzip the BlackBerry Dynamics Launcher Library release .zip distribution package.
3. Copy `GoodLauncherLibrary/launcherlib.aar` to the project `libs` directory.
4. Make the following declarations in your `build.gradle` file, as shown in these snippets:
  - a) Declare a dependency on the `launcherlib.aar` library and `gd` library:

```
dependencies {
    implementation
    'com.blackberry.blackberrydynamics:android_handheld_platform:<version>'
    implementation(name: 'launcherlib', ext: 'aar')
}
```

- b) Add the following repositories for BlackBerry Dynamics Launcher and BlackBerry Dynamics SDK components:

```
repositories{
    //Copy launcherlib.aar inside app/libs folder
    flatDir {
        dirs 'libs'
    }
}
```



```
//Maven url points to the local Dynamics SDK download folder path ex:
gdsdk-release-<version>/m2repository/maven { url '<dynamics-sdk-root-
folder>/m2repository'
}
}
```

c) Add the Android support library dependencies:

```
implementation 'androidx.legacy:legacy-support-v13:1.0.0'
implementation 'androidx.appcompat:appcompat:1.0.0'
implementation 'com.google.android.material:material:1.0.0'
implementation 'androidx.cardview:cardview:1.0.0'
implementation 'androidx.constraintlayout:constraintlayout:1.1.3'
}
```

5. To build your project with Gradle, use either `gradle--info --stacktrace clean assembleDebug` or `gradle --info --stacktrace clean assembleRelease`.

## Using a global instance of GDStateListener instead of a per-activity listener

The BlackBerry Dynamics Launcher Library and BlackBerry Dynamics SDK for Android do not have a mechanism to determine whether the global state listener is set in order to decide whether it should use its own GDStateListener in its activity. You should set a global instance of GDStateListener.

## Initialization, registration, and program setup

Apps that rely on the BlackBerry Dynamics Launcher Library must use Android support library `com.android.support:support-v13`. Before any interaction with the Launcher, it must be initialized.

1. Initialize the Launcher Library:

```
LauncherButton.initForApplication(Application context, Collection<Class>
activities,
ActivitiesTargetingMethod method);
```

The `LauncherButton.initForApplication` should be called inside the `onCreate` of `'android.app.Application'` derived class using application context.

| Item       | Description   |
|------------|---|
| context    | This is a context of the app where the Launcher Library is integrated.  |
| activities | This is a list of the app activities where the Launcher button should or should not be shown. The third parameter, <code>ActivitiesTargetMethod</code> , defines whether this is an excluded activities list or included activities list. |

| Item   | Description   |
|--------|---|
| method | <p>This can be one of two possible values:</p> <ul style="list-style-type: none"> <li>• <code>LauncherButton.ActivitiesTargetingMethod.Exclusive</code></li> <li>• <code>LauncherButton.ActivitiesTargetingMethod.Inclusive</code></li> </ul> |

2. Notify the Launcher of the BlackBerry Dynamics authorization state change. The app that hosts the Launcher Library should let the Launcher Library know the authorization state with the following method:
  - Set to `true` when the BlackBerry Dynamics state `EventListener` notifies `onAuthorized` state.
  - Set to `false` when `EventListener` notifies `onLocked` state.
3. If necessary, register `GDServiceClientListener`.

The Launcher Library uses `GDServiceClient` to start apps listed on the Launcher pad.

The `GDServiceClient` requires an instance of `GDServiceClientListener` but only one listener can be set. In case your app already defines `GDServiceClientListener`, it should be passed to the Launcher Library. Otherwise, the default `GDServiceClientListener` is set to `GDServiceClient` and the app's `GDServiceClientListener` is reset.

```
HostingApp.getInstance().setClientServiceListener(GDServiceClientListener
serviceClientListener);
```

4. Handle the settings icon in the Launcher.

This button is intended to invoke your app settings screen. Your app must implement and then register the `LauncherCommandCallback` interface.

```
HostingApp.getInstance().setOnCommandCallback(LauncherCommandCallback
commandCallback)
public interface HostingApp.LauncherCommandCallback {
    public void onSettingsCommand();
}
```

## ProGuard configuration

To make sure that the build does not fail with too many warnings, apps that integrate the BlackBerry Dynamics Launcher Library must have the following directive in the ProGuard file:

```
-dontwarn com.good.launcher.**
```

# Integrating the BlackBerry Dynamics Launcher Library on iOS

Add either the BlackBerry Dynamics Launcher Library or the BlackBerry Dynamics Launcher dylib to an Xcode project. Choose dylib if you are already using the BlackBerry Dynamics dylib framework in your app.

## Add the Launcher Library to an Xcode project

Adding BlackBerry Dynamics Launcher Library to an Xcode project is no different than adding other libraries, with a few minor additions.

1. Move the unzipped Launcher Library files to any desired directory and add each item to the Xcode project file.
2. Under the **Build Phases** of the app target, add `Launcher.framework` to the **Link Binary With Libraries** phase.
3. Verify that the `LauncherBundle.bundle` is added as part of the **Copy Bundle Resources** phase.
4. Ensure that the **Main Interface** setting for both iPhone and iPad under the target's **General settings** is cleared. The Launcher provides its own root interface.
5. To ensure icons are downloaded, in the app's info.plist file add the following key/valuepair:

```
(string: boolean): GDFetchResources : YES
```

6. Under the **Other Linker Flags** build setting, add the following: `-ObjC`.

## Add the Launcher dylib to an Xcode project

Adding BlackBerry Dynamics Launcher dylib to an Xcode project is no different than adding other libraries, with a few minor additions.

1. Move the unzipped Launcher Library files to any desired directory and add each item to the Xcode project file.
2. Under the **Build Phases** of the app target, add `BlackBerryLauncher.xcframework` to the **Embed Framework**.
3. Ensure that the **Main Interface** setting for both iPhone and iPad under the target's **General settings** is cleared. The Launcher provides its own root interface.
4. To ensure icons are downloaded, in the app's info.plist file add the following key/valuepair:

```
(string: boolean): GDFetchResources : YES
```

5. Under the **Other Linker Flags** build setting, add the following: `-ObjC`.

## Initialize the Launcher

Add the following link to the end of your initialization code, as shown in Example of `onAuthorized` with `startServicesWithOptions`:

```
[launchPadVC  
startServicesWithOptions:GTLInternalGDAuthTokenAndPushConnectionManagement];
```

## Starting the Launcher

After the `GDiOS` delegate (usually also the `UIApplicationDelegate`) receives the `onAuthorized:` callback, the BlackBerry Dynamics Launcher Library needs to start up various services that call into the BlackBerry Dynamics API. Starting the Launcher requires that startup options be provided. Internally, the library uses the `GDUtility` and `GDPushConnection` classes. These classes are singleton classes with a single delegate. If the host app is using these classes, the Launcher Library needs to either retrieve the required information through a delegate callback or through method calls into the Launcher.

| Startup options  | Description   |
|--|---|
| <code>GTLInternalGDAuthTokenAndPushConnectionManagement</code> | This is the default option. Use this option if the host app does not use BlackBerry Dynamics auth tokens ( <code>GDUtility</code> class) or BlackBerry Dynamics push connection. The specified classes are used internally in the Launcher. |
| <code>GTLHostGDAuthTokenManagement</code>                      | Use this option if the host app uses the <code>GDUtility</code> class internally. The Launcher makes a delegate callback into the app whenever it requires an auth token (see below).   |
| <code>GTLHostGDAuthTokenManagement</code>                      | Use this option if the host app uses <code>GDPushConnection</code> and specifies a delegate. Whenever the host app receives the <code>onStatus:</code> call, the value provided should be passed to the Launcher.                           |

## Example of `onAuthorized` with `startServicesWithOptions`

The following fragment is extracted from the sample apps `AppNameGDiOSDelegate.m`.

**Note:** Make sure you add the line highlighted below at the end of your initialization code. Otherwise, your icons might not be displayed properly.

**AppNameGDiOSDelegate.m with `launchPadVC`**

```
-(void) onAuthorized:(GDAppEvent*)anEvent
{
    /* Handle the Good Libraries authorized event. */

    switch (anEvent.code) {
        case GDErrorNone: {
            if (!self.hasAuthorized) {
                // launch application UI here
                .
                .
                .
                //Detect the device
                if ([[UIDevice currentDevice] userInterfaceIdiom] ==
                UIUserInterfaceIdiomPhone)
                {
                    /*
                     *      iPhone start - based on single UINavigationController
                     */
                }
            }
        }
    }
}
```

```

        // Setup the rootviewController and a navigation controller
(for the splitviewController)
        self.navController = [[Utilities storyboard]
instantiateViewControllerWithIdentifier:@"iPhoneNC"];

        GTLLauncherViewController *launchPadVC =
[[GTLLauncherViewController alloc] initWithBaseViewController:self.navController];
        appWindow.rootViewController = launchPadVC;

        [launchPadVC
startServicesWithOptions:GTLInternalGDAAuthTokenAndPushConnectionManagement];

    }
else
{

        /*
        *      iPad start - based on UISplitViewController
        */
        self.splitViewController = [[Utilities storyboard]
instantiateViewControllerWithIdentifier:@"SplitVC"];

        self.navController = [self.splitViewController.viewControllers
firstObject];
        self.detailNavigationController =
[self.splitViewController.viewControllers lastObject];
        GTLLauncherViewController *launchPadVC =
[[GTLLauncherViewController alloc]
initWithBaseViewController:self.splitViewController];
        self.rssReaderAppDelegate.window.rootViewController =
launchPadVC;

        [launchPadVC
startServicesWithOptions:GTLInternalGDAAuthTokenAndPushConnectionManagement];
        .
        .
        .

```

#### **GTLHostGDAAuthTokenManagement startup option**

```

//This method must be implemented if GTLHostGDAAuthTokenManagement is a specified
startup option
- (void)launcherViewController:(GTLLauncherViewController *)controller
didRequestGDAAuthTokenForServerName: (NSString *)name completion:
(void (^)(NSString *token))completion { //Implementation specific to the host
app
    [[HostAuthTokenManager tokenManager] getAuthTokenForServer:name
completion:^(NSString *token) {
    if (completion) {
        completion(token);
    }
}];
}
}

```

#### **GTLHostGDPushConnectionManagement startup option**

```

//GDPushConnectionDelegate callback

```

```
- (void)onStatus:(int)status
{
    .
    .
    //The following is required if GTLHostGDPushConnectionManagement is specified
as a startup option
    GTLLauncherViewController *launcherVC = ...;
    [launcherVC setGDPushConnectionStatus:status];
}
```

## Troubleshooting

If BlackBerry Launcher Framework for iOS does not display an icon for a custom ISV app, check the BlackBerry PCE portal to ensure that the icon for the BlackBerry Dynamics app entitlement appears in the PCE tool. If it does not, upload or refresh the app icon in the PCE tool. For more information, see [Add an internal app to the app list](#).

# Hiding or showing the BlackBerry Dynamics Launcher

The following code samples show how to hide or show the BlackBerry Dynamics Launcher button:

For iOS, use the `GTLauncherViewController.launcherButtonHidden` boolean property.

To hide the Launcher button:

```
GTLauncherViewController *launcherVC = (GTLauncherViewController *)viewController;
launcherVC.launcherButtonHidden = YES;
```

To show the Launcher button:

```
GTLauncherViewController *launcherVC = (GTLauncherViewController *)viewController;
launcherVC.launcherButtonHidden = NO;
```

For Android, use

the `HostingApp.getInstance().setVisible(boolean isVisible, boolean updateView)` property.

To hide the Launcher button:

```
HostingApp.getInstance().setVisible(false, false)
```

To show the Launcher button:

```
HostingApp.getInstance().setVisible(true, false)Paragraph
```

# Sample app for Android and iOS

The distribution comes with a sample RSS Reader app that you can examine to see how the BlackBerry Dynamics Launcher Library is implemented.



# Moving to production

## Service binding

When your application is ready, it needs to be bound to a service in Good Control or BlackBerry UEM. You can bind it to the BlackBerry Dynamics Launcher Library service itself.

For details about how to bind an app to a service, see one of the following:

- For BlackBerry UEM environments, see [Manage BlackBerry Dynamics app services](#)
- For Good Control environments, [see the Manage Services section in the Good Control Help](#).

## Customizing the Launcher icon in BEMS

You can set a custom icon for your app in Good Control or BlackBerry UEM.

- For BlackBerry UEM environments, [see Setting a customized icon for the BlackBerry Dynamics Launcher](#)
- For BlackBerry UEM Cloud environments, [see Setting a customized icon for the BlackBerry Dynamics Launcher](#)
- For Good Control environments, [see Setting a customized icon for the BlackBerry Dynamics Launcher](#).

## Validate the BEMS SSL certificate

You can have the BlackBerry Dynamics Launcher Library validate the SSL certificate of any BlackBerry Enterprise Mobility Server that is associated with your deployment to secure the communications between the servers.

As of the 3.6.0 release of the BlackBerry Dynamics Launcher Library, this entitlement is deprecated and will not have any impact on the Launcher apps section or the UEM web apps shown in the Launcher.

### Before you begin:

- Verify that you have a copy of the BEMS SSL certificate or the BEMS SSL certificate chain. BEMS supports replacing the BEMS self-signed certificate with one issued by an internal or external certificate authority. If the BEMS certificate has been replaced, then you should deploy the Root CA and any intermediates or subordinate signing certificates in the chain, not the actual BEMS certificate. For more information, see [Replacing the autogenerated SSL certificate](#) in the BEMS Configuration content.
- Verify that you have administrative access to your Good Control and BlackBerry UEM server.
- Verify that you have the entitlement ID: `com.blackberry.feature.validatebemscertificate`

1. On the BEMS server, export the SSL certificate.
2. If you are using a Good Control server, go to **Certificates > Trusted Authorities** tab, **Upload New Certificate** to import the BEMS certificate.
3. If you are using a BlackBerry UEM server, go to **Policies and Profiles > Certificates > CA certificate** to add the certificate and assign it to users. For more information, see [Assign the BEMS SSL certificate to users](#).
4. Assign the entitlement ID to users. Do one of the following:
  - Assign it to the Everyone user group.
  - Create a user group of only those users you want to assign it to.
  - Assign it to individual users.

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