Application

Note

Modifying the Custom Launcher on ReconOS for Jet Pro

Custom Launcher

The Custom Launcher is the secondary point of entry when ReconOS is started -- launched by the DashWarning Activity which is the started by ReconOS upon boot. This document will walk through the steps to customizing The Custom Launcher.

Version 1.0

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Preamble

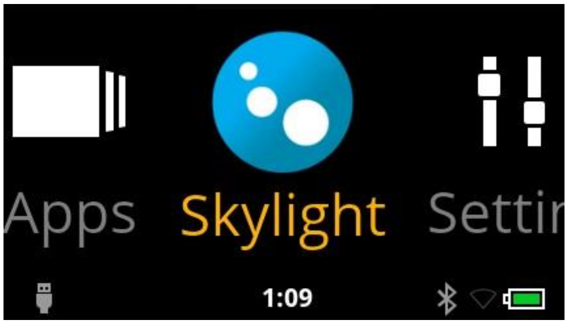
This Application Note assumes that the reader has read, and is familiar with the Application Note “AN001 – Setting up Android Debugging Bridge with Recon Jet Pro”. It further assumes that the reader is familiar with using Android Studio to import a project, writing and editing app code, and run an app the Recon Jet Pro.

Requirements:

- Windows PC (Windows 8+) or Mac computer (OS X Yosemite+)
- Recon Jet Pro
- Micro-B USB cable
- Android Studio

Custom Launcher

The Custom Launcher has the following layout using the ReconOS UI Carousel component:



Custom Launcher System Flow

The Custom Launcher described in this document registers itself as the package to be launched once ReconOS finishes it’s required startup steps. When Jet is powered on, the system application called DashWarning is the initial point of entry. It should be considered the only point of entry, as this system application launches key parts of ReconOS behaviors. As part of its process, DashWarning looks specifically for the presence of any package which registers itself in this way. If a developer was to create their own launcher from scratch – in place of the body of code documented herein, be sure to include the following line of **action**, inside the **<intent-filter>** tag, inside the **<application>** tag in the AndroidManifest.xml file:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
xmlns:android="http://schemas.android.com/apk/res/android"
package="com.reconinstruments.enterprisedemoapp">
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
/>

    <application
        android:allowBackup="true"
android:icon="@mipmap/ic_launcher"
android:label="@string/app_name"
android:theme="@style/ReconTheme">
        <!-- This line uses the Recon UI theme for its graphical components,
subject to change depending on developers' needs. -->
        <activity android:name=".MainActivity">
            <intent-filter>
<action
android:name="com.reconinstruments.enterprise.CUSTOM_LAUNCHER"/>
                ...
                ...
                ...
```

NB: Any application can call the CUSTOM_LAUNCHER action, it need not be a carousel based launcher.

Contents of the Carousel

The contents of the Carousel is populated when ReconOS first boots. The contents of the Carousel may also be updated if one of the following 3 events occurs:

- **The file at enterprise/apps.xml is modified**
- **A package (apk) is installed on Jet**
- **A package (apk) is uninstalled on Jet**

Apps

The **Apps** item of the Custom Launcher will launch a new Activity displaying all apps which are bundled with ReconOS for Jet Pro e.g. Camera App, Compass App and Gallery App, as well as any apps which have been sideloaded onto ReconOS.

Contents of apps.xml

The contents of apps.xml is loaded in the order in which the package names are entered in the apps.xml file. The contents of this file may be empty.

Settings

The **Settings** item of the Custom Launcher will launch a new Activity displaying a vertical list of options to modify settings on Jet. For example, Display settings and Battery Saving settings can be accessed from this Activity.

Customizing displayed items

A user can select which apps are shown on the carousel between **Apps** and **Settings** by modifying the contents of the file located at “`enterprise/apps.xml`”.

NB: If 1 or more app is selected to be shown in carousel, the apps are shown in the carousel, in the order they are entered in `apps.xml`, with the first app being highlighted by default. With zero apps installed the Apps item will be selected by default when the Launcher opens.

Customizing apps.xml

The Custom Launcher uses the contents of a file called **`apps.xml`** to determine which apps to display when the launcher is installed, and Jet is powered on. The xml file can be found in the enterprise folder at root folder level at “**`enterprise/apps.xml`**”. These apps will be displayed following the **Apps** icon. The file is based on a small schema with the following template.

```
<?xml version="1.0" encoding="utf-8"?>
<apps>
    <app namespace="com.example.packagename" />
</apps>
```

The file must have a root element called **`<apps>`**, which contains one or more elements called `<app>`. The **`<app>`** element itself must contain only one attribute **`namespace`**. The value of the attribute **`namespace`** refers to the package namespace of the app that is to be displayed.

The file can be updated live, while the Launcher is being displayed.

NB: If the `apps.xml` file is corrupted, missing, or empty no packages will be displayed – however Apps and Settings will still be displayed.

Customizing the app source code

There are 5 activities within the sample class:

- BaseLauncherActivity
- AllAppsActivity
- MainActivity
- ReconOSComponentsActivity
- SettingsActivity

BaseLauncherActivity

The BaseLauncherActivity contains a lot of the functionality that is shared between the MainActivity which is the primary entry point of the application, and the AllAppsActivity which presents a carousel of all apps installed on the Recon Jet Pro.

AllAppsActivity

The `AllAppsActivity` extends the `BaseLauncherActivity`. The `onCreate()` method is where the `AllAppsActivity` is initialized. This class inherits a significant amount of logic and is therefore quite thin. It should serve as a point of reference when comparing what applications are displayed between this `AllAppsActivity` class and the `MainActivity` class.

MainActivity

The `MainActivity` extends the `BaseLauncherActivity`. The `onCreate()` method is where the `MainActivity` is initialized. It will populate the Carousel contents, and add a `FileObserver` to the "apps.xml". The `getCarouselContents()` method is where the items are added to the Carousel:

The first item added to the Carousel is Apps. It uses the `ImageCarouselItem` class – a subclass of the ReconOS UI `StandardCarouselItem` component. Looking at the `ImageCarouselItem` class shows the extended behavior lies within the `onClick()` method – when the `ImageCarouselItem` is shown in the center of the Carousel, and the user presses the Select button the Intent attached to that instance of the `ImageCarouselItem` is launched. The last item added to the Carousel is "Settings" which also uses the `ImageCarouselItem` class.

Beneath the code to add Apps to the Carousel is a call to `getDrawableCarouselItems()`. This method loads and parses the "apps.xml" file to generate a `ArrayList<String>` of package names. to compare to an `ArrayList<String>` of package names of apps which are installed – this includes both sideloaded apps and system apps installed as part of ReconOS.

Note the two TODO comments in this method. The first highlights the decisions to be made around handling Exceptions. Each implementation has its own decision to make around this.

The second TODO comment provides an opportunity to quickly grasp how to add extra items to the Carousel. Uncomment the code in this area, click Run and note the new Components item added to the Carousel. Click on this item, and note the ReconOS UI List component in use here. Try navigating up and down this list, and press Select on each item in this list to discover what each item launches. The code for this activity is in `ReconOSComponentsActivity`.

The Settings item on the Carousel launches the `SettingsActivity`.

ReconOSComponentsActivity

This sample Activity highlights some of the Intents that can be launched within ReconOS. Note that the list of items on this list is not fully exhaustive of all intents available to launch within ReconOS. Example Intents to launch here include Overlay Menus such as the `RECON_POWER_MENU`. Further information on all Intents within ReconOS can be found within "AN005 – A list of available ReconOS Intents".

SettingsActivity

Similar in behavior to `ReconOSComponentsActivity`, and highlights further uses of the ReconOS UI List component. Each item in the List will launch the ReconOS Settings panel specific to each item. For example clicking the Bluetooth `ListItem` will launch the ReconOS Bluetooth Settings Menu.

Display, Smartphone, Bluetooth, Camera, Device, Notifications, Battery Saving, Advanced are the default options for `SettingsActivity`.