Getting Started with Android Development – Zebra Android Link-OS™ SDK – Java – Eclipse

Overview

This Application Note describes the end to end process of designing, packaging, deploying and running an Android application using the Zebra Link-OS™ Multiplatform SDK and Smartphone Utility.

The sample code used in this Application Note is from the sample code article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

Target Audience

The information in this document assumes that you have technical competence with Microsoft Windows, Java development with the Eclipse Integrated Development Environment (IDE), and core programming concepts and rationales.

Feedback

We value your feedback. Please rate the article and then add your comments/suggestions in the text field that appears.

For information on joining the ISV Program, contact a Program Manager in your area.

System Prerequisites

This Android SDK requires the following system prerequisites.

Java Development Kit (JDK)

To develop Android applications, you must install the latest version of the JDK. Download the JDK.

Eclipse IDE for Java Developers

Eclipse is the IDE used to develop Android applications, such as the one featured in this Application Note. Download the IDE.

Note: The version used in this Application Note is Eclipse - Luna Release 2 (4.4.2).

ADT Plugin for Eclipse

The Android Development Tools (ADT) is a plugin for the Eclipse IDE that is designed to give you a powerful, integrated environment in which to build Android applications. Install the ADT plugin.

Android SDK

Google distributes the Android SDK free of charge. It contains sample code, libraries, emulators and tools to help you build applications for the Android platform. See the installation instructions.

Zebra Link-OS Multiplatform SDK

The Zebra Link-OS Multiplatform SDK contains all the required components to develop applications for Zebra label printers.

The SDK includes a Java library (.jar), which provides the means to scan for, connect to, and print on Zebra label printers. Information, including system prerequisites and download links for Zebra Link-OS Multiplatform SDK Zebra Network-Enabled Label Printer is available.

In order to fully test the application you create, you must have a network-enabled Zebra printer capable of understanding ZPL or CPCL.

Bluetooth connectivity is available through the Zebra Link-OS Multiplatform SDK and covered in other available tutorials.

Check out all of the Zebra label printers.

Android Mobile Device

While the Android Emulator, included in the Android SDK, satisfies most of the anticipated requirements for developing Android applications, we recommended that you test all development with a physical device.

Zebra Link-OS Multiplatform SDK supports various printers and mobile devices.

Installations

You must install all of the items listed in the “System Prerequisites” section.

Note: The default installation options for all these prerequisites are satisfactory.

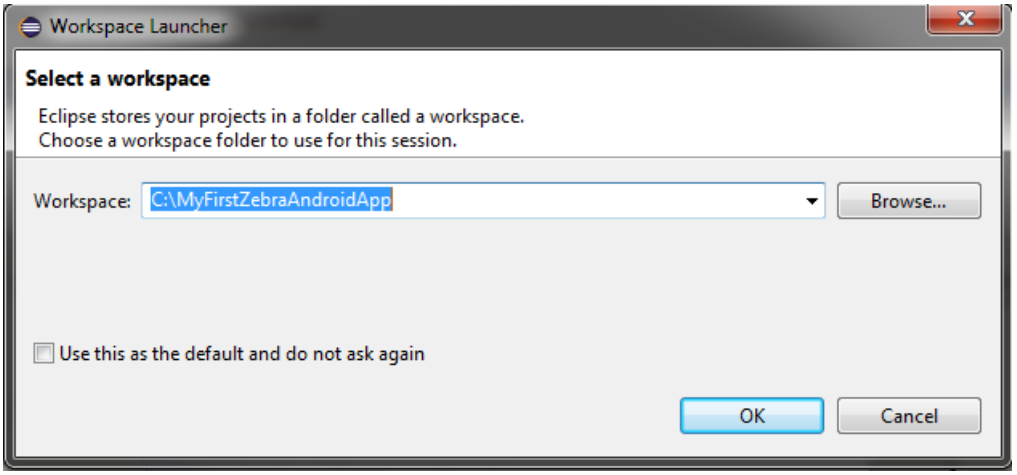
Creating Your Zebra Android Connect and Print Application Project

You will be guided on how to create a mobile application that allows a handheld device to establish a Bluetooth or TCP/IP connection with a Zebra mobile printer.

Note: The sample code used in this Application Note is from the sample code article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

To begin, launch **Eclipse IDE and** locate your desired workspace path.

Note: For the purpose of this application note, we use “C:\MyFirstZebraAndroidApp”.



This section includes instructions on how to:

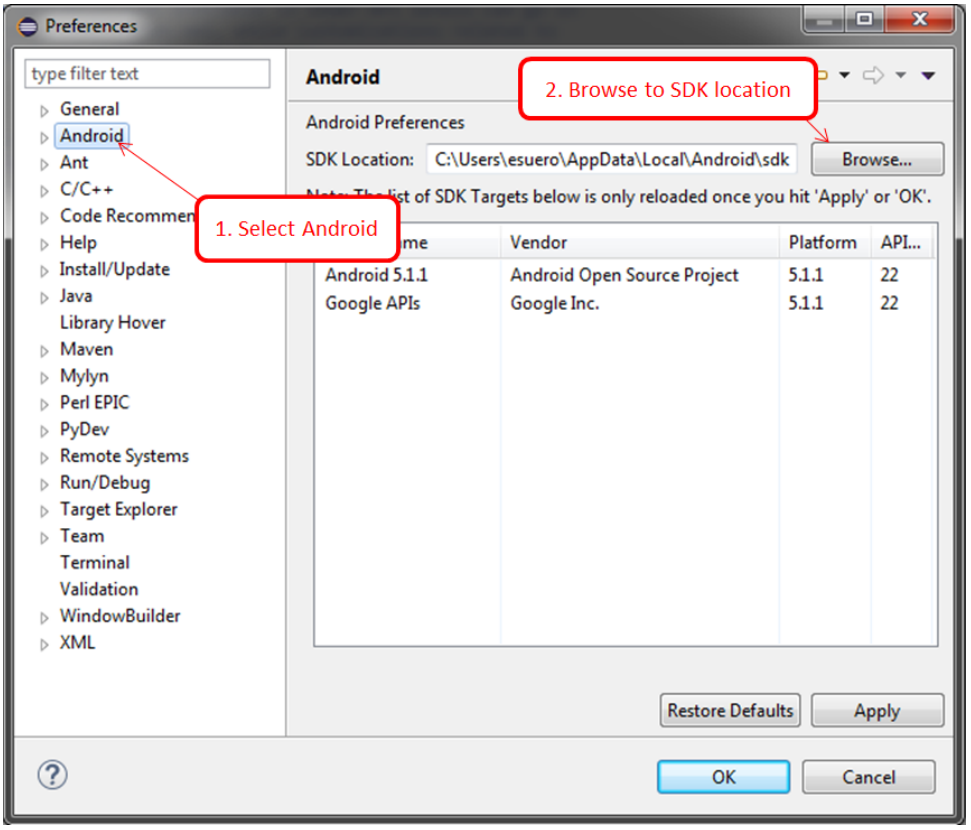
- Configure the SDK Location
- Create an Android Project
- Design Your Zebra Android Connect and Print Application
- Create Java Helper Classes
- Update ConnectivityDemo.java and Include the Zebra Multiplatform SDK Library for Android
- Run Your Zebra Android Connect and Print Application
- Deploy Your Mobile Application

Configure the SDK Location

1. Go to Window -> Preferences.
2. Click **Android** on the left panel.
3. Browse to the location of the Android SDK on the right panel.
4. Click **Apply**.

   A list of SDK Targets appears.

5. Click **OK** to close the Preferences dialog.



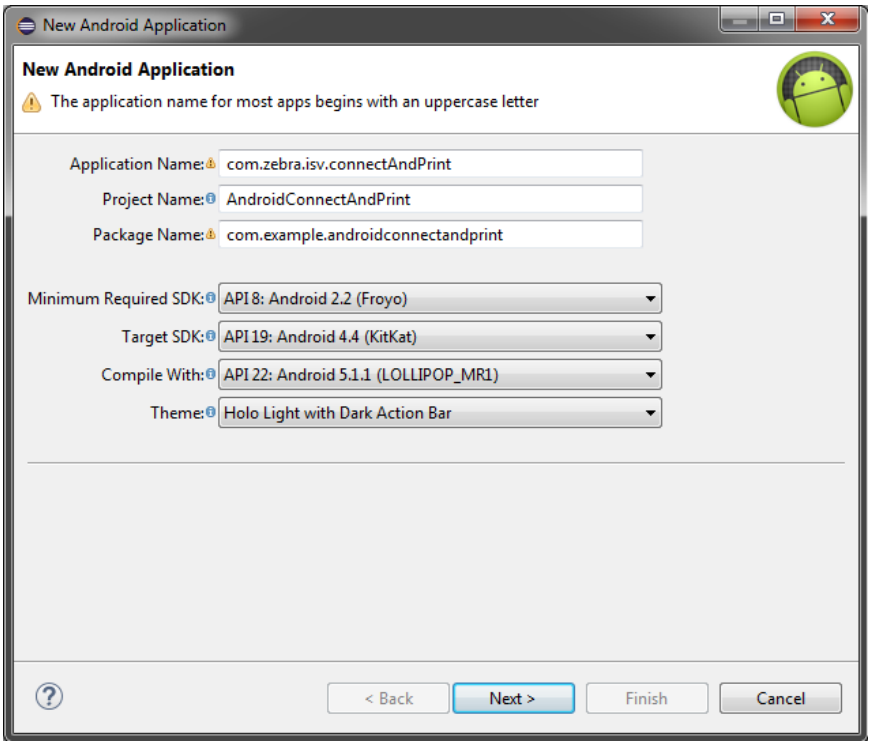
Create an Android Project

1. Go to File -> New -> Android Application Project.

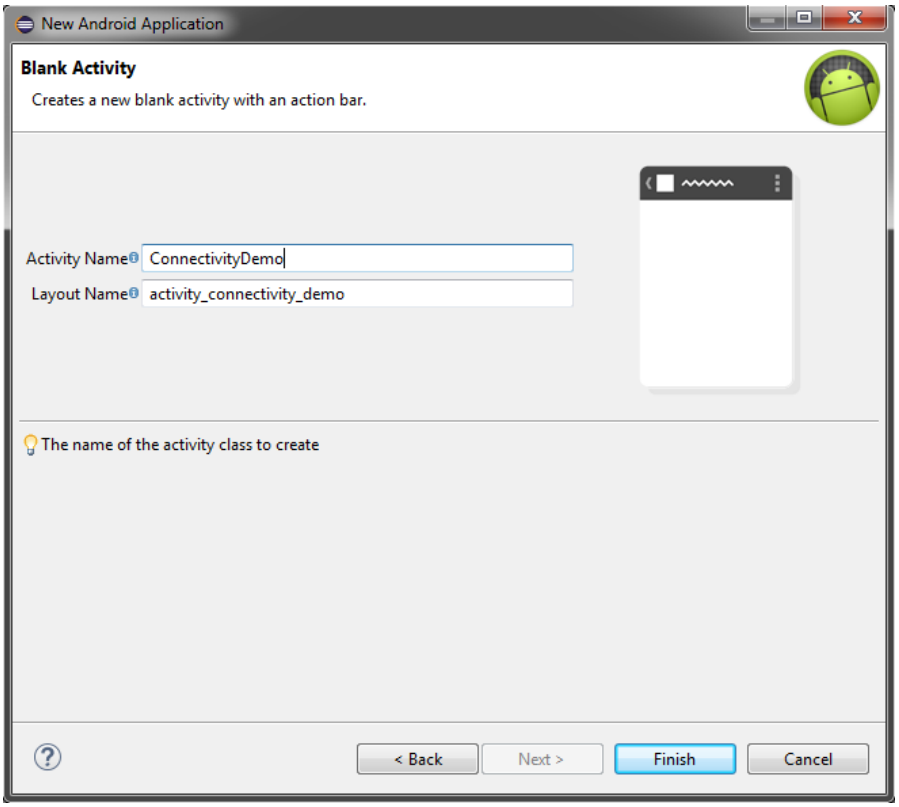
   Note: Alternatively, you can go to File -> New -> Project, and select Android -> Android Application Project.

2. Type **AndroidConnectAndPrint** as the project name.
3. Type **com.zebra.isv.connectAndPrint** for both Application name and Package name.
4. Type **ConnectivityDemo** next to Create Activity (it must be checked).

   Note: You may leave other default inputs unchanged.



5. Click **Next**, leaving the next windows at default, until the Blank Activity window appears.
6. In the Blank Activity window, change the activity name to **ConnectivityDemo** and click **Finish** to exit the window.



Design Your Zebra Android Connect and Print Application

1. Define the variables and values to use in the layout (xml) files later.
   - In the Package Explorer, open strings.xml in the res/values folder.
   - Replace the contents of the “String.xml” file from the “Strings.xml” file from the sample article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

   For information on joining the ISV Program, contact a Program Manager in your area.

   This source code defines the Application Name that appears on the GUI, as well as the color Red for the status bar background when no printer is connected. For more information, go to String Resources.

   - Save and close the file.
2. Define the layout.
   - In the Package Explorer, expand the res/layout folder. Delete main.xml.
   - In the same folder, create 2 files, “connection_screen_with_status.xml” and “connection_screen.xml”.
   - Replace the contents of the two files with the contents of the “connection_screen_with_status.xml” and “connection_screen.xml” files from the sample article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

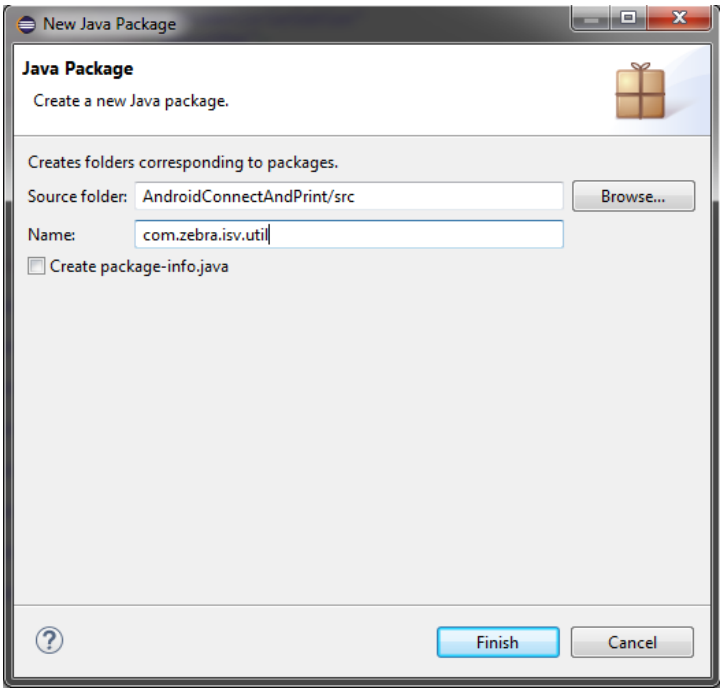
   Note: For more information, click Layout Resource.

   - Save and close the files.
3. Update the AndroidManifest.xml.
   - Replace the contents of the “AndroidManifest.xml” file with the contents of the “AndroidManifest.xml” file from the sample article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

   Note: The AndroidManifest.xml contains helpful information.
4. Go to res/menu folder to delete the connectivity_demo.xml file settings menu.

Create Java Helper Classes

1. Right click on src, hover over **New** and click **Package** to create a new Java Package.
2. Name the package “com.zebra.isv.util”.



3. Create a file “DemoSleeper.java” in the “com.zebra.isv.util” package and replace its contents from the “DemoSleeper.java” file from the sample article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

   This file contains a static sleep method that ConnectivityDemo.java uses.

4. Create a file “SettingsHelper.java” in the “com.zebra.isv.util” package and replace its contents from the “SettingsHelper.java” file from the sample Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

   This file contains methods used in ConnectivityDemo.java to persist Bluetooth and TCP/IP settings for subsequent recall.

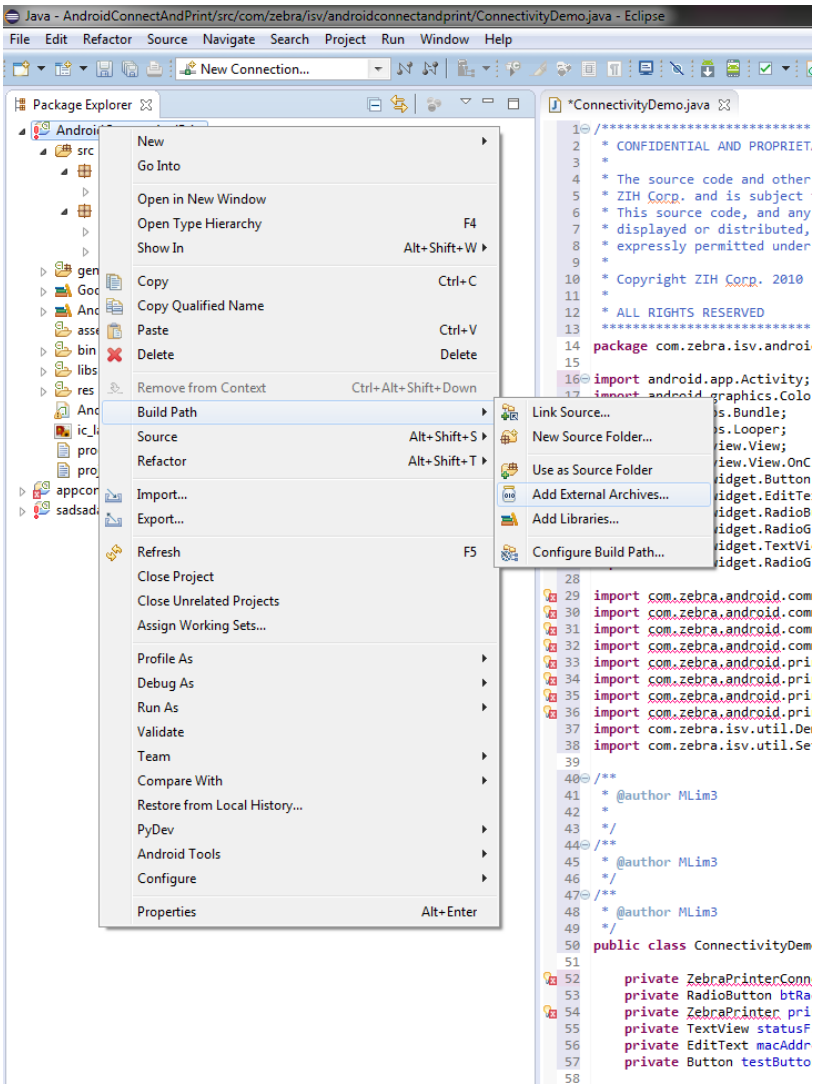
Update ConnectivityDemo.java and Include the Zebra Multiplatform SDK Library for Android

1. Replace the source code in ConnectivityDemo.java with the contents of the “ConnectivityDemo.java” file from the sample article Connect and Print Over TCP/IP and Bluetooth – Zebra Android Link-OS™ SDK – Java – Eclipse.

   This class is the starting point of the Android application.

2. At this point, you should see many errors.

   Note: To resolve the dependencies, right-click the “AndroidConnectAndPrint” project, select **Build Path**, then “Add External Archives…”.

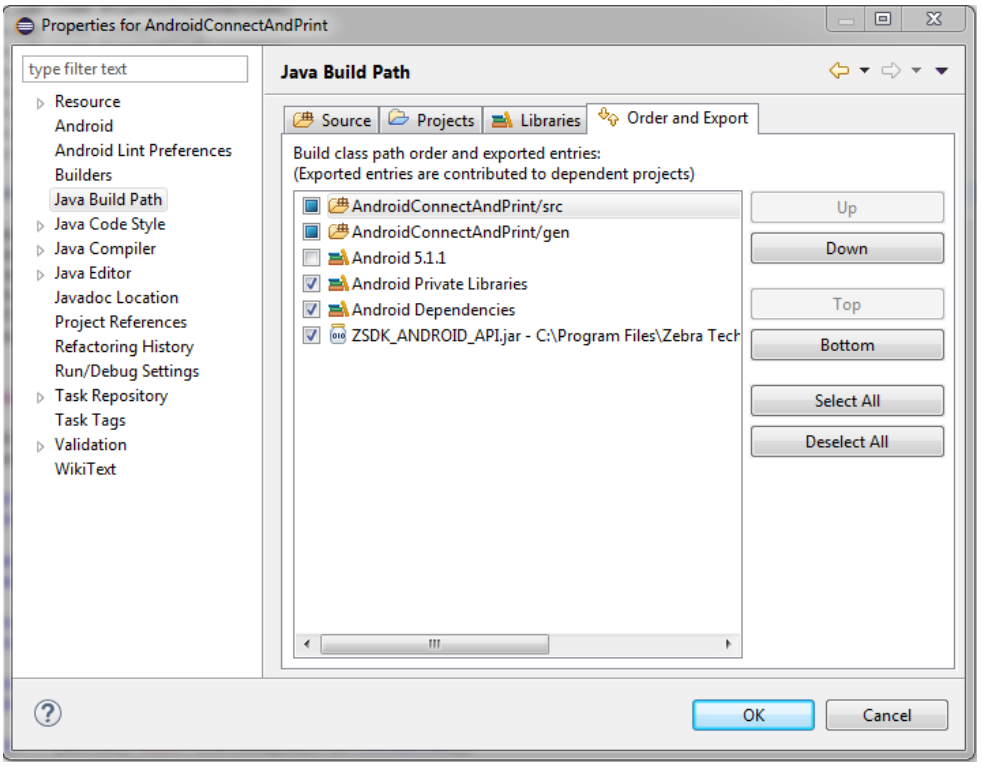


3. Browse to the location of the “ZSDK_API.jar” file and click **Open**.

   The default installation path of this file should be “C:\Program Files\Zebra Technologies\link_os_sdk\android\v2.8.2148\lib\ZSDK_ANDROID_API.jar”.

   The errors in “ConnectivityDemo.java” should disappear now.

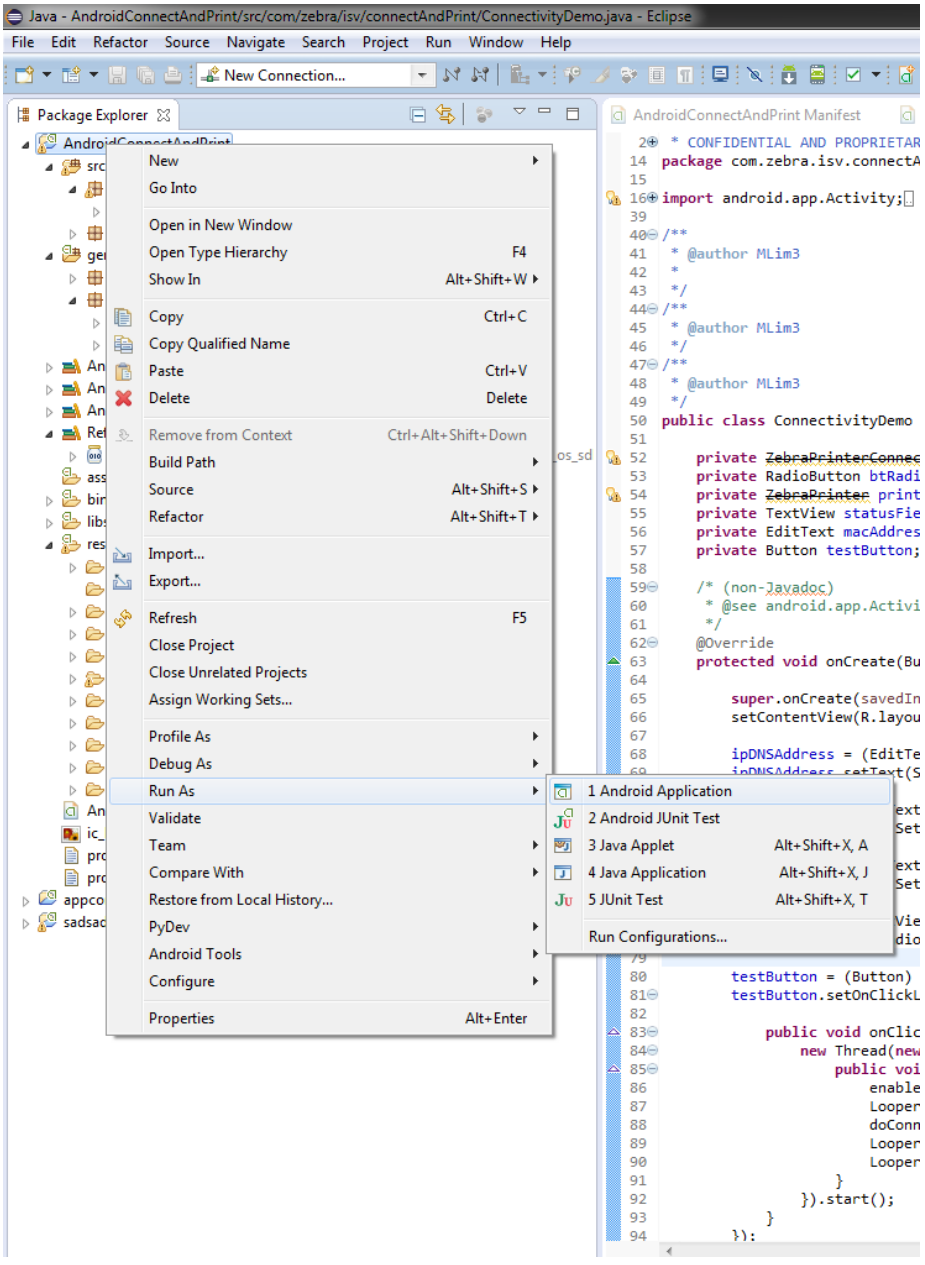
4. Right click on the Project, go to **Java Build Path -> Order and Export** and make sure ZSDK_ANDROID_API.jar is checked.


Properties for AndroidConnectAndPrint
type filter text
Resource
Android
Android Lint Preferences
Builders
Java Build Path
Java Code Style
Java Compiler
Java Editor
Javadoc Location
Project References
Refactoring History
Run/Debug Settings
Task Repository
Task Tags
Validation
WikiText
Java Build Path
Source
Projects
Libraries
Order and Export
Build class path order and exported entries:
(Exported entries are contributed to dependent projects)
AndroidConnectAndPrint/src
AndroidConnectAndPrint/gen
Android 5.1.1
Android Private Libraries
Android Dependencies
ZSDK_ANDROID_API.jar - C:\Program Files\Zebra Tech
Up
Down
Top
Bottom
Select All
Deselect All
OK
Cancel

Run Your Zebra Android Connect and Print Application

1. Build and run the application.
   - Right-click the “AndroidConnectAndPrint” project, select **Run As** -> **Android Application**.

   This runs the application in an Android emulator. The emulator might take a while to start up, depending on the available computer resources and hardware.



   - To run the application, unlock the screen on the emulator by dragging the green lock icon to the right of the screen.

Congratulations! You now have your first Zebra mobile application running on an emulator!

2. To exit the application, click **Back** on the emulator.

   To continue development, leave the emulator running as it takes considerable amount of time to start up.

   Note: The Bluetooth and TCP/IP connectivity may not be correctly emulated. Test the application on a physical device, which will be covered in the next section.

Deploying Your Mobile Application

After your project is complete, you can export it into an Android Application Package (.APK) file for deployment to an Android Device.

1. Right-click the AndroidConnectAndPrint project, and select "**Export…".**

   The Export dialog appears.

2. Expand Android, select **Export Android Application** and click **Next**.
3. On the Export Android Application, enter the project – in this case, it is "AndroidConnectAndPrint" – and click **Next**.

   A dialog appears asking you to enter keystore information.

4. Type the keystore information.

   If you do not have this information, type "C:\AndroidKeyStore" (or any other desired folder) as Location, and then type your desired password.

5. Complete the Key Creation form and click **Next**.

   Note: You must enter at least the Alias, Password, Confirm, Validity and First and Last Name fields. If you do not, you are not allowed to proceed.

   More information on signing your applications is available.

6. On the Destination and key/certificate checks page, type the path for the destination APK file.

   Note: The folder that you specify must first exist. If not, create it in Windows Explorer first.

7. Click **Finish** to export the project.
8. Copy the .APK file to your device and install your application.

See Also

- For the list of printers and mobile devices that are supported by the Zebra Link-OS Multiplatform SDK, click here.
- For further Zebra Link-OS SDK enabled Android Digital Device sample code and applications, refer to the Zebra Support portal.

For any other information, sample code, white papers, and solutions or to request further content, visit the Zebra Support portal.

Document Control

Version	Date	Description
1.0	Dec 2 2010	Initial Release
1.1	Mar-1 2011	Minor update to See also section
2.0	Jun 28 2012	Updated Chinese link into document
3.0	July 31 2012	Updated Spanish and Portuguese link into document
4.0	July 2015	Updated for most recent Link-OS SDK, eclipse and android SDK

Disclaimer

All links and information provided within this document are correct at time of writing
Created for Zebra Global ISV Program by Zebra Development Services.

Note: Google has announced that they will not support Eclipse IDE after December 31 of 2015. We recommend that you migrate to Android Studio.