

AMERICAS APPFORUM 2019 | ELEVATING ENTERPRISE INTELLIGENCE





The Power of DataWedge Intent APIs

Darryn Campbell

SW Architect, Zebra Technologies

@darryncampbell

October 1st / 2nd 2019

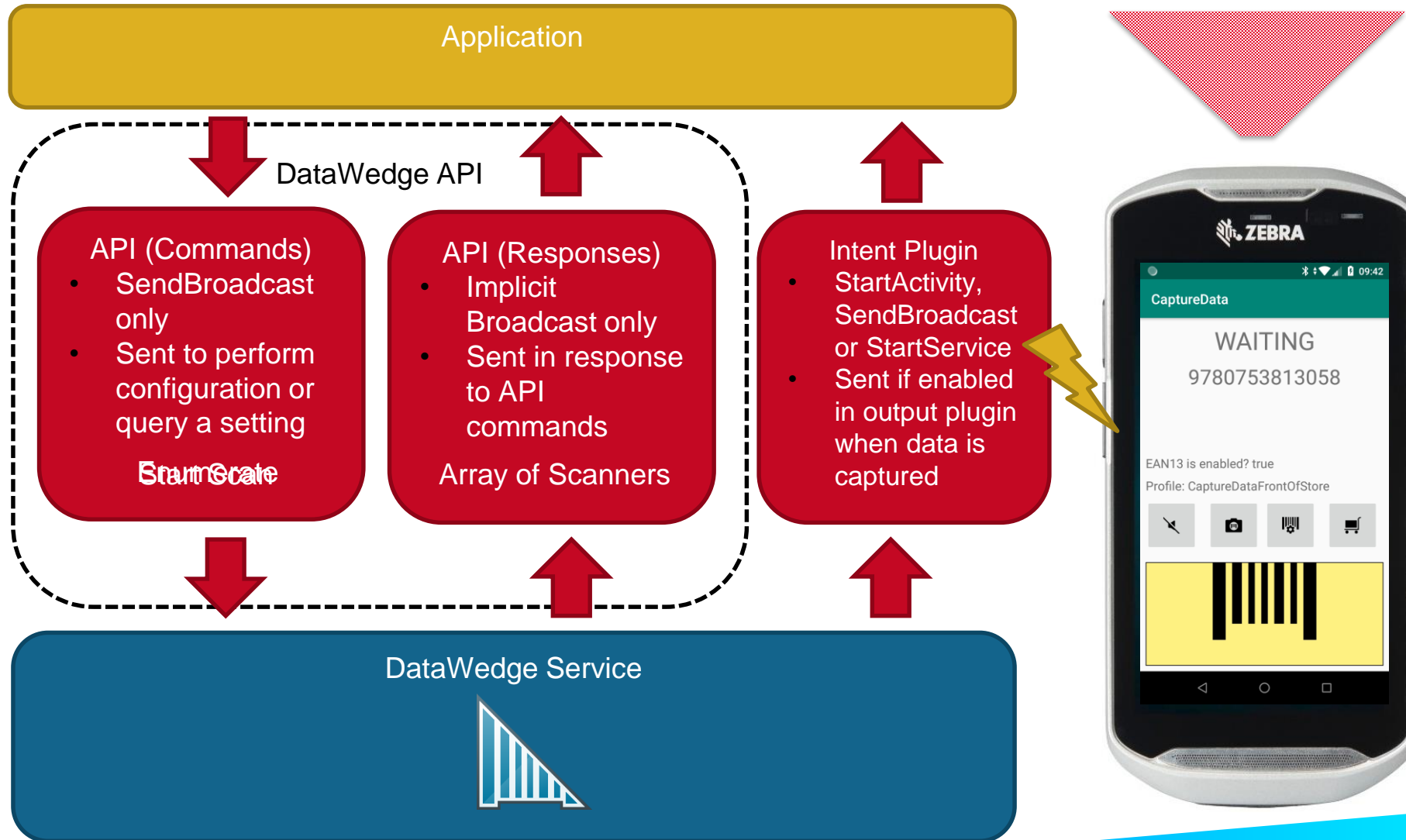
The Power of DataWedge Intent APIs

Agenda

- What are DataWedge Intent APIs?
- Sample apps
- Using the APIs
- Resources

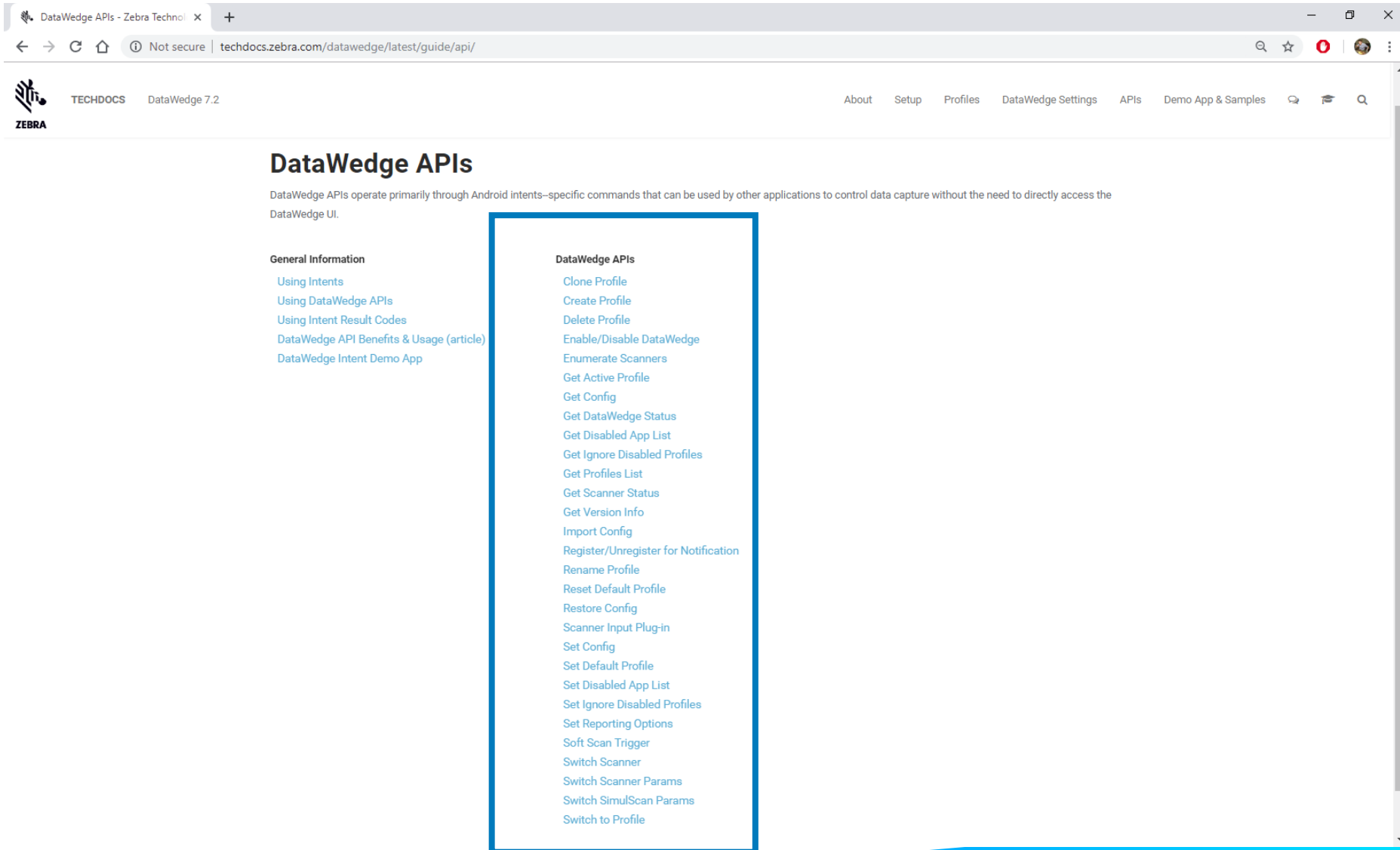
The Power of DataWedge Intent APIs

What are DataWedge Intent APIs



The Power of DataWedge Intent APIs

The APIs: <http://techdocs.zebra.com/datawedge/latest/guide/api/>



The screenshot shows a web browser window displaying the Zebra TechDocs website. The page is titled "DataWedge APIs" and includes a list of API endpoints under the heading "DataWedge APIs". The list is highlighted with a blue box.

DataWedge APIs

DataWedge APIs operate primarily through Android intents--specific commands that can be used by other applications to control data capture without the need to directly access the DataWedge UI.

General Information

- [Using Intents](#)
- [Using DataWedge APIs](#)
- [Using Intent Result Codes](#)
- [DataWedge API Benefits & Usage \(article\)](#)
- [DataWedge Intent Demo App](#)

DataWedge APIs

- [Clone Profile](#)
- [Create Profile](#)
- [Delete Profile](#)
- [Enable/Disable DataWedge](#)
- [Enumerate Scanners](#)
- [Get Active Profile](#)
- [Get Config](#)
- [Get DataWedge Status](#)
- [Get Disabled App List](#)
- [Get Ignore Disabled Profiles](#)
- [Get Profiles List](#)
- [Get Scanner Status](#)
- [Get Version Info](#)
- [Import Config](#)
- [Register/Unregister for Notification](#)
- [Rename Profile](#)
- [Reset Default Profile](#)
- [Restore Config](#)
- [Scanner Input Plug-in](#)
- [Set Config](#)
- [Set Default Profile](#)
- [Set Disabled App List](#)
- [Set Ignore Disabled Profiles](#)
- [Set Reporting Options](#)
- [Soft Scan Trigger](#)
- [Switch Scanner](#)
- [Switch Scanner Params](#)
- [Switch SimulScan Params](#)
- [Switch to Profile](#)

The Power of DataWedge Intent APIs

The APIs: <http://techdocs.zebra.com/datawedge/latest/guide/api/>

Configuration

- Clone Profile
- Create Profile
- Delete Profile
- Rename Profile
- Enable / Disable DW
- Enumerate Scanners
- Restore (Reset DW)
- Set Config
- Get Version
- Get Profiles List
- Get DataWedge Status
- Get Disabled Apps
- *Import Config*
- *Set Reporting Options*
- *Reset Default Profile*
- *Set Default Profile*
- *Set Ignore App List*
- *Set Ignore Disabled Profiles*
- *Switch SimulScan Params*

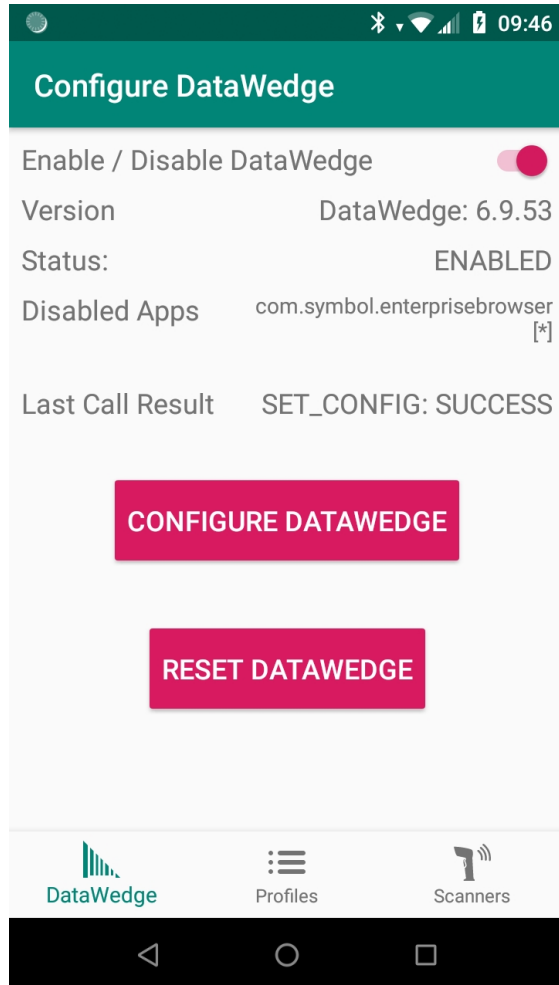
Data Capture

- Soft Scan Trigger
- Register For Notification
- Unregister For Notification
- Get Scanner Status
- Switch Scanner Params
- Switch Scanner
- Set Input Plugin (Disable Scanning)
- Get Active Profile
- Get Config
- Basic / *Advanced* Data Formatting
- *Switch to Profile*

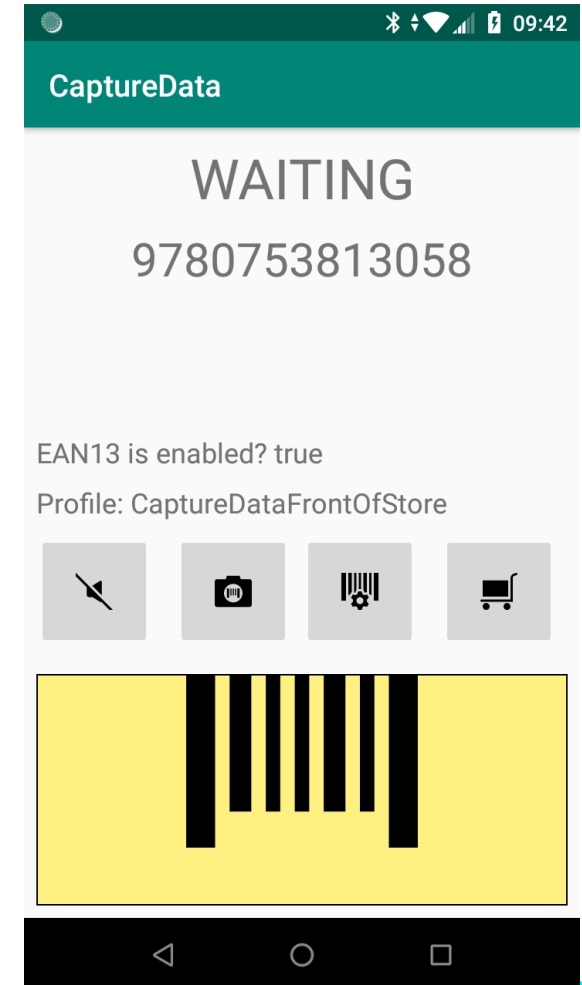
The Power of DataWedge Intent APIs

The APIs: <http://techdocs.zebra.com/datawedge/latest/guide/api/>

Configuration



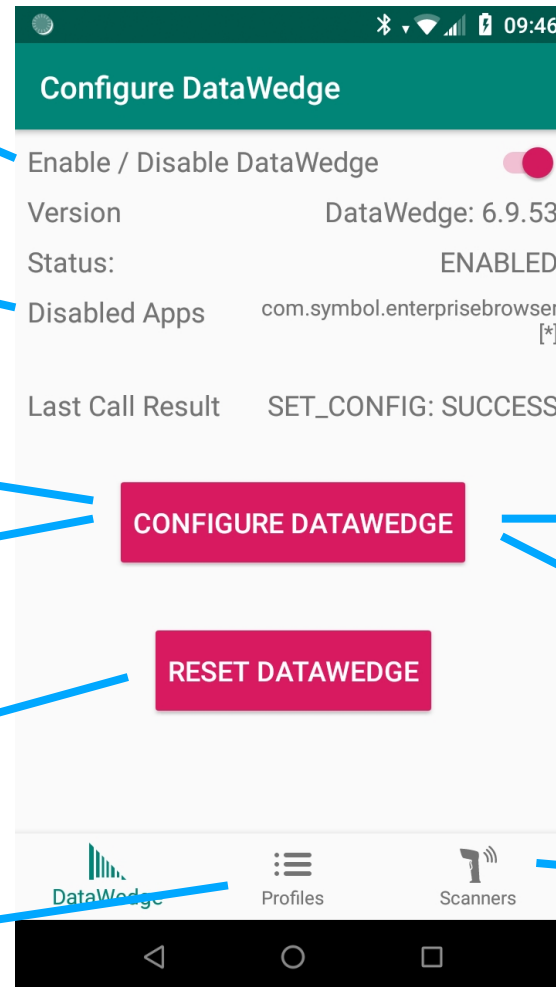
Data Capture



The Power of DataWedge Intent APIs

Configuration: Demonstration

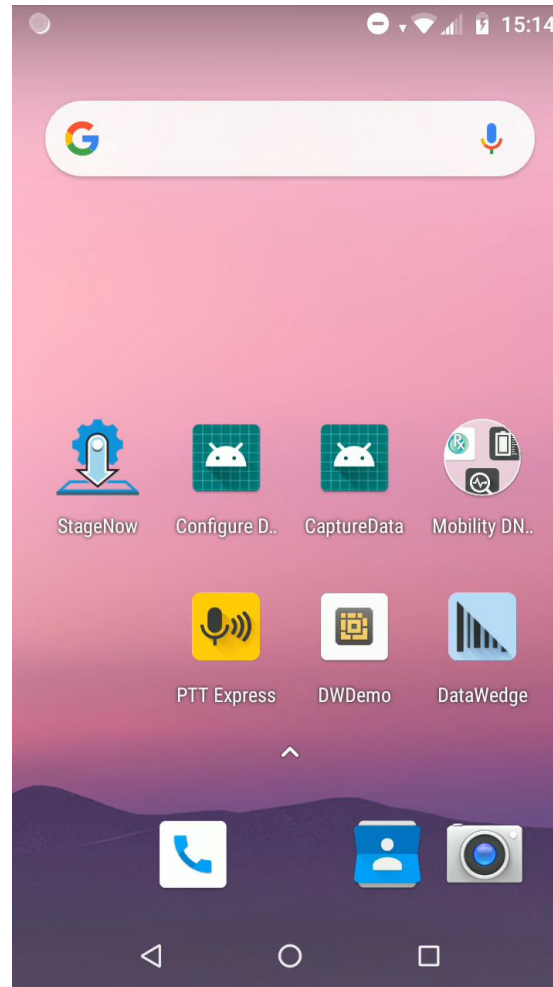
- Enable / Disable DW
- Get Disabled Apps
- Create Profile
- Clone Profile
- Restore (Reset DW)
- Get Profiles List
- Get Version
- Get DataWedge Status
- Result of call (if supported)
- Rename Profile
- Set Config
- Enumerate Scanners



The Power of DataWedge Intent APIs

Configuration: Demonstration

- Enable / Disable DW
- Get Disabled Apps
- Create Profile
- Clone Profile
- Restore (Reset DW)
- Get Profiles List



- Get Version
- Get DataWedge Status
- Rename Profile
- Set Config
- Enumerate Scanners

The Power of DataWedge Intent APIs

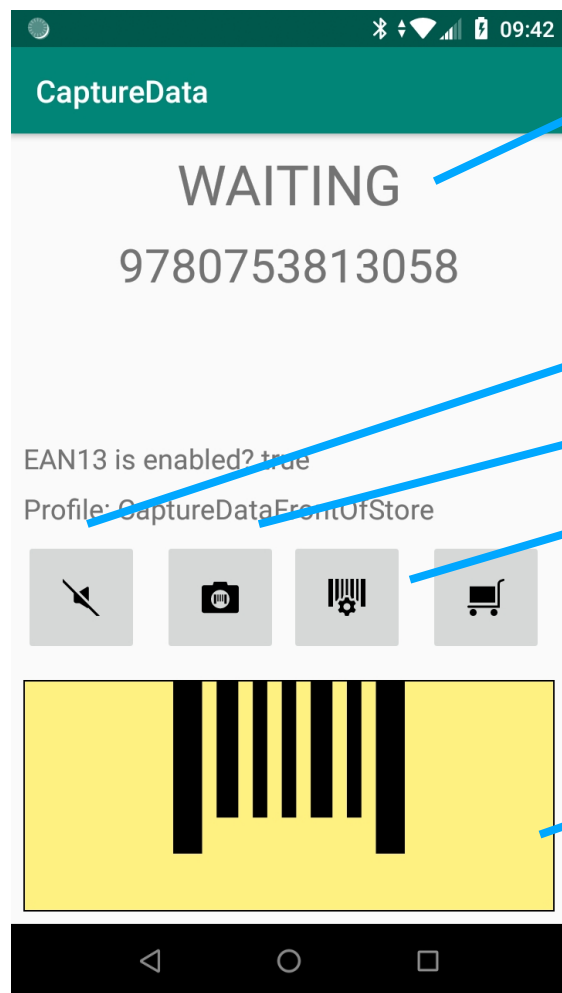
Configuration: Demonstration

Configuration APIs not used in application

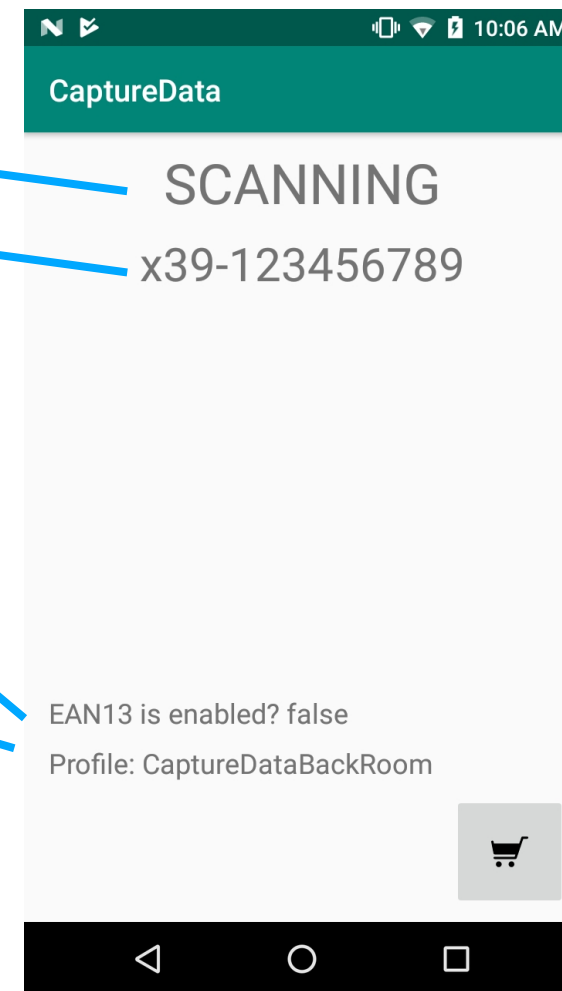
- Delete Profile
- Import Config
- Set Reporting Options
- Reset Default Profile
- Set Default Profile
- Set Ignore App List
- Set Ignore Disabled Profiles
- Switch SimulScan Params

The Power of DataWedge Intent APIs

Data Capture: Demonstration



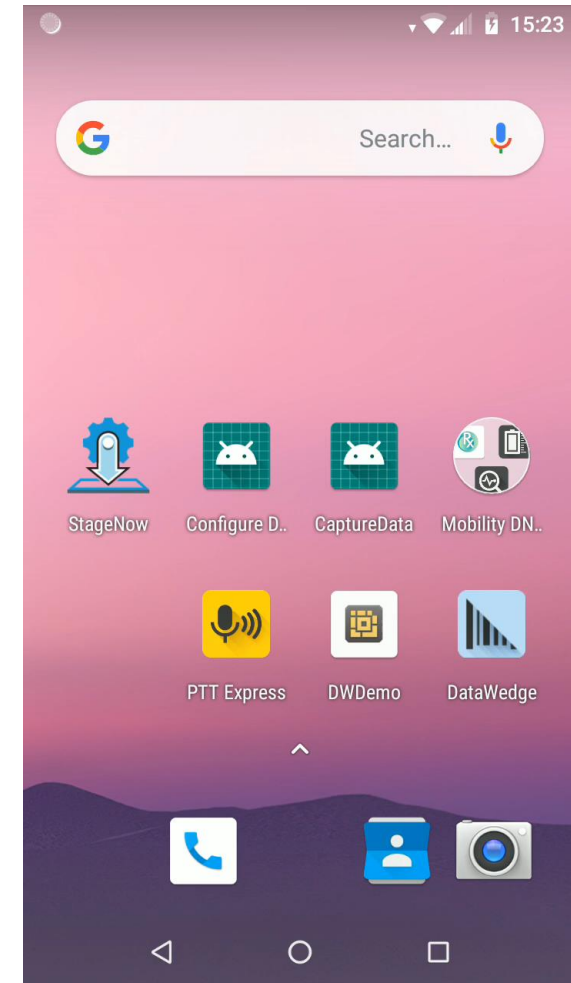
- Get Scanner Status
- Register / Unregister For Notification
- Basic Data Formatting
- Switch Scanner Params
- Switch Scanner
- Set Input Plugin (Disable Scanning)
- Soft Scan Trigger



The Power of DataWedge Intent APIs

Data Capture: Demonstration

- Get Scanner Status
- Register / Unregister For Notification
- Basic Data Formatting
- Switch Scanner Params
- Switch Scanner
- Set Input Plugin (Disable Scanning)
- Get Config
- Get Active Profile
- Soft Scan Trigger



The Power of DataWedge Intent APIs

Data Capture: Demonstration

Data Capture APIs not used in application

- Advanced Data Formatting
- Switch to Profile

The Power of DataWedge Intent APIs

Using the APIs

1. Create Intent Structure:
 - Action: `com.symbol.datawedge.api.ACTION`
2. Add Extra (singular) to define the API
 - Key will define which API you are calling (e.g. `com.symbol.datawedge.api.CREATE_PROFILE`)
 - Value will contain all the data required by the API
 - Could be empty
 - Could be a String
 - Could be a complex Bundle or Bundle Array structure
3. Optionally, assign an id and request feedback whether the API succeeded (where supported by the API)
4. Register a Broadcast Receiver to receive feedback from the API
 - Return values, e.g. list of profiles
 - Whether the call succeeded or not

The Power of DataWedge Intent APIs

Using the APIs: Example – SCANNER_INPUT_PLUGIN

```
String EXTRA_SCANNERINPUTPLUGIN =  
"com.symbol.datawedge.api.SCANNER_INPUT_PLUGIN";
```

```
Intent dwIntent = new Intent();  
dwIntent.setAction("com.symbol.datawedge.api.ACTION");  
dwIntent.putExtra(EXTRA_SCANNERINPUTPLUGIN, "ENABLE_PLUGIN");  
context.sendBroadcast(dwIntent);
```

The Power of DataWedge Intent APIs

Using the APIs: Example – RENAME_PROFILE (without feedback)

```
String EXTRA_RENAME_PROFILE =  
"com.symbol.datawedge.api.RENAME_PROFILE";  
  
String[] profileNames = {"old_profile_name", "new_profile_name"};  
  
Intent dwIntent = new Intent();  
dwIntent.setAction("com.symbol.datawedge.api.ACTION");  
dwIntent.putExtra(EXTRA_RENAME_PROFILE, profileNames);  
context.sendBroadcast(dwIntent);
```


The Power of DataWedge Intent APIs

Using the APIs: Example – RENAME_PROFILE (with feedback - Sending)

```
String EXTRA_RENAME_PROFILE =  
"com.symbol.datawedge.api.RENAME_PROFILE";  
  
String[] profileNames = {"old_profile_name", "new_profile_name"};  
  
Intent dwIntent = new Intent();  
dwIntent.putExtra("SEND_RESULT", "TRUE");  
dwIntent.putExtra("COMMAND_IDENTIFIER", "1");  
dwIntent.setAction("com.symbol.datawedge.api.ACTION");  
dwIntent.putExtra(EXTRA_RENAME_PROFILE, profileNames);  
context.sendBroadcast(dwIntent);
```

The Power of DataWedge Intent APIs

Using the APIs: Example – RENAME_PROFILE (with feedback – Processing 1/2)

```
// When declaring IntentFilter for Broadcast Receiver
IntentFilter filter = new IntentFilter();
filter.addAction("com.symbol.datawedge.api.RESULT_ACTION");
filter.addCategory(Intent.CATEGORY_DEFAULT);
context.registerReceiver(myBroadcastReceiver, filter);
```

More Information on TechDocs: <http://techdocs.zebra.com/datawedge/latest/guide/api/resultinfo/>

The Power of DataWedge Intent APIs

Using the APIs: Example – RENAME_PROFILE (with feedback – Processing 2/2)

```
private BroadcastReceiver myBroadcastReceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        if (intent.getAction().equals("com.symbol.datawedge.api.RESULT_ACTION")) {
            // Process any result codes
            if (intent.hasExtra("RESULT")) {
                String result = intent.getStringExtra("RESULT"); // Success?
                String command = intent.getStringExtra("COMMAND"); // Invoking Intent
                if (intent.hasExtra("RESULT_INFO")) { // More detail
                    Bundle result_info = intent.getBundleExtra("RESULT_INFO");
                    String result_code = result_info.getString("RESULT_CODE");
                    // List of Result Codes available from TechDocs
                }
            }
            String command_identifier = intent.getStringExtra("COMMAND_IDENTIFIER");
            if (commandIdentifier.equals("1")) {
                // Response to the previous command}}}}
        }
    }
}
```

The Power of DataWedge Intent APIs

Using the APIs: Example – GET_DATAWEDGE_STATUS (Provides a Callback 1/2)

```
String EXTRA_GET_DATAWEDGE_STATUS =  
"com.symbol.datawedge.api.GET_DATAWEDGE_STATUS";
```

```
Intent dwIntent = new Intent();  
dwIntent.setAction("com.symbol.datawedge.api.ACTION");  
dwIntent.putExtra(EXTRA_GET_DATAWEDGE_STATUS, "");  
context.sendBroadcast(dwIntent);
```

```
// When declaring IntentFilter for Broadcast Receiver  
IntentFilter filter = new IntentFilter();  
filter.addAction("com.symbol.datawedge.api.RESULT_ACTION");  
filter.addCategory(Intent.CATEGORY_DEFAULT);  
context.registerReceiver(myBroadcastReceiver, filter);
```

The Power of DataWedge Intent APIs

Using the APIs: Example – GET_DATAWEDGE_STATUS (Provides a Callback 2/2)

```
private BroadcastReceiver myBroadcastReceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        String dw_status_result = "com.symbol.datawedge.api.RESULT_GET_DATAWEDGE_STATUS"
        if (intent.getAction().equals("com.symbol.datawedge.api.RESULT_ACTION")) {
            // Process any result codes
            if (intent.hasExtra(dw_status_result)) {
                String status = intent.getStringExtra(dw_status_result);
                Log.i(TAG, "DW Status: " + status; // 'enabled' / 'disabled'
            }
        }
    }
}
```

The Power of DataWedge Intent APIs

Using the APIs: Example – GET_VERSION_INFO

```
private BroadcastReceiver myBroadcastReceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        String dw_version_result = "com.symbol.datawedge.api.RESULT_GET_VERSION_INFO"
        if (intent.getAction().equals("com.symbol.datawedge.api.RESULT_ACTION")) {
            // Process any result codes
            if (intent.hasExtra(dw_version_result)) {
                Bundle versionInfo = intent.getBundleExtra(dw_version_result);
                String dwVersion = versionInfo.getString("DATAWEDGE");
                String barcodeVersion = versionInfo.getString("BARCODE_SCANNING");
                String decoderVersion = versionInfo.getString("DECODER_LIBRARY");
                // Firmware is a String array
                String[] firmware = versionInfo.getStringArray("SCANNER_FIRMWARE");
            }
        }
    }
}
```

The Power of DataWedge Intent APIs

Using the APIs: Example – SWITCH_SCANNER_PARAMS

```
String EXTRA_SWITCH_SCANNER_PARAMS =  
"com.symbol.datawedge.api.SWITCH_SCANNER_PARAMS";  
  
Bundle barcodeProps = new Bundle();  
if (quieter)  
    barcodeProps.putString("decode_audio_feedback_uri", "Altair");  
else  
    barcodeProps.putString("decode_audio_feedback_uri", "optimized-beep");  
  
Intent dwIntent = new Intent();  
dwIntent.setAction("com.symbol.datawedge.api.ACTION");  
dwIntent.putExtra(EXTRA_SWITCH_SCANNER_PARAMS, barcodeProps);  
context.sendBroadcast(dwIntent);
```

The Power of DataWedge Intent APIs

Using the APIs: Example – SET_CONFIG



```
Bundle profileConfig = new Bundle();
profileConfig.putString("PROFILE_NAME", profileName);
profileConfig.putString("PROFILE_ENABLED", "true");
profileConfig.putString("CONFIG_MODE", "UPDATE");
Bundle appConfig = new Bundle();
appConfig.putString("PACKAGE_NAME", packageName);
appConfig.putStringArray("ACTIVITY_LIST", new String[]{packageName + activityName});
profileConfig.putParcelableArray("APP_LIST", new Bundle[]{appConfig});
```

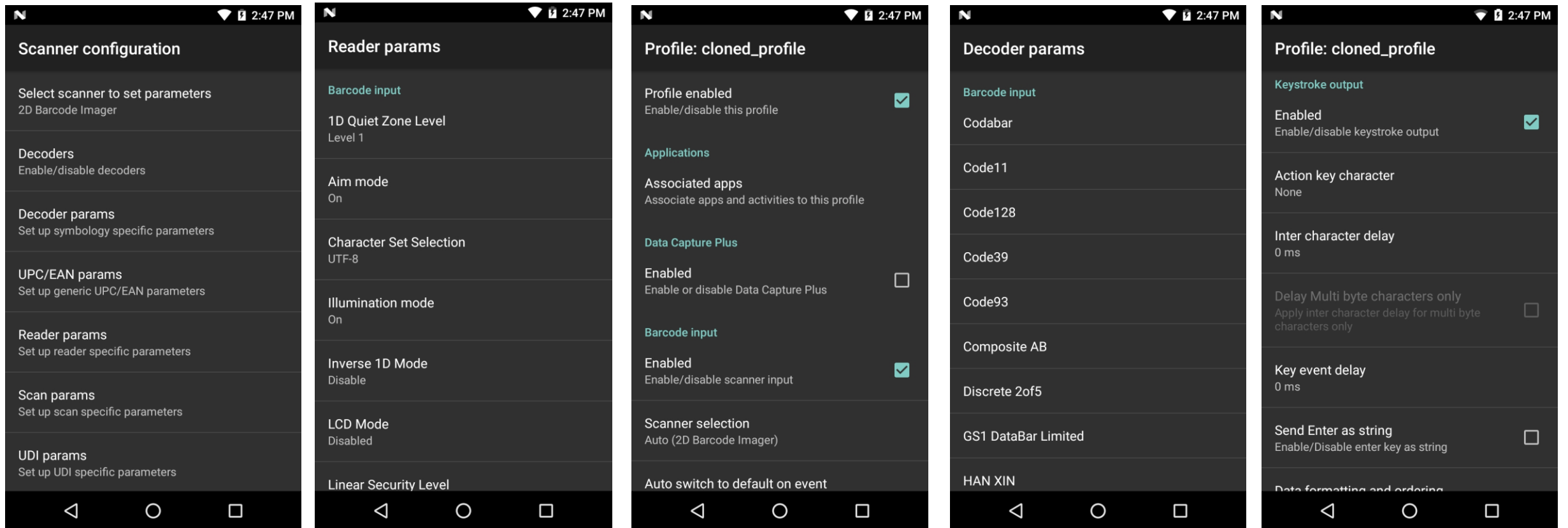
```
Bundle barcodeConfig = new Bundle();
barcodeConfig.putString("PLUGIN_NAME", "BARCODE");
barcodeConfig.putString("RESET_CONFIG", "true");
Bundle barcodeProps = new Bundle();
// Can either use scanner_selection here or scanner_selection_by_identifier
barcodeProps.putString("scanner_selection", "auto"); // Requires DW 6.4
barcodeProps.putString("scanner_input_enabled", "true");
barcodeProps.putString("decoder_code128", code128);
barcodeProps.putString("decoder_code39", code39);
barcodeProps.putString("decoder_ean8", ean8);
barcodeProps.putString("decoder_ean13", ean13);
barcodeProps.putString("picklist", picklist);
barcodeConfig.putBundle("PARAM_LIST", barcodeProps);
// Note: DW 6.6 supports the ability to define multiple plugin configs in the same intent but we separate it into multiple calls to be compatible with earlier versions, from 6.4
profileConfig.putBundle("PLUGIN_CONFIG", barcodeConfig);
sendDataWedgeIntentWithExtra(ACTION_DATAWEDGE_FROM_6_2, EXTRA_SET_CONFIG, profileConfig, context);

profileConfig.remove("APP_LIST");
profileConfig.remove("PLUGIN_CONFIG");
Bundle intentConfig = new Bundle();
intentConfig.putString("PLUGIN_NAME", "INTENT");
intentConfig.putString("RESET_CONFIG", "true");
Bundle intentProps = new Bundle();
intentProps.putString("intent_output_enabled", "true");
intentProps.putString("intent_action", "com.darryncampbell.datacapture.ACTION");
intentProps.putString("intent_delivery", "2");
intentConfig.putBundle("PARAM_LIST", intentProps);
profileConfig.putBundle("PLUGIN_CONFIG", intentConfig);
sendDataWedgeIntentWithExtra(ACTION_DATAWEDGE_FROM_6_2, EXTRA_SET_CONFIG, profileConfig, context);
```


The Power of DataWedge Intent APIs

Using the APIs: SET_CONFIG

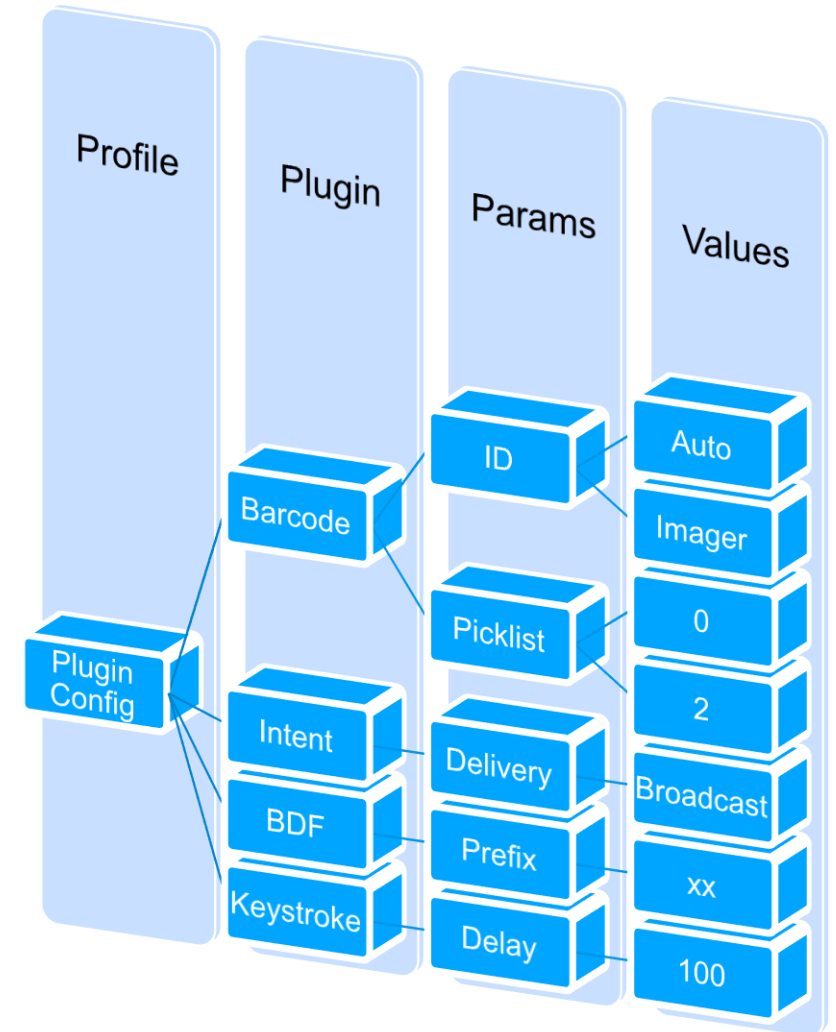
There is a lot of configurable configuration...



The Power of DataWedge Intent APIs

Using the APIs: [SET_CONFIG](#)

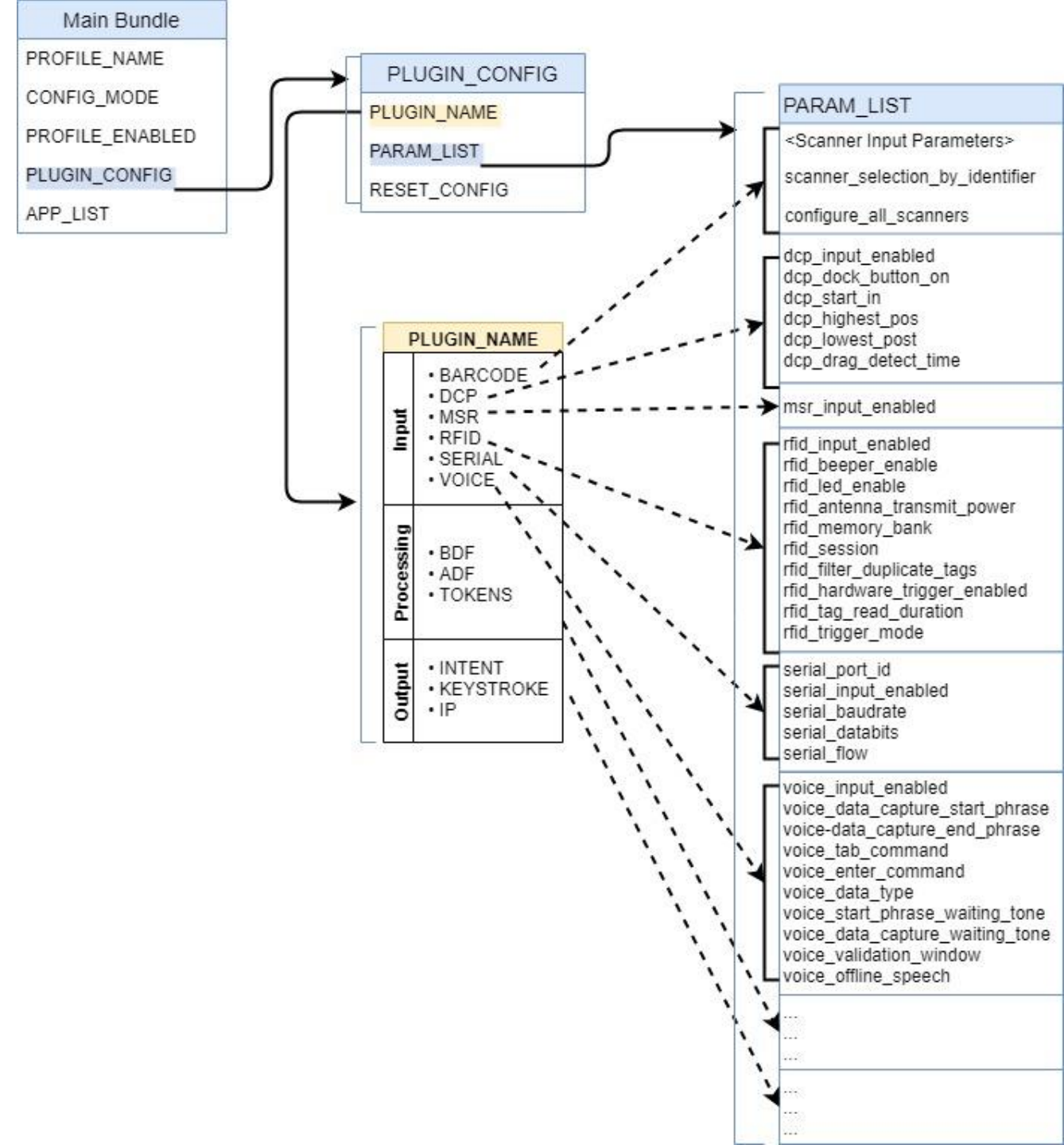
- Configuration is defined in a hierarchy:
 - Each level of the hierarchy contains a Bundle or String
 - Result is a Bundle of Bundles



The Power of DataWedge Intents

Using the APIs: SET_CONFIG

- Configuration is defined in a hierarchy:
 - Each level of the hierarchy contains a Bundle or String
 - Result is a Bundle of Bundles



The Power of DataWedge Intent APIs

Using the APIs: [SET_CONFIG](#)

Supported Plugins

- Barcode
- Serial
- Data Capture Plus
- Mag Stripe Reader
- SimulScan
- Voice
- Basic Data Formatting
- Advanced Data Formatting
- Tokens
- Intent
- Keystroke
- Internet Protocol (IP)

The Power of DataWedge Intent APIs

Using the APIs: SET_CONFIG

Notes about SET_CONFIG:

- Introduced with DataWedge **6.4** it has undergone many enhancements
- You can set multiple plugins with a single call, from DW 6.6
 - I personally find it easier to set them one at a time
- Offers FULL configuration of the profile
- Be sure to register for SendResult when developing to help debug what might be going wrong
- Copy & paste from known working samples (either as presented here or on techdocs: <http://techdocs.zebra.com/datawedge/latest/guide/api/setconfig/>)

The Power of DataWedge Intent APIs

Using the APIs: Example - SET_CONFIG

```
Bundle profileConfig = new Bundle();
profileConfig.putString("PROFILE_NAME", profileName);
profileConfig.putString("PROFILE_ENABLED", "true");
profileConfig.putString("CONFIG_MODE", "UPDATE");
Bundle appConfig = new Bundle();
appConfig.putString("PACKAGE_NAME", packageName);
appConfig.putStringArray("ACTIVITY_LIST", new String[]{packageName +
activityName});
profileConfig.putParcelableArray("APP_LIST", new Bundle[]{appConfig});
```

- Create main bundle and top level profile attributes (name, specify we only want to update specified settings). Associate this profile with the given package and activity within that package

The Power of DataWedge Intent APIs

Using the APIs: Example - SET_CONFIG

```
Bundle barcodeConfig = new Bundle();
barcodeConfig.putString("PLUGIN_NAME", "BARCODE");
barcodeConfig.putString("RESET_CONFIG", "true");
Bundle barcodeProps = new Bundle();
barcodeProps.putString("scanner_selection", "auto"); // Requires DW 6.4
barcodeProps.putString("scanner_input_enabled", "true");
barcodeProps.putString("decoder_ean8", ean8);
barcodeProps.putString("decoder_ean13", ean13);
barcodeProps.putString("picklist", picklist);
barcodeConfig.putBundle("PARAM_LIST", barcodeProps);
profileConfig.putBundle("PLUGIN_CONFIG", barcodeConfig); // or ArrayList from 6.6+
```

- Create bundle for the barcode plugin and a sub-bundle to define the parameters for the barcode. These settings will apply to whichever barcode scanner is active (“Auto”). Place the parameters bundle in the barcode config and the barcode config in the profile bundle
- Optionally: rinse and repeat for additional plugins (Bundle Array)

The Power of DataWedge Intent APIs

Using the APIs: Example - SET_CONFIG

```
String EXTRA_SET_CONFIG =  
    "com.symbol.datawedge.api.SET_CONFIG";  
  
Intent dwIntent = new Intent();  
dwIntent.setAction("com.symbol.datawedge.api.ACTION");  
dwIntent.putExtra(EXTRA_SET_CONFIG, profileConfig);  
context.sendBroadcast(dwIntent);
```

Send the profileConfig bundle in the same way that any other DataWedge API was called

The Power of DataWedge Intent APIs

Resources

- Sample applications described in this presentation:
 - https://github.com/darryncampbell/Appforum_2019_DataWedge_API
- Videos of sample apps:
 - https://www.youtube.com/playlist?list=PLj8D9Diz5FBrSp-MWcVlk_lutL43usktD
- Additional examples which show the use of APIs including SET_CONFIG:
 - Official DataWedge API Exerciser: <https://github.com/Zebra/samples-datawedge/tree/master/DataWedge-API-Exerciser>
 - Moving from the EMDK Data Capture Profile to DataWedge: <https://developer.zebra.com/community/home/blog/2018/06/03/moving-from-the-emdk-data-capture-profile-to-datawedge> ([forked sample](#))
- Documentation on the DataWedge API from TechDocs:
 - <http://techdocs.zebra.com/datawedge/latest/guide/api/>

Questions?

ZEBRA DEVELOPER PORTAL

<http://developer.zebra.com>

[Sign up for news](#)

[Join the ISV program](#)

Thank You



ZEBRA and the stylized Zebra head are trademarks of Zebra Technologies Corp., registered in many jurisdictions worldwide. All other trademarks are the property of their respective owners. ©2019 Zebra Technologies Corp. and/or its affiliates. All rights reserved.