| | TCL通讯科技控股有限公司<br>TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED |
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| **DOCUMENT TITLE** | |
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# FCM Configuration

# User Guide

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| 2019-01-08 | 0.1 | WANG KAN | initial version |
| 2019-01-13 | 1.0 | WANG KAN | Update AIO to FCM |
| | | | |

## 目录

# 1. 简介

## 1.1. 配置简介

FCM可以实现对多种数据对象的预配置，比如常规的壁纸、浏览器书签、开机动画定制、build.prop系统配置、特定apk overlay定制配置。对于开发人员及维护人员来说，FCM提供了多种配置方式，来满足所有配置的实现需求。主要的配置手段有以下几种，FCM通过以下一种或多种配置手段的组合来完成对某一数据对象的配置：

- 通过PropertyData.json配置属性
- 通过overlay的package包配置
- 通过build.prop文件配置
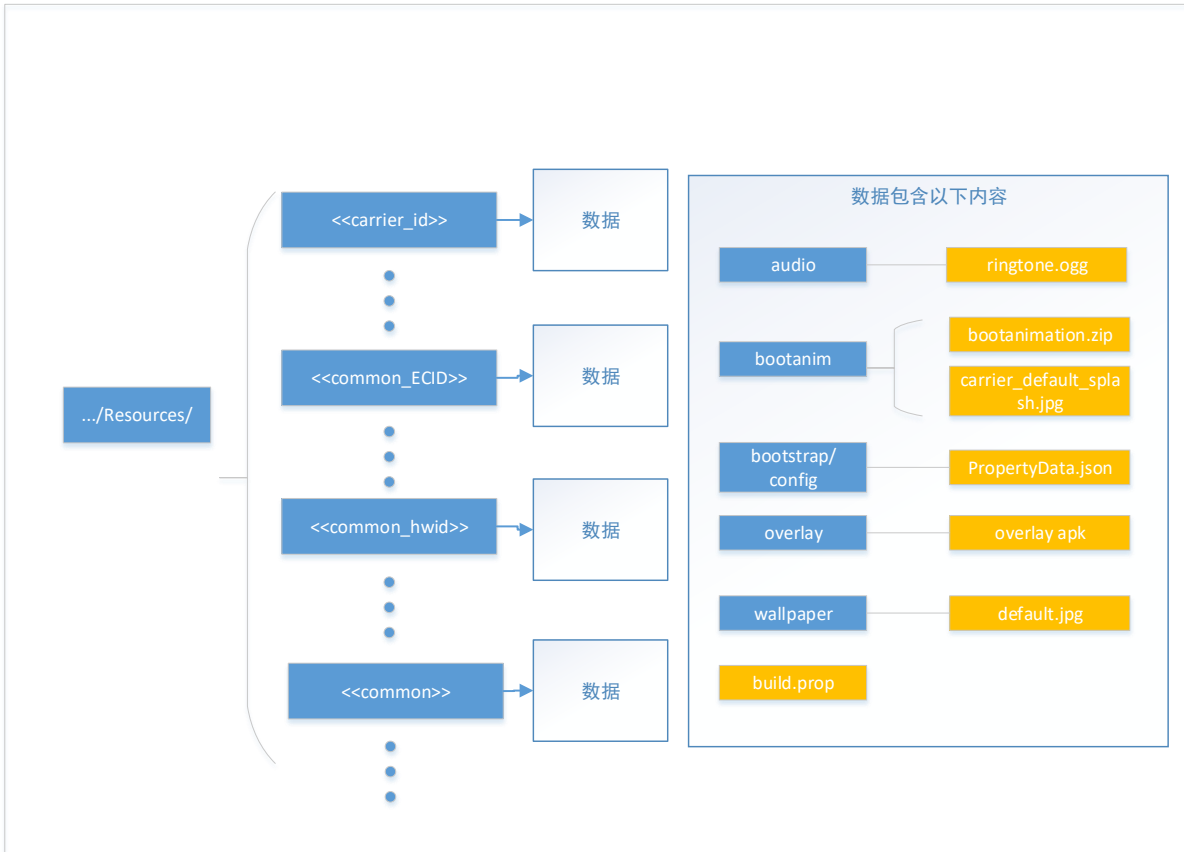- 通过资源、数据库等文件的更新配置
- 通过ECIDUtils在目标源码中配置

# 2. 配置实现

## 2.1. 配置类型

FCM中常规用于配置的数据列举如下，由于FCM是可扩展的，所以所有可配置的数据不仅限于下列数据：

| 数据 | 配置 | 配置方式 | 数据对象 |
|---|---|---|---|
| Ringtone | Ringtone | ...(xx-id)/bootstrap/config/PropertyData.json<br>...(xx-id)/audio/… | Media |
| Wallpaper | Wallpaper | ...(xx-id)/bootstrap/config/PropertyData.json<br>...(xx-id)/wallpaper/… | Media |
| Bookmark | Browser | ...(xx-id)/bootstrap/config/PropertyData.json | Media |
| WIFI | WLAN | ...(xx-id)/bootstrap/config/PropertyData.json | WLAN |
| 12/24-hour setting | Date/Time | ...(xx-id)/bootstrap/config/PropertyData.json | Settings |
| Default virtual keyboard setting | Inputmethod | ...(xx-id)/bootstrap/config/PropertyData.json | Settings |

| Homepage | Browser | ...(xx-id)/bootstrap/config/PropertyData.json | TCT |
|---|---|---|---|
| BootAnimation | BootAnimation | ...(xx-id)/bootanim/… | TCT |
| Overlay apk | Apk | ...(xx-id)/overlay/… | TCT |
| Build.prop | System | ...(xx-id)/build.prop | TCT |
| APP | TCT APP | 在源码中调用 ECID util 类进行判断并编写配置代码 | TCT |

## 2.2. 配置目录

Resource目录下包含了适配的各种对象的配置数据，软件编译版本中包含这些配置数据，系统根据ECID和carrierid等数据来加载所需的配置数据。



## 3. 配置示例

### 3.1. Ringtone

PropertyData.json配置结构如下：

```json
{
  "PropertyData": [
    {
      "P": "ringtones",
      "PV": [
        {
          "path": "/system/fcm_custom/resources/common_21460000/audio/carrier_default_ringtone.ogg",
          "notification": "false",
          "default": "true",
          "artist": "Ringer",
          "mime": "audio/ogg",
          "title": "Test Firefly"
        },
        {
          "path": "/system/fcm_custom/resources/common_21460000/audio/CHAT_ALERT.ogg",
          "notification": "true",
          "default": "true",
          "artist": "Ringer",
          "mime": "audio/ogg",
          "title": "Test Chat Alert"
        }
      ],
      "V": "1",
      "CI": "0",
      "DO": "telephony"
    }
  ]
}
```

## 3.2. 12/24-hour setting

PropertyData.json配置结构如下：

```json
{
  "PropertyData": [
    {
      "P": "hourformat",
      "PV": "12",
      "V": "1",
      "CI": "0",
      "DO": "settings"
    }
  ]
}
```

## 3.3. Wallpaper

PropertyData.json配置结构如下：

```
{
  "PropertyData": [
    {
      "P": "wallpapers",
      "PV": [
        {
          "path": "/system/fcm_custom/resources/common_21460000/wallpaper/China1.png",
          "default": "true"
        },
        {
          "path": "/system/fcm_custom/resources/common_21460000/wallpaper/default.jpg",
          "default": "false"
        }
      ],
      "V": "1",
      "DO": "homescreen",
      "CI": "0",
      "URI": "content://com.tct.fcm.provider/carrier/wallpapers"
    }
  ]
}
```

## 3.4. Bookmarks

PropertyData.json配置结构如下：

```
{
  "PropertyData": [
    {
      "P": "bookmarks",
      "PV": [
        {
          "title": "京东",
          "url": "http://m.jd.com"
        }
      ],
      "V": "1",
      "CI": "0",
      "DO": "browser",
      "URI": "content://com.tct.fcm.provider/carrier/bookmarks"
    }
  ]
}
```

## 3.5. Inputmethod

PropertyData.json配置结构如下：

```json
{
  "PropertyData": [
    {
      "P": "inputmethod",
      "PV": "com.touchtype.swiftkey/com.touchtype.KeyboardService",
      "V": "1",
      "CI": "0",
      "DO": "settings"
    }
  ]
}
```
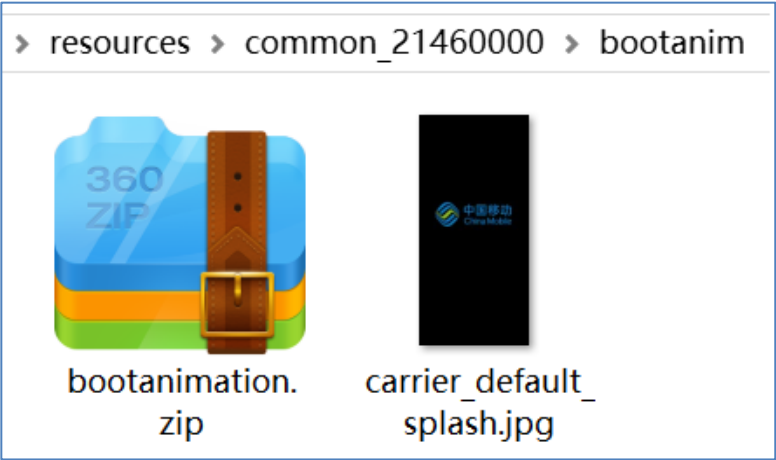
## 3.6. Homepage

PropertyData.json配置结构如下：

```json
{
  "PropertyData": [
    {
      "P": "browser_homepage",
      "PV": "http://wap.monternet.com",
      "V": "1",
      "CI": "0",
      "DO": "tcl",
      "URI": "content://com.android.partnerbrowsercustomizations/homepage"
    }
  ]
}
```

## 3.7. BootAnimation

Bootanimation配置数据存放在对应id的bootanim目录下，包含bootanimation.zip、

carrier_default_splash.png两个文件。前者表示开机动画包文件，后者表示开机静态图像。

## 3.8. Overlay Apk

　　系统apk或第三方apk如果需要进行动态overlay配置，可以使用该配置。配置目录在overlay目录下，集成编译软件是到oem或system的overlay目录下，apk中包含overlay参数所需要的ecid和codename属性，系统会根据ecid和codename扫入必要的overlay apk。详细介绍见FCM Overlay Apk Guide文档。

## 3.9. build.prop

　　build.prop可以控制功能的开关配置，该配置在资源目录的根目录下的build.prop，其中的配置会集成到软件中。详细介绍见Parameter technical & build prop documentation文档。

## 3.10. TCT App

　　如果需要代码进行控制，那么可以通过ECID类来调用判断。目前的ECID类提供对于编码参数的解析，包括VENDOR_TYPE、REGION_NAME、PLMN_NUM、MCC_NUM、MNC_NUM这几个参数。开发人员可以对于特定ECID对照参数来配置实现。

```java
/** Various ECID strings. */
/** {@hide} */
public static class ECID {
    private static final String TAG = "ECID";
    private static final String DEFAULT_RESULT  = "";
    private static final int ECID_LENGTH  = 8;
    public static final String ECID_PROP = SystemProperties.get("ro.ecid", "");

    /**
     * Get vendor type from ecid.
     * ecid[0] -> vendor type
     */
    public static final int VENDOR_TYPE =  deriveVendorType();
    private static int  deriveVendorType(){
        return getIntProp(0, 0);
    }

    /**
     * Get region name from ecid.
     * ecid[1] -> region name
     */
    public static final int REGION_NAME =  deriveRegionName();
    private static int  deriveRegionName(){
        return getIntProp(1, 1);
    }
```

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```
/**
 * Get plmn number from ecid.
 * ecid[2-7] -> plmn number
 */
public static final String PLMN_NUM = derivePlmnNum();
private static String derivePlmnNum(){
    return getStrProp(2, 7);
}

/**
 * Get mcc number from ecid.
 * ecid[2-4] -> mcc number
 */
public static final String MCC_NUM = deriveMccNum();
private static String deriveMccNum(){
    return getStrProp(2, 4);
}

/**
 * Get mnc number from ecid.
 * ecid[5-7] -> mnc number
 */
public static final String MNC_NUM = deriveMncNum();
private static String deriveMncNum(){
    return getStrProp(5, 7);
}

private static String getStrProp(int start, int end) {
    String ret = "";
    if(ECID_PROP.length() == ECID_LENGTH){
        ret = ECID_PROP.substring(start, end);
    }
    return ret;
}
```

```java
    private static int getIntProp(int start, int end) {
        int ret = -1;
        if(ECID_PROP.length() == ECID_LENGTH){
          try {
            ret = Integer.parseInt(ECID_PROP.substring(start,
end));
          } catch (NumberFormatException e) {
            Slog.e(TAG, "Invalid ECID part prop from : " +
start + " to " + end);
          }
        }
        return ret;
      }
    }
```