

Android Custom API Guide

1 Documentation

This document is suitable for people who do application development in NAMTSO Android products. The interface is compatible with a variety of products, in a product development adaptation is completed, can be used in a variety of products.

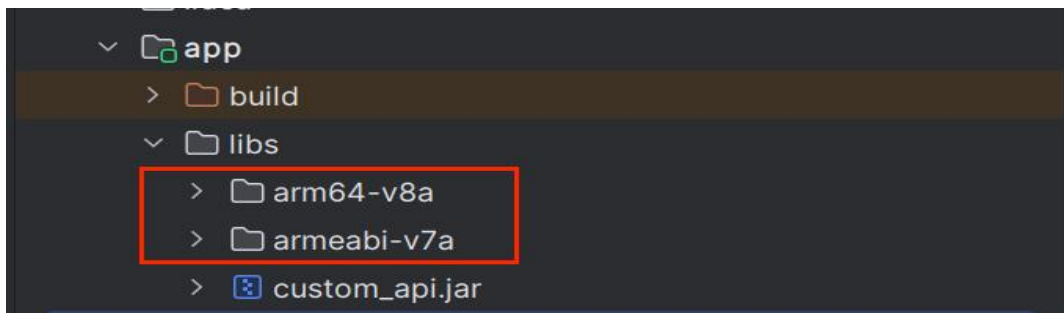
The interface call is divided into two ways: integrating JAR packages and sending broadcasts; the JAR package interface call provides system software interfaces and hardware control interfaces; the broadcast interface only includes common system software interfaces. The broadcast interface only includes the system's commonly used software interfaces, the broadcast method is suitable for applications that do not facilitate the integration of JAR, developers can choose the appropriate way to call according to their own actual situation.

Code download method:

```
git clone https://github.com/opensource-wesion/custom_api_demo.git
```

2 JAR package integration method

Add the JAR package to the project in app/libs/.



Then configure the build.gradle file by adding the following code:

```
+ useLibrary 'org.apache.http.legacy'
+ sourceSets {
+ main() {
+ jniLibs.srcDirs = ['libs']
+ }
+ }

dependencies {
+ implementation fileTree(dir: 'libs', include: ['*.jar'])
}
```

3 JAR Package Call Interface

3.1 system software interface

3.1.1 Run shell commands with su privileges

Function: public String execSuCmd(String cmd)

Parameters: cmd: shell command

Return: String Input command return value

Example:

```
getCustomApi().execSuCmd("cat /system/build.prop");  
getCustomApi().execSuCmd("screencap -p /sdcard/screenshot.png");
```

3.1.2 system shutdown

Function: public void shutdown()

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```
getCustomApi().shutdown();
```

3.1.3 system reboot

Function: public void reboot()

Example:

```
getCustomApi().reboot();
```

3.1.4 system hibernation

Function: public void sleep()

Example:

```
getCustomApi().sleep();
```

3.1.5 system wakeup

Function: public void wakeup()

Note: This method does not work after entering deep hibernation.

Example:

```
getCustomApi().wakeup();
```

3.1.6 Silent installation of applications

Function: public boolean silentInstall(String apkPath)

Parameters: apkPath: apk path

Return: true Installation was successful

Example:

```
getCustomApi().silentInstall(apkPath);
```

3.1.7 Silent installation of applications

Function: public void silentInstall(String apkPath, boolean isLaunch, ICustomApiCallBack customApiCallBack)

Parameters: apkPath: apk path, isLaunch whether to pull up immediately after installation, customApiCallBack installation completion callback interface.

Example:

```
getCustomApi().silentInstall("/sdcard/test.apk", true, new ICustomApiCallBack() {  
    @Override  
    public void silentInstallCallBack(String s, boolean b) {  
    }  
    @Override  
    public void silentUninstallCallBack(String s, int i) {  
    }  
}).
```

3.1.8 Silent uninstallation of applications

Function: public boolean silentUnInstall(String pkgName)

Parameters: pkgName: the package name of the application to be uninstalled.

Returns: true if the uninstallation succeeds, false if it fails.

Note: Only supports uninstalling installed apps, not built-in apps.

Example:

```
getCustomApi().silentUnInstall("com.androids.gps.test.pro")
```

3.1.9 Setting the system time

Function: public boolean setTime(int year, int month, int day, int hour, int minute, int second)

Rtn: true to set success, false to set failure.

Example:

```
getCustomApi().setTime(2020,11,13,15,33,06);
```

3.1.10 Local ota package upgrade

Function: public void installPackage(String path)

Arguments: absolute path name of the path package.

Example:

```
getCustomApi().installPackage("/sdcard/update.zip");
```

3.1.11 Setting property integer values

Function: public void setSystemPropertiesInt(String name, int value)

Parameters: name: name of the attribute value: set the corresponding integer value.

Example:

```
getCustomApi().setSystemPropertiesInt("persist.sys.test1", 1);
```

3.1.12 Get property integer value

Function: public int getSystemPropertiesInt(String name, int value)

Parameters: name: the name of the attribute value: no corresponding value will be returned by default.

Return: Returns the attribute character value.

Example:

```
int propertiesValue = getCustomApi().getSystemPropertiesInt("persist.sys.test1",0);
```

3.1.13 Setting Property Character Values

Function: public void setSystemProperties(String name, String val)

Parameters: name: the name of the attribute val: no corresponding value is returned by default.

Example:

```
getCustomApi().setSystemProperties("persist.sys.test2", "1");
```

3.1.14 Get property character values

Function: public String getSystemProperties(String name, String val)

Return: Returns the attribute character value.

Example:

```
String propertiesval = getCustomApi().getSystemProperties("persist.sys.test2", "UNKNOWN");
```

3.1.15 Status bar control

Function: public void setStatusbarVisibility(boolean visibility)

Example:

```
getCustomApi().setStatusbarVisibility(true); //show the status bar
getCustomApi().setStatusbarVisibility(false); //hide status bar
```

3.1.16 Navigation bar control

Function: public void setNavigationBarVisibility(boolean visibility)

Example:

```
getCustomApi().setNavigationBarVisibility(true); //show the navigation bar
getCustomApi().setNavigationBarVisibility(false); //hide navigation bar
```

3.1.17 Screen display angle control

Function: public int setDisplayPosition(int pos)

Parameters: pos : Display angle parameter 0 is 0, 1 is 90, 2 is 180, 3 is 270.

Return: Return to set the display angle.

Example:

```
getCustomApi().setDisplayPosition(0);
```

3.1.18 videotape a screen

Function: public int screenRecord(String pathName, int seconds)

DESCRIPTION: This function is time consuming and needs to be run in a thread, please refer to the demo app.

Parameters: pathName: absolute path to save seconds: seconds to record.

Returns: -1: Failure 0: Success.

Example:

```
int ret = getCustomApi().screenRecord("/sdcard/demo.mp4",6);
```

3.2 Hardware Control Interface

GPIO output use flow: GPIO application -> set GPIO output -> set output level (can be set multiple times with different level output) -> release GPIO (no longer used).

GPIO input use flow: GPIO application -> set GPIO input -> read input level (can be read multiple times) -> release GPIO (no longer used).

GPIO pin calculation formula: $pin = bank * 32 + number$

GPIO group number calculation formula: $number = group * 8 + X$

GPIO4_C3 pin pin calculation method:

bank = 4; //GPIO4_C3 => 4, bank ∈ [0,4]

group = 2; //GPIO4_C3 => 2, group ∈ {(A=0), (B=1), (C=2), (D=3)}

X = 3; //GPIO4_C3 => 3, X ∈ [0,7]

number = group * 8 + X = 2 * 8 + 3 = 19

pin = bank*32 + number= 4 * 32 + 19 = 147

3.2.1 gpio application

Function: public boolean gpioRequest (int gpio)

Description: Apply for GPIO, before using GPIO for input, output, you need to apply for use.

Parameters: gpio gpio number.

Returns: true the application was successful, false the application failed.

Example:

```
boolean ok = getCustomApi. gpioRequest (147);
```

3.2.2 gpio release

Function: public boolean gpioFree (int gpio)

Description: Release GPIO, no longer use GPIO, need to release.

Parameters: gpio gpio number.

Returns: true the application was successful, false the application failed.

Example:

```
boolean ok = getCustomApi. gpioFree (147);
```

3.2.3 gpio direction setting

Function: public boolean gpioSetDirection (int gpio, String direction)

Description: Set the input and output direction of GPIO, need to apply before use.

Parameters: gpio gpio number, direction for direction in,for input, out for output.

Rtn: true setup success, false setup failure.

Example:

```
boolean okIn = getCustomApi().gpioSetDirection(147, "in"); //set GPIO147 input mode  
boolean okOut = getCustomApi().gpioSetDirection(147, "out"); //set GPIO147 output mode
```

3.2.4 gpio output level setting

Function: public boolean gpioSetValue(int gpio, int value)

Description: Set the output level of GPIO, need to apply before use.

Parameters: gpio gpio number value Level: 0 low, 1 high.

Rtn: true setup success, false setup failure.

Example:

```
boolean okLow = getCustomApi. gpioSetValue (147, 0); // set the output low level
boolean okHigh = getCustomApi. gpioSetValue (147, 1); // set the output high level
```

3.2.5 gpio input level reading

Function: public int gpioGetValue (int gpio)

Description: Read GPIO input level, need to apply before use.

Parameters: gpio gpio number.

Returns: -1, 0 low, 1 high in case of read failure.

Example:

```
int gpioValue = getCustomApi. gpioGetValue(147);
```

3.2.6 i2c read function

Function: public int i2cReadByteData (int bus, int addr, int reg)

Parameters: bus: i2c bus on which the device is mounted addr: device i2c address reg: device register value.

Return: Returns the value of the register read.

Example:

```
int value = getCustomApi().i2cReadByteData(4, 0x0e, 0x60);
```

3.2.7 i2c write function

Function: public int i2cWriteByteData (int bus, int addr, int reg, int value)

Parameters: bus: i2c bus on which the device is mounted addr: device i2c address reg: device register value:

value to be set.

Returns: -1: Failure 0: Success.

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```
int ret = getCustomApi().i2cWriteByteData(4,0x0e, 0x60, 96);
```

3.2.8 Serial Interface Usage

Import so library file: libserialPort.so

Open the serial port according to the path and baud rate and set the callback function.

```
SerialPortUtil serialPortUtil.
serialPortUtil = new SerialPortUtil();
serialPortUtil.setSerialPortDataCallBack(UartSettings.this);
serialPortUtil.initSerialPort("/dev/ttyWCH0", 9600, 0);
```

Sends a string to the serial port:

```
String sendTxt = "0123456789ABCDEF";
serialPortUtil.sendOrder(hexStringToBytes(sendTxt));
```

Close the serial port:

```
if(serialPortUtil != null) {
    serialPortUtil.closeSerialPort();
}
serialPortUtil = null;
```

3.2.9 Can Interface Usage

Import so library file: libSocketCan.so

Function: public int openCan(String canx, String baudrate)

Description: Open the Can interface.

Parameters: canx: Can interface e.g. can0, can1, baudrate: baud rate.

Return: Open the interface file descriptor FD.

Example:

```
customCan.openCan("can0", "25000"); // customCan as CustomCan object
```

Function: public int closeCan()

Description: Disables the Can interface.

Returns: -1: Failure 0: Success.

Example:

```
customCan.closeCan(); // customCan is a CustomCan object
```

Function: public int writeCan(long canid, long eff, long rtr, int len, int[] data)

Description: Send Can data .

Parameters: canid Frame ID, eff 1 for extended frame, 0 for standard frame, rtr 1 for remote frame, 0 for data frame data Frame data.

Returns: number of bytes written .

Example:

```
int ret = customCan0.writeCan(0x123, 0, 0, 8, buf); // customCan is a CustomCan object
```

Function: public long[] readCan()

Description: Read Can interface data .

Returns: a long array of the read data .

Example:

```
long[] data = customCan0.readCan(); // customCan is a CustomCan object
```

3.2.10 Setting the LED mode

Function: public void setLedMode(int type, int mode)

Parameter: type: select which light to control(0,white_led 1,red_led)

mode: lamp state (0 off, 1 on, 2 timer,3 heartbeat)

Example:

```
getCustomApi().setLedMode(0, 1);
```

3.2.11 Get LED status

Function: public int getLedMode(int type)

Parameters: type: which light.

Returns: the lamp status value.

Example:

```
int mode = getCustomApi().getLedMode(0);
```

3.2.12 Setting the Fan Mode

Function: public void setFanMode(int mode)

Parameters: mode: fan state (0 off, 1 auto, 2 primary, 3 secondary, 4 tertiary, 5 quaternary, 6 quintuple).

Example.

```
getCustomApi().setFanMode(1);
```

3.2.13 Getting Fan Status

Function: public int getFanMode()

Returns: the fan status value.

Example:

```
int mode = getCustomApi().getFanMode();
```

3.2.14 Setting the Wol Mode

Function: public void setWolMode(boolean mode)

Parameters: mode: Wol state (true on, false off)

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```
getCustomApi().setWolMode(true);
```

3.2.15 Get Wol Status

Function: public boolean getWolMode()

Returns: wol status value.

Example:

```
boolean mode = getCustomApi().getWolMode();
```

4 Broadcast Calling Interface

4.1 Setting the system time

Broadcast: com.custom.action.UPDATE_TIME

Description: Update the system time .

Parameters: time: System time format to be set: "yyyy-MM-dd HH:mm:ss"

Example:

```
Intent timeIntent = new Intent("com.custom.action.UPDATE_TIME");
timeIntent.putExtra("time", "2024-06-01 12:00:00");
sendBroadcast(timeIntent).
```

4.2 Setting Property Character Values

Broadcast: com.custom.action.SET_SYSPROP

Parameters: name: the name of the attribute val: no corresponding value is returned by default.

Example:

```
Intent setSysPropIntent = new Intent("com.custom.action.SET_SYSPROPS");
setSysPropIntent.putExtra("name", "persist.sys.test");
setSysPropIntent.putExtra("value", "setprop_test");
sendBroadcast(setSysPropIntent);
```

4.3 system shutdown

Broadcast: com.custom.action.SHUTDOWN

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```
Intent shutdownIntent = new Intent("com.custom.action.SHUTDOWN");
sendBroadcast(shutdownIntent).
```

4.4 system reboot

Broadcast: com.custom.action.REBOOT

Example:

```
Intent rebootIntent = new Intent("com.custom.action.REBOOT");
sendBroadcast(rebootIntent);
```

4.5 system hibernation

Broadcast: com.custom.action.SLEEP

Example:

```
Intent sleepIntent = new Intent("com.custom.action.SLEEP");
sendBroadcast(sleepIntent);
```

4.6 system wakeup

Broadcast: com.custom.action.WAKEUP

Note: The system entering deep hibernation will not take effect.

Example:

```
Intent wakeupIntent = new Intent("com.custom.action.WAKEUP");
sendBroadcast(wakeupIntent);
```

4.7 Silent installation of applications

Broadcast: com.custom.action.SILENT_INSTALL

Parameters: apkPath: apk path.

Example:

```
Intent silentInstallIntent = new Intent("com.custom.action.SILENT_INSTALL");
silentInstallIntent.putExtra("apkPath", "/sdcard/test.apk");
silentInstallIntent.putExtra("isLaunch", true);
sendBroadcast(silentInstallIntent);
```

Installation status callback broadcast:

```
IntentFilter filter = new IntentFilter();
filter.addAction("com.custom.action.SILENT_INSTALL_RESULT");
mContext.registerReceiver(mCustomApiBroadReceiver, filter);
//Get post-installation results
String installPkgName = intent.getStringExtra("pkgName");
boolean success = intent.getBooleanExtra("success", false);
```

4.8 Silent uninstallation of applications

Broadcast: com.custom.action.SILENT_UNINSTALL

Parameters: pkgName: the package name of the application to be uninstalled, not the built-in application.

Example:

```
Intent silentUninstallIntent = new Intent("com.custom.action.SILENT_UNINSTALL");
silentUninstallIntent.putExtra("pkgName", "com.android.gps.test.pro");
sendBroadcast(silentUninstallIntent);
```

Unload status callback broadcast:

```
IntentFilter filter = new IntentFilter();
filter.addAction("com.custom.action.SILENT_UNINSTALL_RESULT");
mContext.registerReceiver(mCustomApiBroadReceiver, filter);
//Get the result after uninstallation code 0 is uninstalled normally.
String uninstallPkgName = intent.getStringExtra("pkgName");
int code = intent.getIntExtra("code", -1);
```

4.9 Show status bar

Broadcast: com.custom.action.SHOW_STATUSBAR

Example:

```
Intent showStatusBarIntent = new Intent("com.custom.action.SHOW_STATUSBAR");
sendBroadcast(showStatusBarIntent);
```

4.10 Close status bar

Broadcast: com.custom.action.HIDE_STATUSBAR

Example:

```
Intent hideStatusBarIntent = new Intent("com.custom.action.HIDE_STATUSBAR");
sendBroadcast(hideStatusBarIntent);
```

4.11 Show navigation bar

Broadcast: com.custom.action.SHOW_NAVIBAR

Example:

```
Intent showNaviBarIntent = new Intent("com.custom.action.SHOW_NAVIBAR");
sendBroadcast(showNaviBarIntent);
```

4.12 Close the navigation bar

Broadcast: com.custom.action.HIDE_NAVIBAR

Example:

```
Intent hideNaviBarIntent = new Intent("com.custom.action.HIDE_NAVIBAR");
sendBroadcast(hideNaviBarIntent);
```

4.13 Screen display angle control

Broadcast: com.custom.action.SET_DISPOS

Parameters: pos : Display angle parameter 0 is 0, 1 is 90, 2 is 180, 3 is 270.

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```
Intent displayPosIntent = new Intent("com.custom.action.SET_DISPOS");
displayPosIntent.putExtra("pos", 0);
sendBroadcast(displayPosIntent);
```

4.14 Local ota package upgrade

Broadcast: com.custom.action.OTA_UPDATE

Arguments: absolute path name of the path package.

Example:

```
Intent otaUpdateIntent = new Intent("com.custom.action.OTA_UPDATE");
otaUpdateIntent.putExtra("path", "/sdcard/update.zip");
sendBroadcast(otaUpdateIntent).
```