MFYSDK(Android)
Programming Manual
V1.0.7

Fujian Morefun Electronic Technology Co., Ltd.

Catalogue

1. REVISION HISTORY

Date	Revision level	Description	Modify by
2018-10	V1.0	Create	Chen Jiaqi
2018-10-16	V1.0.1	update ClrBuffer function description	Chen Jiaqi
2019-6-1	V1.0.2		Chen Jiaqi
2019-7-7	V1.0.3	Updated parameter descriptions for some functions	Chen Jiaqi
2019-10-30	V1.0.5	Update interface about dukpt Login bussinessId dukpt set "09000000" 6.12 PinPad 1.2 initDukptBDKAndKsn(BDK) 1.3 initDukptIPEKAndKsn(IPEK) 1.4 dukptCalculation(dukpt 3des) 1.14 inputOnlinePin 6.8 MagCardReader 1.2 searchCard 6.13 EmvHandler 1.9 readEmvData	ZhengBinbin
2019-11-13	V1.0.6	Added Interface about print 6.5 MultipleAppPrinter	ZhengBinbin
2019-12-02	V1.0.7	delete irrelevant parameters	ZhengBinbin
2020-01-09	V1.0.8	New add 6.12.9 DukptKeyGid 6.13.3 EmvTransDataConstrants	ZhengBinbin

2. GENERAL

Specifications		
Processor Quad-core + secure CPU **OS** Android 5.1 / 7.0 **Memory** 1GB DDR3 RAM, 8GB EMMC (2GB+16GB optional) **Extendable memory** TF card, maximum support 128GB **Display** 5 inch IPS color screen, 720*1280 **Touch Screen** Multi-point capacitive touch screen **Key** Power key **Magnetic Card Reader** Track1 / 2 / 3, Bi-directional ISO7811 standard **IC Card Reader** ISO7816, EMV/ PBOC 3.0 standard **NFC Card Reader** Support ISO14443 Type A/B, Mifare card, qPBOC L1 &2 standard, Felica	**Printer** Built-in high-speed thermal printer, supports graphic printing Scroll width/diameter: 58mm/30mm **Communication** 4G (2G/3G compatible) WIFI: IEEE 802.11 b/g/n bluetooth 4.0 **SAM Card Reader** One, ISO7816 standard **National Encryption** Built-in national encryption chip, support SM2, SM3, SM4 algorithm **Physical Port** 1 x Micro USB 2.0 **GPS** Built-in GPS, support A-GPS, GLONASS, Compass **Dual Camera** Front: optional 0.3 megapixel, can read barcode Back: 5 megapixel, flashlight optional, Auto-focusing	**Audio** Support voice playing and recording **Battery** 7.4V, 2x2500mAH Lithium polymer **Power Supply** Input AC 100V-240V Output DC 5V/2A **Finger Print** Optional **Weight** 388g **Size** 81 x 180.4 x 54.8 mm **Certifcations** PCI PTS 5.0 EMV Contact L1 & L2 EMV Contactless L1 TQM Paypass Paywave CE FCC

This manual is applicable to MF919 POS Terminal (hereinafter referred to as "MFPOS").

All APIs are built based on standard Android mechanism, and you need to add a JAR file to your project directory. The MFPOS application development environment is the same as Android application development environment.

3. DEFINITIONS

3.1. Android Service

One of the four major components in the Android system

This component is almost at the same level as Activity, but can only run in the

background and interact with other components.

There are 2 ways to start the service (Service):

（Context）ctx.startService()

（Context）ctx..bindService()

3.2. AIDL（Android Interface definition language）

Since there is no shared memory between processes in Android system, some mechanisms need to be provided for data communication between different processes.

To enable other applications to access the services provided by this application, the Android system uses Remote Procedure Call (RPC) to implement it.

3.3. Master Key(MK)

The master key is used to encrypt the work key (WK). The terminal management system assigns a unique TMK to each terminal. The TMK should use at least double long key. TMK must have security protections, can only write and participate in operations, and cannot be read. TMK should be securely stored in the terminal and terminal management system.

3.4. Working Key(WK)

Also known as data key, usually refers to PIN encryption key, MAC calculated key and track data encryption key. Work keys must be updated frequently. The working key must be encrypted with the Master key encryption in the on-line updated message, and then transmitted after forming the ciphertext.

3.5. PIN(personal identification number)

It's personal password. Data information that identifies the identity of cardholders in

online transactions is not allowed to appear in plaintext in any part of computer and network systems.

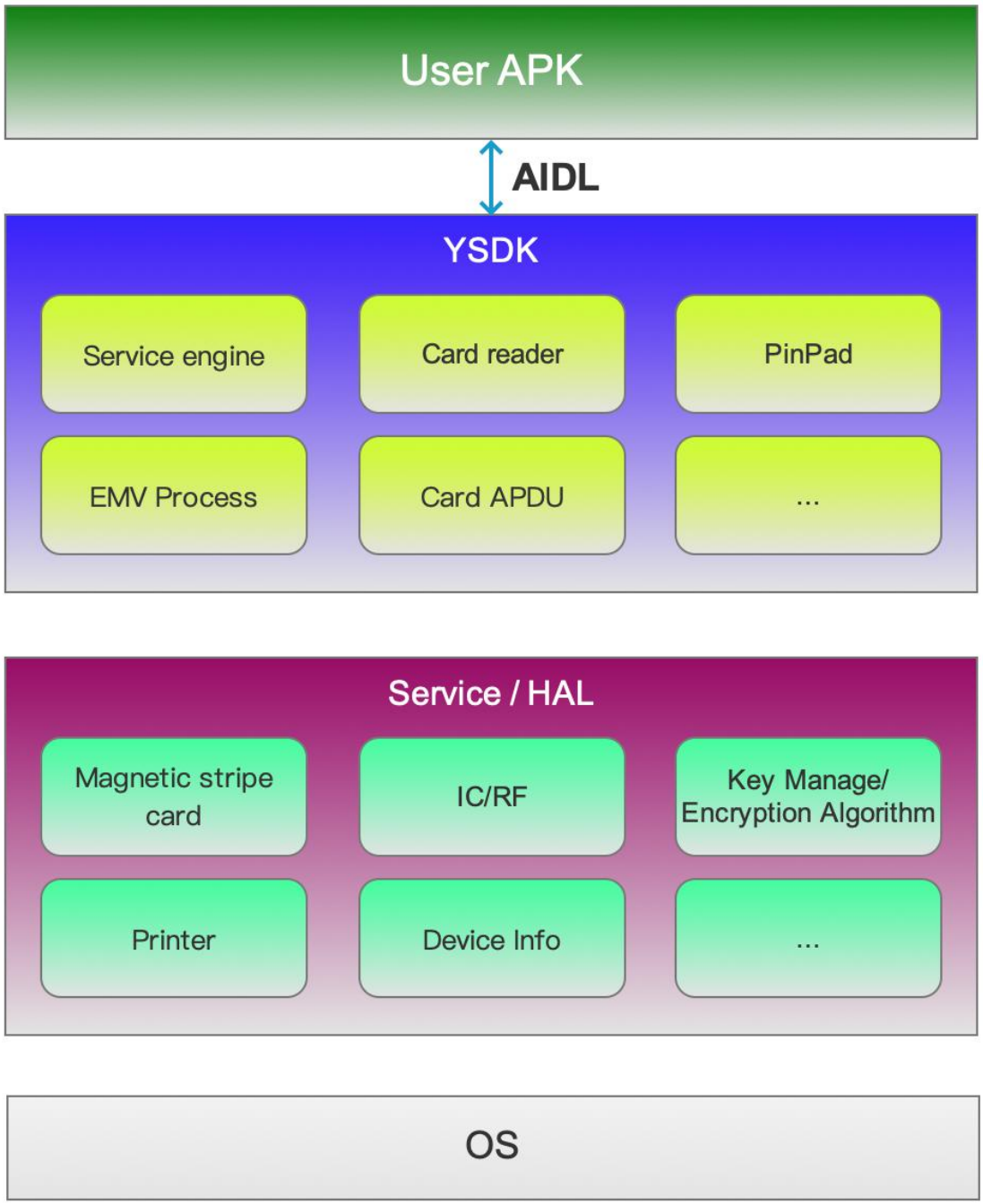
3.6. MAC(message authentication code)

It is used to complete the correct identification of sources, prevent data tampered or steal users' data.

Mainly based on the user key to calculate the Mac function to verify the integrity of the message.

4. ARCHITECTURE

The terminal software architecture based on service mode is shown in the following figure:



5. SERVICE INSTRUCTION

5.1. Interface

The service layer will be output in the form of Apk, the APK runs independently in the smart POS terminal, and the application layer should invoke the service using the AIDL interface.

Service layer AIDL interface meets the following design principles:

AIDL uniformly exposes the interface, and the application program actively call the interface.

The interfaces declared in AIDL are the interfaces that are returned immediately after the call, and can be called directly on the main thread, without generate an ANR.

For an interface whose call time is uncontrollable, the result of the call is received by injecting a callback listener.

5.2. Configure

The service identifies itself by an action called “ysdk.service”, through which the application starts and binds the service. Some sample code about Action is as follows:

```
<intent-filter >
    <action android:name="com.morefun.ysdk.service”/>
</intent-filter>
```

- Return value defintions

Return KEY	Value	Description
Success	0	Call succeed
Fail	-1	Call failed
Param_In_Invalid	-2	Parameter error
TimeOut	-3	Call timeout
Device_Not_Ready	-4	Device not login

5.3. Import JAR file

Developing MFPOS applications requires adding jar file(mfysdk.jar) to your project.

6. FUNCTION SPECIFICATION

6.1. Service engine

Used to manage all built-in and external device interfaces, such as magnetic stripe cards, printers, contact IC cards and contactless IC cards.

- Package name

  com.morefun.yapi.engine

6.1.1. DeviceServiceEngine

- AIDL filename

  DeviceServiceEngine.aidl

- AIDL interface list

Interface Prototype	Function Description
login	Login ysdk service
logout	Logout ysdk service
getDevInfo	Get system information
getBeeper	Get Beep operating object
getLEDDriver	Get LEDoperating object
getPrinter	Get Printer operating object
getMultipleAppPrinter	Get Multiple Printer operating object
getInnerScanner	Get inbuilt scanner operating object

getSerialPortDriver	Get SerialPort operating object
MagCardReader getMagCardReader()	Get MagCardReader operating object
IccCardReader getIccCardReader (int slotNo)	Get ICCard Reader controlling object
CPUCardHandler getCPUCardHandler (in IccCardReader reader)	Get CPUCard Reader operatingobject
M1CardHandler getM1CardHandler (in IccCardReader reader)	Get Mifare one Card Reader operating object
PinPad getPinPad()	Get PinPadoperating object
EmvHandler getEmvHandler()	Get EMV process operating object
setLanguageType(int languageType,int scope)	Set language type

6.1.1.1. Function description

6.1.1.1.1. Login

Prototype	int login (in Bundle bundle,String bussinessId)
Description	Login ysdk service

Parameter	bundle	KEY=”workmode” work mode 0-PAD mode / 1-Payment mode If there is no key-value of workmode, the default mode is PAD mode.
	bussinessId	Bussiness id(Reserve) “09000000” DUKPT “00000000” MK/SK
Return	0	Login succeed(service layer exist EMV file)
	1	Login failure
	2	Login succeed(sevice layer without EMV file)
Other		

6.1.1.1.2. Logout

Prototype	void logout()
Description	Logout ysdk service
Parameter	void
Return	void
Other	

6.1.1.1.3. getDevInfo

Prototype	Bundle getDevInfo()
Description	Get system information
Parameter	void

Return	hardware configuration information
Other	The return value is defined in the description of the DeviceInfoConstrants class.

6.1.1.1.4. getBeeper

Prototype	Beeper getBeeper()
Description	Get Buzzer object
Parameter	void
Return	If succeed, return to the buzzer operation example if failed, return NULL
Other	

6.1.1.1.5. getLEDDriver

Prototype	LEDDriver getLEDDriver()
Description	Get LEDoperating object
Parameter	void
Return	If succeed, Return LED operation example if failed, return NULL
Other	

6.1.1.1.6. getPrinter

Prototype	Printer getPrinter()
Description	Get Printer operating object
Parameter	void
Return	If succeed, Get Printer operating example

	if failed, return NULL
Other	

6.1.1.1.7. getMultipleAppPrinter

Prototype	Printer getMultipleAppPrinter ()
Description	Get Multiple Printer operating object
Parameter	void
Return	If succeed, Get Multiple Printer operating example if failed, return NULL
Other	

6.1.1.1.8. getInnerScanner

Prototype	Printer getInnerScanner()
Description	Get inbuilt scanner operating object
Parameter	void
Return	If succeed, return scanner operating example if failed, return NULL
Other	

6.1.1.1.9. getSerialPortDriver

Prototype	Printer getSerialPortDriver()
Description	Get SerialPort object
Parameter	void
Return	If succeed, return scanner operating example if failed, return NULL

Other	

6.1.1.1.10. getMagCardReader

Prototype	Printer getMagCardReader()
Description	Get MagCardReader object
Parameter	void
Return	If succeed, return MagCardReader object if failed, return NULL
Other	

6.1.1.1.11. getIccCardReader

Prototype	Printer getIccCardReader()
Description	Get IccCardReader object
Parameter	void
Return	If succeed, return IccCardReader object if failed, return NULL
Other	

6.1.1.1.12. getCPUCardReader

Prototype	Printer getCPUCardReader()
Description	Get CPUCardReader object
Parameter	void
Return	if succeed, return CPUCardReader object if failed, return NULL
Other	

6.1.1.1.13. getM1CardReader

Prototype	Printer getM1CardReader()
Description	Get M1CardReader object
Parameter	void
Return	if succeed, return M1CardReader object if failed, return NULL
Other	

6.1.1.1.14. getPinPad

Prototype	Printer getPinPad()
Description	Get PinPad object
Parameter	void
Return	if succeed, return PinPad object if failed, return NULL
Other	

6.1.1.1.15. getEmvHandler

Prototype	EmvHandler getEmvHandler()
Description	Get EMV process object
Parameter	void
Return	if succeed, return EMV processobject if failed, return NULL
Other	

6.1.1.1.16. setLanguageType

Prototype	int setLanguageType(int languageType,int scope)	
Description	Set language type	
Parameter	languageType	Language type (see class LanguageType declaration)
	scope	
Return	If succeed, return to 1; if failed, return to o	
Other		

6.1.2. Defintions

6.1.2.1. Device Info Constrants

Const	Value	Description
COMMON_VENDOR	vendor(String)	Vendor name
COMMON_MODEL	model(String)	Model name
COMMON_OS_VER	os_ver(String)	OS version
COMMON_HARDWARE	hardware(String)	Firmware version
COMMON_SN	sn(String)	Serial number
COMMON_SERVICE_VER	service_ver(String)	YSDK version

6.1.2.2. LanguageType

Const	Value	Description
ENGLISH	0(int)	English
SIMPLIFIED_CHINESE	1(int)	Simplified Chinese
TRADITIONAL_CHINESE	2(int)	Tradittion Chinese

6.1.2.3. ScopeType

Const	Value	Description
SERVICE_SCOPE	0(int)	Service layer Effective globally (including PIN pad, camera interface, etc.)

6.1.2.4. ServiceResult

Const	Value	Description
Success	0	Processing success
Fail	-1	Processing failure
Param_In_Invalid	-2	Input parameter error
Timeout	-3	Processing timeout
Device_Not_Ready	0	Service not logged in

6.2. Beeper

Operate buzzer equipment

- Package name

com.morefun.yapi.device.beeper

6.2.1. Device API

- AIDL filename

Beeper.aidl

- AIDL interface list

Prototype	Description
beep	buzzing

6.2.1.1. beep

Prototype	void beep(int mode)
Description	Buzzer beep
Parameter	mode:Beep mode(See BeepModeConstrants declaration)
Return	void
Other	void

6.2.2. BeepModeConstrants

Const	Value	Description
NORAML	0(int)	Beeps once
SUCCESS	1(int)	Beeps ok
FAIL	2(int)	Beeps failure

6.3. LED

Operate LED equipment

- Package name

com.morefun.yapi.device.led

6.3.1. Device API

- AIDL filename

LEDDriver.aidl

- AIDL interface list

Prototype	Description

powerLed	Contactless Led
setLed	Contactless Led

6.3.1.1. setLed

Prototype	void setLed(int light,boolean isOn)	
Description	Control LED switch	
Parameter	light	Specify LED(see LedLightConstrants declaration)
	isOn	0:OFF 1:ON
Return	void	
Other		

6.3.1.2. powerLed

Prototype	void powerLed (boolean blue , boolean yellow , boolean green , boolean red);	
Description	Control LED switch	
Parameter	blue	false:OFF true:ON
	yellow	false:OFF true:ON
	green	false:OFF true:ON
	red	false:OFF true:ON
Return	void	

Other	

6.3.2. LedLightConstrants

Const	Value	Description
RED	1(int)	Red LED
GREEN	2(int)	Green LED
YELLOW	3(int)	Yellow LED
BLUE	4(int)	Blue LED

6.4. Printer

Operate printer equipment

- Package name

com.morefun.yapi.device.printer

- Return value:

Const	Value	Description
Printer_Print_Fail	-1001	Print failure
Printer_AddPrnStr_Fail	-1002	Set string buffer failed
Printer_AddImg_Fail	-1003	Set picture buffer failed
Printer_Busy	-1004	Printer busy
Printer_PaperLack	-1005	No paper
Printer_Wrong_Package	-1006	Data format error
Printer_Fault	-1007	Printer failure
Printer_OutOfMemory	-1008	Data out of memory
Printer_No_Printer	-1012	No printer

Printer_Low_Power	-1013	Low power
Printer_Other_Error	-1999	Other error

6.4.1. Device API

- AIDL filename

Printer.aidl

- AIDL interface list

Prototype	Description
initPrinter	Initialize printer
setConfig	Parameter settings
startPrint	Start print
getStatus	Get printer status
appendPrnStr	Append print context
appendImage	Append print image
feedPaper	Feed paper
cutPaper	Cut paper
appendScript	Append print script

6.4.1.1. InitPrinter

Prototype	int initPrinter()

Description	Initialize printer
Parameter	void
Return	void
Other	Every new print needs to be called

6.4.1.2. setConfig

Prototype	void setConfig(in Bundle bundle)	
Description	Parameter settings	
Parameter	bundle	Parameter(see PrintConfig declaration)
Return	void	
Other		

6.4.1.3. startPrint

Prototype	int startPrint(in OnPrintListener listener)	
Description	Start print	
Parameter	listener	Print results listener
Return	see Return valuedeclaration	
Other		

6.4.1.4. getStatus

Prototype	int getStatus()
Description	Get printer status
Parameter	void
Return	seeReturn valuedeclaration
Other	

6.4.1.5. feedPaper

Prototype	void feedPaper(int value,int unit)	
Description	Printer feed paper	
Parameter	value	Feed value
	unit	Feed unit (see FeedUnitdeclaration)
Return	void	
Other		

6.4.1.6. cutPaper

Prototype	void cutPaper()
Description	Printer cut paper
Parameter	void
Return	void
Other	No support: WIN9/MF919

6.4.1.7. appendPrnStr

Prototype	int appendPrnStr(String text ,int fontsize ,boolean isBoldFont)	
Description	Append print context	
Parameter	text	Print text
	fontsize	Font size (see FontFamilydeclaration)

	isBoldFont	Bold format (see FontFamilydeclaration)
Return	see Return valuedeclaration	
Other		

6.4.1.8. appendImage

Prototype	int appendImage(in BitMap bitmap)	
Description	Append print image	
Parameter	bitmap	Print image
Return	see Return valuedeclaration	
Other		

6.4.2. OnPrintListener

- AIDL filename

OnPrintListener.aidl

- AIDL interface list

Prototype	Description
onPrintResult	Print result listener

6.4.2.1. onPrintResult

Prototype	void onPrintResult(int retCode)	
Description	Get printer status	
Parameter	retCode	Print result (see Return Valuedeclaration)

Return	void
Other	

6.4.3. FontUnit

Const	Value	Description
LINE	0(int)	Unit of line
PONIT	1(int)	Unit of point

6.4.4. FontFamily

Const	Value	Description
SMALL	0(int)	Small size
MIDDLE	1(int)	Middle size
BIG	2(int)	Big size
NEED_BOLD	true(boolean)	Fontweight
NOT_NEED_BOLD	false(boolean)	Noraml

6.4.5. PrintConfig

Const	Value	Description
COMMON_GRAYLEVEL	graylevel(String)	Print gray level
COMMON_REVERSE	reverse(String)	Set print reverse, default normal print
COMMON_IS_CUTPAPER	1(int)	automatic paper cutting at the end of printing

6.5. MultipleAppPrinter

Operate printer equipment

- Package name

com.morefun.yapi.device.printer

- Return value:

Const	Value	Description
Printer_Print_Fail	-1001	Print failure
Printer_AddPrnStr_Fail	-1002	Set string buffer failed
Printer_AddImg_Fail	-1003	Set picture buffer failed
Printer_Busy	-1004	Printer busy
Printer_PaperLack	-1005	No paper
Printer_Wrong_Package	-1006	Data format error
Printer_Fault	-1007	Printer failure
Printer_OutOfMemory	-1008	Data out of memory
Printer_No_Printer	-1012	No printer
Printer_Low_Power	-1013	Low power
Printer_Other_Error	-1999	Other error

6.5.1. Device API

- AIDL filename

Printer.aidl

- AIDL interface list

Prototype	Description

printStr	Print Multiple content
printImage	Print image

6.5.1.1. printStr

Prototype	int printStr(in List<MulPrintStrEntity> lists,in OnPrintListener listener, in Bundle config);	
Description	Start print Multiple content	
Parameter	lists	List<MulPrintStrEntity>
	listener	Print results listener
	config	see PrintConfig declaration
Return	see Return valuedeclaration	
Other		

6.5.1.2. printImage

Prototype	int printImage(in Bitmap bitmap ,in OnPrintListener listener ,inBundle config);	
Description	Start print image	
Parameter	bitmap	Print image
	listener	Print results listener
	config	see PrintConfig declaration
Return	see Return valuedeclaration	
Other		

6.6. Scanner

Operate Scanner equipment

- Package name

com.morefun.yapi.device.scanner

- Return value

Const	Value	Description
Scanner_Customer_Exit	-2001	User cancel
Scanner_Other_Error	-2002	Other error

6.6.1. Device API

- AIDL filename

Scanner.aidl

- AIDL interface list

Prototype	Description
initScanner	Initialize scanner
startScan	Start scan
stopScan	Stop scan

6.6.1.1. initScaner

Prototype	void initScanner(in Bundle bundle)
Description	

Parameter	bundle	Scanner config parameter (see ScannerConfig declaration)
Return	void	
Other		

6.6.1.2. startScan

Prototype	int startScan(int timeout , in OnScannedListener listener)	
Description	Control LED switch	
Parameter	timeout	Scan time
	listener	Scan result listener
Return	See Return Valuedeclaration	
Other		

6.6.1.3. stopScan

Prototype	void stopScan()
Description	Scanner stop scan
Parameter	void
Return	void
Other	

6.6.2. OnScannedListener

- AIDL filename

OnScannedListener.aidl

- AIDL interface list

Prototype	Description
onScanResult	Scan result callback

6.6.2.1. onScanResult

Prototype	void onScanResult(int retCode,in byte[] data)	
Description	Scan result callback	
Parameter	retCode	Scan result (see ReturnValue declaration)
	data	Scan data
Return	void	
Other		

6.6.3. ScannerConfig

Const	Key value	Description	Bundle value
COMM_SCANNER_TYPE	scanner_type	Scanner Type	0:Front camera 1:Back camera
COMM_ISCONTINUOUS_SCAN	iscontinuous_scan	Continuous scanning	1:Continuous 0:Normal
COMM_CONTINUOUS_SCAN_PERIOD	continuous_scan_period	Continuous scanning interval	Unit: millsecond

6.7. SerialPort

Operate Serial port equipment

- Package name

com.morefun.yapi.device.serialport

- Return value:

Const	Value	Description
SerialPort_Connect_Fail	-4001	Connect failure
SerialPort_Fd_Error	-4002	handle error
SerialPort_Port_Not_Open	-4003	Port no open
SerialPort_DisConnect_Fail	-4004	Disconnect failure
SerialPort_Send_Fail	-4005	Send data failure
SerialPort_Timeout_Receiving_Data	-4006	Data reception timeout
SerialPort_Other_Error	-4999	Other error

6.7.1. Device API

- AIDL filename

SerialPortDriver.aidl

- AIDL interface list

Prototype	Description
connect	Open serial port
send	Send data
recv	Receive data
disConnect	Close serial port

clrBuffer	Clear serial buffer data

6.7.1.1. connect

Prototype	int connect(String cfg)	
Description	Open serial port	
Parameter	cfg	Connect parameter (Format: 115200,n,8,1 speed: Baud rate event: Check bit bits: Data bit stop: Stop bit)
Return	See Return Valuedeclaration	
Other		

6.7.1.2. send

Prototype	int send(in byte[] data,int dataLen)	
Description	Send data	
Parameter	data	Send data buffer
	datalen	Data length
Return	See Return Valuedeclaration	
Other		

6.7.1.3. recv

Prototype	int recv(out byte[] buffer

	,int recvlen ,long timeout)	
Description	Receive data	
Parameter	buffer	Receive buffer
	recvlen	Receive buffer size
	timeout	Receiving timeout time
Return	receive data length	
Other		

6.7.1.4. disConnect

Prototype	int disconnect()
Description	Open serial port
Parameter	void
Return	See Return Valuedeclaration
Other	

6.7.1.5. clrBuffer

Prototype	void clrBuffer()
Description	Clear serial buffer data
Parameter	void
Return	void
Other	

6.8. Magnetic card reader

Operate Magnetic card Reader equipment

- Package name

com.morefun.yapi.device.reader.mag

- Return value:

Const	Value	Description
MagCardReader_No_Swiped	-5001	No swipe card
MagCardReader_Other_Error	-5999	other error

6.8.1. Device API

- AIDL filename

MagCardReader.aidl

- AIDL interface list

Prototype	Description
searchCard	Wait swipe card
stopSearch	Stop wait
setIsCheckLrc	Check LRC switch

6.8.1.1. searchCard

Prototype	int searchCard(in OnSearchMagCardListener listener ,int timeout , in Bundle data)
Description	Wait swipe card

Parameter	listener	Search listener
	timeout	Wait time
	data	Bundle for dukpt
Return	See Return Valuedeclaration	
Other		

6.8.1.2. stopSearch

Prototype	void stopSearch()
Description	Stop wait
Parameter	void
Return	void
Other	

6.8.1.3. setIsCheckLrc

Prototype	void setIsCheckLrc(boolean isCheckLrc)	
Description	Check LRC switch	
Parameter	isCheckLrc	true: checkLRC false: no check
Return	void	
Other		

6.8.2. OnSearchMagCardListener

- AIDL filename

OnSearchMagCardListener.aidl

- AIDL interface list

Prototype	Description
onSearchResult	Search result callback

6.8.2.1. onSearchResult

Prototype	void onSearchResult(int retCode ,in MagCardInfoEntity mcie)	
Description	Search result callback	
Parameter	retCode	See Return Valuedeclaration
	mcie	Card data object (see MagCardInfoEntity declartion)
Return	See Return Valuedeclaration	
Other		

6.8.3. MagCardInfoEntity

Information description of magnetic stripe card

- AIDL filename

MagCardInfoEntity.aidl

- Attribute description

Const	Value	Description
tk1	String	First track data
tk2	String	Second track data
tk3	String	Third track data
tk1ValidResult	int	First track Lrc check results

		0-Pass 1-Failure 2-No check
tk2ValidResult	int	Second track Lrc check results 0-Pass 1-Failure 2-No check
tk3ValidResult	int	Third track Lrc check results 0-Pass 1-Failure 2-No check
cardNo	String	Bank card number

6.9. IC card reader

Operate IC card Reader equipment

- Package name

com.morefun.yapi.device.reader.icc

- Return value:

Const	Value	Description
IccCardReader_ReadCardType_Error	-6001	Wrong card type
IccCardReader_CardInit_Error	-6002	Card initialization failed

IccCardReader_Other_Error	-6999	Other error

6.9.1. Device API

- AIDL filename

IccCardReader.aidl

- AIDL interface list

Prototype	Description
searchCard	Search card
stopSearch	Stop search card
isCardExists	Whether IC card exist
setupReaderConfig	Parameter settings

6.9.1.1. searchCard

Prototype	int searchCard(in OnSearchIccCardListener listener ,int timeout ,in String[] cardType)	
Description	Search card	
Parameter	listener	Search listener
	timeout	Wait time
	cardType	Card type
Return	See Return Valuedeclaration	
Other		

6.9.1.2. stopSearch

Prototype	void stopSearch()
Description	Stop wait
Parameter	void
Return	void
Other	

6.9.1.3. isCardExists

Prototype	boolean isCardExists()
Description	Whether IC card exist
Parameter	void
Return	true: card is exist false: card not found
Other	

6.9.1.4. setupReaderConfig

Prototype	boolean setupReaderConfig(in Bundle bundle)	
Description	Parameter settings	
Parameter	bundle	Card slot parameters (see ReaderConfig declaration)
Return	true: set succeed false: set failure	
Other		

6.9.2. OnSearchIccCardListener

- AIDL filename

OnSearchIccCardListener.aidl

- AIDL interface list

Prototype	Description
onSearchResult	Search result callback

6.9.2.1. onSearchResult

Prototype	void onSearchResult (int retCode ,in Bundle bundle)	
Description	Search result callback	
Parameter	retCode	See Return Valuedeclaration
	bundle	Data returned after successful implementation of IC card (Key definition is defined by ICCSearchResult).
Return	void	
Other		

6.9.3. ICCSearchResult

Const	KeyValue	Description	Bundle Value
CARDTYPE	CardType	Card type	String
M1SN	M1_sn	M1 card sn	byte[]
CARDOTHER	CardOther	Other information on card, including error message code, card response	byte[]

		information and so on. Format: error number (2 byte) + card related information (1 byte Hex length +Value) + reserved information	

6.9.4. IC Card type const defination

Const	Value	Description
AT24CXX	AT24CXX(String)	
AT88SC102	AT88SC102(String)	
AT88SC1604	AT88SC1604(String)	
AT88SC1608	AT88SC1608(String)	
CPUCARD	CPUCARD(String)	
SLE44X2	SLE44X2(String)	
SLE44X8	SLE44X8(String)	
ACARD	ACARD(String)	
BCARD	BCARD(String)	
M1CARD	M1CARD(String)	
FELICA	FELICA(String)	
PSAM	PSAM（String）	

6.9.5. ReaderConfig

Const	Key value	Description	Bundle value

COMMON_SLOT_CHANNEL	slot_channel	Channel slot(1-7)	int
COMMON_ICC_PROTOCOL	icc_protocol	Supported specification types (0:EMV 1:ISO7816-3)	int

6.9.6. SLOT_CHANNCEL

Const	Value	Description
ICSlOT1	1(int)	IC slot 1
PSAMSlOT1	4(int)	PSAM slot1
PSAMSlOT2	5(int)	PSAM slot2
PSAMSlOT3	6(int)	PSAM slot3
RFSlOT	7(int)	RF slot

6.10. CPU card

Operate CPU card equipment

- Package name

com.morefun.yapi.card.cpu

- Return value:

Const	Value	Description
Icc_PullOut_Card	-10001	Card put out
Icc_Parity_Err	-10002	Parity error
Icc_Channel_Err	-10003	Channel error
Icc_Data_Len_TooLong	-10004	Send data too long(LC)

Icc_Protocol_Err	-10005	protocol error (Not T＝0 or T＝1)
Icc_No_Reset_Card	-10006	No reset card.
Icc_Not_Call	-10007	Unable to communicate or fail to power up
Icc_Other_Error	-10099	Other error
Picc_Not_Open	-10201	RF module not open
Picc_Not_Searched_Card	-10202	No cards found
Picc_Card_Too_Many	-10203	Too many card (Communication conflict)
Picc_Protocol_Data_Err	-10204	Protocol error
Picc_Card_No_Activation	-10205	Card not activated
Picc_Muti_Card_Err	-10206	Multi card conflict
Picc_Io_Err	-10207	IO error
Picc_Card_Status_Err	-10209	Card status error (such as A/B card calling M1 card interface, or M1 card calling PiccIsoCommand interface)
Picc_Not_Call	-10210	Chip does not exist or abnormal
Picc_Other_Error	-10299	Other error

6.10.1. Device API

- AIDL filename

CPUCardHandler.aidl

- AIDL interface list

Prototype	Description
setPowerOn	Module power on
setPowerOff	Module power off
exchangeAPDUCmd	APDUcommunication
halt	Card hangs up
active	Card activation

6.10.1.1. setPowerOn

Prototype	boolean setPowerOn(out byte[] atr)	
Description	Module power on	
Parameter	atr	ATR response(Format: ASCII)
Return	true: succeed false: failure	
Other		

6.10.1.2. setPowerOff

Prototype	void setPowerOff()
Description	Module power off

Parameter	void
Return	void
Other	

6.10.1.3. exchangeAPDUCmd

Prototype	int exchangeAPDUCmd(inout APDUCmd cmd)	
Description	APDUcommunication	
Parameter	cmd	APDU command(see APDUCmd declaration)
Return	See Return Valuedeclaration	
Other		

6.10.1.4. halt

Prototype	boolean halt()
Description	Card hangs up
Parameter	void
Return	true: succeed false: failure
Other	

6.10.1.5. active

Prototype	boolean active()
Description	Card activation
Parameter	void
Return	true: succeed false: failure

Other	

6.10.2. APDUCmd

- AIDL filename

APDUCmd.aidl

- Member variables

Variable	Type	Description
p1（byte）	byte	
p2（byte）	byte	
lc（int）	int	
le(int)	int	
ins(int)	int	
cla(int)	int	
swa(byte)	byte	
swb(byte)	byte	
dataIn(byte[])	byte[]	
dataOut(byte[])	byte[]	
dataOutLen(int)	int	

6.11. Mifare one card

Operate Mifare one card equipment

- Package name

com.morefun.yapi.card.mifare

- Return value:

Const	Value	Description
M1Card_Verify_Err	-10301	Authentication failure
M1Card_Fan_Not_Verify	-10302	Sector unauthenticated
M1Card_Data_Block_Err	-10303	Data block error
M1Card_Not_Open	-10304	Not open
M1Card_Card_Not_Activation	-10305	Not activation
M1Card_Card_OperType_Err or	-10306	Operate error
M1Card_Other_Error	-10399	Other error

6.11.1. Device API

- AIDL filename

M1CardHandler.aidl

- AIDL interface list

Prototype	Description
authority	card authorization
readBlock	Read block
writeBlock	Write block
operateBlock	Performs a charge/decrease/backup on a

	specified block of data, updating the value after the operation to another specified block of data

6.11.1.1. authority

Prototype	int authority(int keyType ,int secNo ,in byte[] pwd ,in byte[] serialNo)	
Description	Card authorization	
Parameter	keyType	Key type (see M1KeyTypeConstrants declaration)
	secNo	Sector number
	pwd	Sector password
	serialNo	Card serailno
Return	See Return Valuedeclaration	
Other		

6.11.1.2. readBlock

Prototype	int readBlock(int blkNo,out byte[] blkValue)	
Description	Read block	
Parameter	blkNo	Read block number
	blkValue	Block data read

Return	See Return Valuedeclaration
Other	

6.11.1.3. writeBlock

Prototype	int writeBlock(int blkNo,in byte[] blkValue)	
Description	Write data to block	
Parameter	blkNo	Write block number
	blkValue	Block data writen
Return	See Return Valuedeclaration	
Other		

6.11.1.4. operateBlock

Prototype	int operateBlock(int operType ,int blkNo ,in byte[] value ,int updBlkNo)	
Description	Increment/Decrement/Backup operations to specified data blocks.	
Parameter	operType	Operation mode (see class M1CardOperType definition)
	blkNo	Block numberto be written
	value	Data to be written
	updBlkNo	Specify update target block number
Return	See Return Valuedeclaration	
Other		

6.11.2. M1KeyTypeConstrants

Const	Value	Description
KEYTYPE_A	0(int)	KEYA
KEYTYPE_B	1(int)	KEYB

6.11.3. M1CardOperType

Const	Value	Description
INCREMENT	0(int)	Increment operation
DECREMENT	1(int)	Decrement operation
BACKUP	2(int)	Backup operation

6.12. PinPad

Operate PinPad equipment

- Package name

com.morefun.yapi.device.pinpad

- Return value:

Const	Value	Description
PinPad_No_Key_Error	-7001	key does not exist
PinPad_KeyIdx_Error	-7002	The key index is wrong, and the parameter index is not in the range.
PinPad_Check_Key_Fail	-7004	Key validation failed
PinPad_No_Pin_Input	-7005	No input PIN
PinPad_Input_Cancel	-7006	Cancel input PIN

PinPad_Wait_Interval	-7007	Function call is less than minimum interval time
PinPad_Key_Len_Error	-7014	Key length error
PinPad_Input_Timeout	-7015	Input PIN timeout
PinPad_LoadMK_Error	-7019	Load master key failure
PinPad_LoadWK_Error	-7018	Load Work key failure
PinPad_Input_Clear	-7035	exit press clear key,
PinPad_Mac_Error	-7041	MAC error
PinPad_Crc_Error	-7042	CRC error
PinPad_Type_Error	-7043	Type error
PinPad_Other_Error	-7999	Other error

6.12.1. Device API

- AIDL filename

PinPad.aidl

- AIDL interface list

Prototype	Description
initPinPad	Initialize PinPad
initDukptBDKAndKsn	Init KSN and save BDK
initDukptIPEKAndKsn	Init KSN and save IPEK
increaseKSN	Generate new PEK

	and return new KSN
dukptCalculation	TDES encrypted/decrypted data by dukpt
loadEncryptMKey	Load master key
loadWKey	Load working key
getMac	Calculate MAC
desEncByWKey	DES encrypted MAC/track key
calcWKeyKCV	Calculate CheckValue of work key
format	Format key zone
getRandom	Get 8 bytes random number
inputOnlinePin	Input online PIN
isInputting	Whether inputting
cancelInput	User cancel input
setTimeOut	Set input timeout
ppDispText	Set PIN keyboard display text
ppScrClr	Clear PIN keyboard display text
void setSupportPinLen(in int[] pinLen)	Set PIN input length

6.12.1.1. initPinPad

Prototype	int initPinPad(int type)	
Description	Initialize PinPad	
Parameter	type	PIN keyboard type (see class PinPadType declaration)
Return	See Return Value declaration	
Other		

6.12.1.2. initDukptBDKAndKsn

Prototype	int initDukptBDKAndKsn(int keyIndex ,String key ,String KSN ,boolean isPlainTextKey ,String kvc)	
Description	Load BDK and KSN	
Parameter	keyIndex	Which keyIndex do you need set
	key	BDK
	KSN	Init KSN,the 6 last char should be 0.
	isPlainText	If it's a ciphertext, it's decrypted through KEK(TMK)
	kvc	If it's a ciphertext , KVC must be a valid value
Return	See Return Value declaration	

Other	**KEK(TMK) can generally be prefabricated in the factory.**

6.12.1.3. initDukptIPEKAndKsn

Prototype	int initDukptBDKAndKsn(int keyIndex ,String key ,StringKSN ,boolean isPlainTextKey ,String kvc)	
Description	Load IPEK and KSN	
Parameter	keyIndex	Which keyIndex do you need set
	key	IPEK
	KSN	Init KSN,the 6 last char should be 0.
	isPlainText	If it's a ciphertext, it's decrypted through **KEK(TMK)**
	kvc	If it's a ciphertext , KVC must be a valid value
Return	See Return Value declaration	
Other	**KEK(TMK) can generally be prefabricated in the factory.**	

6.12.1.4. increaseKSN

Prototype	String increaseKSN (int keyIndex, in Bundle bundle);
Description	Initialize PinPad

Parameter	type	PIN keyboard type (see class PinPadType declaration)
Return	See Return Value declaration	
Other		

6.12.1.5. dukptCalculation

Prototype	int dukptCalculation(byte keyType , int desAlgorithmType , in byte[] data , int dataLen , int desMode , boolean prepareDukptKey , out byte[] ksn)	
Description	TDES encrypted/decrypted data by dukpt	
Parameter	keyType	See DukptKeyType
	desAlgorithmType	See DesAlgorithmType
	data	inputData
	dataLen	inputDataLen
	desMode	See DesMode
	prepareDukptKey	True
	data	inputData

Return	See Return Value declaration
Other	

6.12.1.6. loadEncryptMKey

Prototype	int loadEncryptMKey(int mKeyIdx ,in byte[] keyData ,int keyDataLen)	
Description	Load master key	
Parameter	mKeyIdx	Key index
	keyData	Key data(Obtained from the platform, 16 bytes of key data)
	keyDataLen	Key data length
Return	See Return Value declaration	
Other		

6.12.1.7. loadWKey

Prototype	int loadWKey(int mKeyIdx ,int wKeyType ,in byte[] keyData ,int keyDataLen)	
Description	Load working key	
Parameter	mKeyIdx	Key index
	wKeyType	Key type(see WorkKeyType declaration)

	keyData	Key data, Obtained from the platform, support two format: 1. 8 bytes of key data + 4 bytes of check value 2. 16 bytes of key data + 4 bytes of check value
	keyDataLen	Key data length
Return	See Return Valuedeclaration	
Other		

6.12.1.8. getMac

Prototype	byte[] getMac(int mKeyIdx ,int mode ,int type ,in byte[] data , in Bundle bundle)	
Description	Initialize PinPad	
Parameter	mKeyIdx	Key index
	mode	Algorithm type (see MacAlgorithmType declaration)
	type	Des algorithm type (see DesAlgorithmType declaration)
	data	Source data
Return	See Return Valuedeclaration	
Other		

6.12.1.9. desEncByWKey

Prototype	public int desEncByWKey(int mKeyIdx , int wKeyType , byte[] data , int dataLen , int desType , byte[] desResult)	
Description	DES encrypted MAC/track key	
Parameter	mKeyIdx	Key index
	wKeyType	Algorithm type (see WorkKeyTypedeclaration)
	data	Source data buffer
	dataLen	Source data length
	desType	Encrypt type, default DES
	desResult	Result data
Return	See Return Valuedeclaration	
Other		

6.12.1.10. calcWKeyKCV

Prototype	public byte[] calcWKeyKCV(int mKeyIdx , int wKeyType)	
Description	Calculate CheckValue of work key	
Parameter	mKeyIdx	Key index

	wKeyType	Algorithm type (see WorkKeyTypedeclaration)
Return	The CheckValue of work key	
Other		

6.12.1.11. deleteMKey

Prototype	boolean deleteMKey(int mKeyIdx)	
Description	Delete Master key	
Parameter	mKeyIdx	Key index
Return	true: succeed false: failure	
Other		

6.12.1.12. format

Prototype	boolean format()
Description	Format key zone
Parameter	void
Return	true: succeed false: failure
Other	

6.12.1.13. getRandom

Prototype	byte[] getRandom()
Description	Get 8 bytes random number
Parameter	void

Return	8 bytes random number
Other	

6.12.1.14. inputOnlinePin

Prototype	int inputOnlinePin(in Bundle confing in byte[] panBlock ,int mKeyId ,int pinAlgMode ,in OnPinPadInputListenerlistener)	
Description	Initialize PinPad by dukpt	
Parameter	Bundle	Confing (see KSNConstrants declaration)
	panBlock	PAN account number
	mKeyId	Key index
	pinAlgMode	PIN algorithm type (see PinAlgorithmMode declaration)
	listener	PinPad input callback
Return	See Return Valuedeclaration	
Other		

6.12.1.15. isInputting

Prototype	boolean isInputting()
Description	Whether inputting
Parameter	void

Return	true: inputting, else return false
Other	

6.12.1.16. cancelInput

Prototype	voidcancelInput ()
Description	User cancel input
Parameter	void
Return	void
Other	

6.12.1.17. ppDispText

Prototype	void ppDispText(String text,int lineNo)	
Description	Set PIN keyboard display text	
Parameter	text	Display text
	lineNo	Line number
Return	void	
Other		

6.12.1.18. ppScrClr

Prototype	void ppScrClr(int lineNo)	
Description	Clear PIN keyboard display text	
Parameter	lineNo	Line number
Return	void	
Other		

6.12.1.19. setSupportPinLen

Prototype	void setSupportPinLen（in int[] pinLen）	
Description	Set Pin input length range	
Parameter	pinLen	Pin input length range
Return	void	
Other		

6.12.1.20. setLanguageType

Prototype	int setLanguageType(int languageType)	
Description	Set the language type displayed on the secret interface. If not set, the service layer will default to simplified Chinese.	
Parameter	languageType	Language type (see LanguageType declaration)
Return	0: set succeed, elsefailure	
Other		

6.12.2. OnPinPadInputListener

- AIDL filename

OnPinPadInputListener.aidl

- AIDL interface list

Prototype	Description
onInputResult	Pinpad input callback
onSendKey	Synchronous echo display for input

6.12.2.1. onInputResult

Prototype	void onInputResult(int retCode,in byte[]data,String ksn)	
Description	Pinpad input callback	
Parameter	retCode	See Return Valuedeclaration
	data	Encrypted PIN ciphertext
	ksn	Dukpt KSN
Return	void	
Other		

6.12.2.2. onSendKey

Prototype	void onSendKey(byte keycode)	
Description	Synchronous echo display for input	
Parameter	keyCode	KeyCode key value (online Pin needs to convert 0-9 to *)
Return	void	
Other		

6.12.3. PinPadType

Const	Value	Description
INTERNAL	0(int)	Internal pin
EXTERNAL	1(int)	External pin

6.12.4. WorkKeyType

Const	Value	Description
PINKEY	0(int)	PIN Key
MACKEY	1(int)	MAC Key

TDKEY	2(int)	Track Key

6.12.5. PinAlgorithmMode

Const	Value	Description
ISO9564FMT1	0(int)	

6.12.6. MacAlgorithmType

Const	Value	Description
ECB	0(int)	
CBC	1(int)	

6.12.7. KSNConstrants

Const	Value	Description
DukptKeyType	DukptKeyType(byte)	See DukptKeyType
DUKPT_KEY_GID	KEY index(int)	Allow 0-5 See DukptKeyGid class
DesAlgorithmType	DesAlgorithmType (int)	See DesAlgorithmType

6.12.8. DukptKeyType

Const	Value	Description
MF_DUKPT_DES_KEY_PIN	0x00	
MF_DUKPT_DES_KEY_MAC1	0x01	
MF_DUKPT_DES_KEY_	0x02	

MAC2		
MF_DUKPT_DES_KEY_DATA1	0x03	
MF_DUKPT_DES_KEY_DATA2	0x04	

6.12.9. DukptKeyGid

Const	Value	Description
GID_GROUP_EMV_IPEK	0	
GID_GROUP_TRACK_IPEK	1	
GID_GROUP_PIN_IPEK	2	
GID_GROUP_EMV_IPEK2	3	
GID_GROUP_TRACK_IPEK2	4	
GID_GROUP_PIN_IPEK2	5	

6.12.10. DispTextMode

Const	Value	Description
PASSWORD	0(int)	* number display
PLAINTEXT	1(int)	original display

6.12.11. PinPadKeyCode

Const	Value	Description
KEYCODE_0	0x30(byte)	0
KEYCODE_1	0x31(byte)	1
KEYCODE_2	0x32(byte)	2

KEYCODE_3	0x33(byte)	3
KEYCODE_4	0x34(byte)	4
KEYCODE_5	0x35(byte)	5
KEYCODE_6	0x36(byte)	6
KEYCODE_7	0x37(byte)	7
KEYCODE_8	0x38(byte)	8
KEYCODE_9	0x39(byte)	9
KEYCODE_STAR	0x2a(byte)	*
KEYCODE_OCTOTHORPE	0x23(byte)	#
KEYCODE_CANCEL	0x18(byte)	Cancel
KEYCODE_BACKSPACE	0x08(byte)	Backspace
KEYCODE_CLEAR	0xfe(byte)	Clear
KEYCODE_CONFIRM	0x0d(byte')	OK

6.12.12. LanguageType

Const	Value	Description
ENGLISH	0(int)	English

6.13. EMV Process

Operate EMV Process

- Package name

com.morefun.yapi.emv

- Return value:

Const	Value	Description

Emv_Qpboc_Online	-8003	Non contact QPBOC transactions online
Emv_PARA_ERR	-8011	Parameter error
Emv_App_Block	-8013	Application has been locked
Emv_FallBack	-8014	Transaction fallback
Emv_Online	-8019	Trading should be online.
Emv_Cancel	-8020	Transaction cancellation
Emv_Declined	-8021	Transaction refusal
Emv_Terminate	-8022	Transaction terminate
Emv_Other_Error	-8999	Other error

6.13.1. Device API

- AIDL filename

EMVHandler.aidl

- AIDL interface list

Prototype	Description
emvProcess	Start EMV Process
initTermConfig	Initialize EMV config
clearAidParam	Clear all AID parameter
addAidParam	Add a EMV Parameter

clearCAPKParam	Clear all CA public key
addCAPKParam	Add CA public key
readEmvData	Get Tags value
getTlv	Get Tag value
setTlv	Set Tag value
getEmvCardLog	Get card log
clearLog	Clear EMV log
emvGetEcBalance	Get electronic cash balance
onSelAppResponse	Select application response
onConfirmCardNoResponse	Confirm cardNo response
onSetCertVerifyResponse	Identification result response
onSetOnlineProcResponse	Online callback response
onSetAIDParameterResponse	Set AID parameter response
onSetCAPubkeyResponse	Set CApublickey response
isErrorCode	Emv kernel ErrorCdoe

6.13.1.1. EmvProcess

Prototype	int emvProcess(in Bundle data ,in OnEmvProcessListener listener)

Description	Printer feed paper	
Parameter	data	Data for EMV process (see class EMVTransDataConstrants definition)
	listener	Process listener (see OnEMVProcessListenerdeclaration)
Return	See ReturnValue declaration	
Other		

6.13.1.2. initTermConfig

Prototype	int initTermConfig(in Bundle cfg)	
Description	Initialize terminal parameters	
Parameter	cfg	Terminal parameters (see class EMVTermCfgConstrants declaration)
Return	See ReturnValue declaration	
Other		

6.13.1.3. clearAidParam

Prototype	int clearAidParam()
Description	Clearn all EMV parameter
Parameter	void
Return	See ReturnValue declaration
Other	

6.13.1.4. addAidParam

Prototype	int addAidParam(byte[] aidPara)	
Description	Add a EMV parameter	
Parameter	aidPara	AID parameter(Format: TLV)
Return	See ReturnValue declaration	
Other		

6.13.1.5. clearCAPKParam

Prototype	int clearCAPKParam()
Description	Clearall CA public key
Parameter	void
Return	See ReturnValue declaration
Other	

6.13.1.6. addCAPKParam

Prototype	int addCAPKParam(byte[] capkParam)	
Description	Adda CA public key	
Parameter	capkList	CA public key list(Format: TLV)
Return	See ReturnValue declaration	
Other		

6.13.1.7. getTlv

Prototype	byte[] getTlv(in byte[] tag,int pathId , inout Bundle bundle)
Description	Read tag value

Parameter	tag	Specify tag key
	pathId	Data source (see EMVDataSource declaration)
Return	TLV value	
Other		

6.13.1.8. setTlv

Prototype	int setTlv(in byte[] tag,in byte[] value)	
Description	Write TLV value to kernel	
Parameter	tag	Specify tag key
	value	TLV value
Return	See ReturnValue declaration	
Other		

6.13.1.9. readEmvData

Prototype	int readKernelData (in String []taglist ,out byte[] buffer , inout Bundle bundle)	
Description	read TLV valuesfrom kernel	
Parameter	taglist	Specify tag key array
	buffer	The result from SDK with TLV
	Bundle	Bundle for dukpt
Return	See ReturnValue declaration	
Other		

6.13.1.10. getEmvCardLog

Prototype	int getEmvCardLog(int channelType , in OnEmvProcessListener listener)	
Description	Get EMV card log	
Parameter	channelType	Source of card transaction log (see EmvChannelType declaration)
	listener	Process listener (see OnEMVProcessListener declaration)
Return	true: succeed false: failure	
Other		

6.13.1.11. clearLog

Prototype	int clearLog()
Description	Clear EMV kernel transaction log
Parameter	void
Return	See ReturnValue declaration
Other	

6.13.1.12. emvGetEcBalance

Prototype	int emvGetEcBalance(int channelType , in OnEmvProcessListener listener);
Description	Get electronic cash balance

Parameter	channelType	Source of card transaction log (see EmvChannelType declaration)
	listener	Process listener (see OnEMVProcessListener declaration)
Return	See ReturnValue declaration	
Other		

6.13.1.13. onSelAppResponse

Prototype	void onSelAppResponse(int appIdx)	
Description	Select application response	
Parameter	appIdx	Application index(< 0: cancel select)
Return	void	
Other		

6.13.1.14. onConfirmCardNoResponse

Prototype	void onConfirmCardNoResponse (boolean isConfirm)	
Description	Confirm cardNo response	
Parameter	isConfirm	Whether confirm the card number
Return	void	
Other		

6.13.1.15. onSetCertVerifyResponse

Prototype	void onSetCertVerifyResponse (boolean isVerify)	
Description	Identification result response	
Parameter	isVerify	Whether confirm the certificate number

Return	true: succeed false: failure
Other	

6.13.1.16. onSetOnlineProcResponse

Prototype	void onSetOnlineProcResponse(int retCode,in Bundle data)	
Description	Online callback response	
Parameter	retCode	Process result
	data	Online result data (see class EmvOnLineResult definition)
Return	void	
Other		

6.13.1.17. onSetAIDParameterResponse

Prototype	void onSetAIDParameterResponse (in EmvAidPara aid)	
Description	Set AID parameter response	
Parameter	aid	AID parameter
Return	void	
Other		

6.13.1.18. onSetCAPubkeyResponse

Prototype	void onSetCAPubkeyResponse (in EmvCapk capk)	
Description	Set CA public key response	
Parameter	capk	CA public key
Return	void	

Other	

6.13.1.19. onSetOnlineProcResponse

Prototype	void onSetOnlineProcResponse(int retCode,in Bundle data)	
Description	Online callback response	
Parameter	retCode	Process result
	data	Online result data (see class EmvOnLineResult definition)
Return	void	
Other		

6.13.2. OnEmvProcessListener

- AIDL filename

OnEmvProcessListener.aidl

- AIDL interface list

Prototype	Description
onSelApp	Select application callback
onConfirmCardNo	Confirm card number callback
onCardHolderInputPin	Input PIN callback
onPinPress	Input PIN show callback
onCertVerify	ID confirmation callback
onOnlineProc	Online callback

onFinish	Finish callback
onSetAIDParameter	Set AID parameter callback
onSetCAPubkey	Set CA public key callback

6.13.2.1. onSelApp

Prototype	void onSelApp(in List<String> appNameList ,boolean isFirstSelect)	
Description	Select application callback	
Parameter	appNameList	App name list
	isFirstSelect	Whether first select
Return	void	
Other		

6.13.2.2. onConfirmCardNo

Prototype	void onConfirmCardNo(String cardNo)	
Description	Confirm card number callback	
Parameter	cardNo	card number
Return	void	
Other		

6.13.2.3. onCardHolderInputPin

Prototype	void onCardHolderInputPin(boolean isOnlinePin ,int leftTimes)
Description	Input PIN callback

Parameter	isOnlinePin	Whether online pin
	leftTimes	number of attempts remaining
Return	void	
Other		

6.13.2.4. onPinPress

Prototype	void onPinPress(byte keyCode)	
Description	Press key callback	
Parameter	keyCode	only *, Del and Clear keys.
Return	void	
Other		

6.13.2.5. onCertVerify

Prototype	void onCertVerify(String cerName ,String certInfo)	
Description	ID confirmation callback	
Parameter	cerName	Cert name
	certInfo	Cert Infomation
Return	void	
Other		

6.13.2.6. onOnlineProc

Prototype	void onOnlineProc(in Bundle data)
Description	Online process callback

Parameter	data	Online data (see EMVOnlineRequest declaration)
Return	void	
Other		

6.13.2.7. onFinish

Prototype	void onFinish(int retCode,in Bundle data)	
Description	Finish callback	
Parameter	retCode	Result code (see ReturnValue declaration)
	data	Result data (see EMVOnlineResult & EmvErrorConstrants declaration)
Return	void	
Other		

6.13.2.8. onSetAIDParameter

Prototype	void onSetAIDParameter(String aid)	
Description	Set AID parameter callback	
Parameter	aid	AID value
Return	void	
Other		

6.13.2.9. onSetCAPubkey

Prototype	void onSetCAPubkey(string rid

	, int index ,int algMode)	
Description	Set AID parameter callback	
Parameter	rid	RID value
	index	IC public key index
	algMode	Algorithm (see EmvAlgorithmType declaration)
Return	void	
Other		

6.13.2.10. isErrorCode

Prototype	boolean isErrorCode(int errorCode);	
Description	Is contain EmvErrorCode	
Parameter	errorCode	Emv kernel Code (see EmvErrorCode declaration)
Return	if true, is contain EmvErrorCode	
Other		

6.13.3. EmvTransDataConstrants

Const	Key value	Description	Bundle value
PROCTYPE	procType	EMV Process (seeEmvTransFlow declaration)	int
SEQNO	posSer	POS batch number	String

TRANSAMT	transAmt	transaction amount	String
CASHBACKAMT	cashbackAmt	Cashback amount	String
TRANSDATE	transDate	transaction date (YYYYMMDD)	String
TRANSTIME	transTime	transaction time(hhmmss)	String
MERNAME	merName	Merchant name	String
MERID	merId	Merchant number	String
TERMID	termId	Teriminal number	String
B9C	9C	9C	byte
ISQPBOCFORCE ONLINE	isQpbocForceLin e	Whether Qpboc forced online	boolean
FORCE_ONLINE_ CALL_PIN	ForceOnlinePin	Online force call input pin	boolean
TERMINAL_TLVS	TerminalTlvs	EMV terminal tlvs Such as DF81190118 /DF811B0130 TAG : DF8119 LEN:01 VALUE:18	ArrayList<String>
ISNEEDPAN	isNeedPan	Whether the account	boolean

		is involved in encryption true: the account is required to participate in encryption. false or no KEY:the account is not involved in encryption.	

6.13.4. EmvTermCfgConstrants

Const	Key value	Description	Bundle value
TERMCAP	termCap	Terminal Capabilities (9F33)	byte[3]
ADDTERMCAP	additionalTermCap	Terminal addition capabilities (9F40)	byte[5]
BATCHDATACAPTURE	BatchDataCapture	EC Terminal Support Indicator (9F7A)	byte[9]
COUNTRYCODE	countryCode	Terminal Country Code (9F1A)	byte[2]

TERMID	termId	Terminal Identification (9F1C)	byte[9]
TERMTYPE	termType	Terminal Type (9F35)	Byte
CURRENCYCODE	curCode	Transaction Currency Code (5F2A)	byte[2]

6.13.5. EmvOnlineRequest

Const	Key value	Description	Bundle value
PIN	Pin	Pin encrypted ciphertext	byte[8]
CARDSN	cardSn	Card serial number	byte[2]

6.13.6. EmvErrorConstrants

Const	Key value	Description	Bundle value
EMV_ERROR_CODE	EMV ERROR CODE	Emv error code	String

6.13.7. EmvProcessResult

Const	Key value	Description	Bundle value
SCRIPTRESULT	scriptResult	Process result	byte[]
EMVLOG	emvLog	EMV log	List<EmvCardLog>
ECBALANCE	ecBalance	e-cash balance	byte[12]

			(Format: ASC)

6.13.8. EmvCardLog

- AIDL filename

  EmvCardLog.aidl

- AIDL member list

Name	Type	Description
isAmtExist	Boolean	Transaction amount is identified
amt	String	Transaction amount (like it: 00001000)
isOtherAmtExist	boolean	Other amounts are identified
otherAmt	String	Other amounts
isDateExist	boolean	Whether transaction date exist
transDate	String	Date of transaction(YYMMDD)
isTimeExist	boolean	Whether transaction time exist
transTime	String	Time of transaction
isCntCodeExist	boolean	Whether country code exist
cntCode	String	country code(9F1A)
isCurExist	boolean	Whether Transaction Currency Code exist

curCode	String	Transaction Currency Code (5F2A)
isAtcExist	boolean	Whether Application Transaction Counter exist
atc	String	Application Transaction Counter(9F36)
is9Cexist	boolean	Whether Transaction Type exist
serveType	String	Transaction Type(9C)
isMerNameExist	boolean	Whether Merchant name address exist
merName	String	Merchant name address(9F4E)
tlvLen	int	Tlv length
tlv	byte［］	Other TLV

6.13.9. EmvChannelType

Const	Value	Description
FROM_ICC	0(int)	ICC
FROM_PICC	1(int)	RF IC

6.13.10. EmvDataSource

Const	Type	Description
FROMKERNEL	0(int)	From kernel
FROMCARD	1(int)	From card

6.13.11. EmvTransFlow

Const	Type	Description
FULL	0(int)	EMV full process
SIMPLE	1(int)	EMV simple process
QPASS	2(int)	QPASS process

6.13.12. EmvErrorCode

Const	Value	Description
EMV_ERR_SELAPP	273	Application selection error
EMV_ERR_SELAPP_PSE	289	PSE application selection error
EMV_ERR_SELAPP_PSE_UNSUPPORT	290	Card does not support PSE selection
EMV_ERR_SELAPP_APPLOCK	291	is locked
EMV_ERR_SELAPP_DIRSEL	292	Dir selection error
EMV_ERR_SELAPP_PARSE	293	PPSE parsing error

EMV_ERR_AIDLIST	305	AID list method selection error
EMV_ERR_ICCOP_SELECT AID	308	Send AID select command to return negative value
EMV_ERR_ICCOP_SELECT AID_DATA84	309	
EMV_ERR_ICCOP_SELECT AID_DATASFI	308	
EMV_ERR_ICCOP_SELECT AID_SFI	311	
EMV_ERR_SELECTAID_NO MATCH	312	
EMV_ERR_SELECTAID_SW 1W2_NO_9000	313	
EMV_ERR_SELECTAID_PA RSE_ERROR	314	
EMV_ERR_SELECTAID_DA TA_MISS	315	
EMV_ERR_INITAPP_ERR	529	Initialization application error
EMV_ERR_INITAPP_CHECK	545	

GPO		
EMV_ERR_INITAPP_GPO_UNPACK	546	
EMV_ERR_INITAPP_GPO_LEN	547	GPO data length is incorrect
EMV_ERR_INITAPP_GPO_77	548	
EMV_ERR_INITAPP_GPO_80	549	
EMV_ERR_INITAPP_GPO_NO82	550	
EMV_ERR_INITAPP_GPO_NO94	551	
EMV_ERR_INITAPP_SELACCOUNT	554	Account selection error
EMV_ERR_INITAPP_6985	555	ICC returns 6985
EMV_ERR_COMPLETE	2321	Failed to complete processing
EMV_ERR_COMPLETE_ADVICE	2337	Terminal requested to connect and forced notification, but failed to connect

EMV_ERR_COMPLETE_GAC	2338	The second GAC return is not 9000
EMV_ERR_COMPLETE_CID_INTERRUPT	2340	CID returned transaction aborted
EMV_ERR_COMPLETE_PARASE_GAC	2341	GAC parsing failed
EMV_ERR_ICCOP_POWERUP	2643	IC card power on error
EMV_ERR_ICCOP_POWERDOWN	2644	IC card power off error
EMV_ERR_ICCOP_L1_ERR	2642	APDU not returned