SDK API User's Guide (ETC)

Version 0.6.0

Display Audio

Solution Team

Release information

The following changes have been make to this document.

Change History

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Contact us

[11595] BundangYemiji Bldg. 12F, 31 Hwangsaeul-ro 258 beon gil, Bundang-gu, Sungnam-city, Gyeonggi-do, Korea.

TEL: 82-31-698-7400

FAX:82-31-698-7455

http://www.nexell.co.kr

Contents

Chap 1. Overview

1.1 Overview

이 문서는 Display Audio 개발을 위하여 제공되는 기타 SDK 들에 대해서 설명한 문서이다.

1.2 Feature

제공되는 SDK 들은 다음과 같다.

-. libnxconfig : private configuration (Android SharedPrefrence Modeling)

-. libnxsqlutils : SQLite database access. (support reading operation)

-. libnxdaudioipc : IPC Server / Client Engine, IPC engine wrapper

Chap 2. Private Configuration

2.1 Overview

Application 들의 개별 Configuration 을 관리하여 줄 수 있는 libnxconfig 를 제공하여 준다. 해당 library 는 Thread-safe 하지 못함으로 application 간 configuration 을 공유하는 목적으로는 사용이 부적합하다.

2.2 APIs

2.2.1 Open()

```
virtual int32_t Open(
        const char *pFile
) = 0;
```

Description

Open XML configuration file.

Parameter

-. pFile : XML Configuration file.

Parameter

0 is successful. -1 is failed.

2.2.2 Close()

```
virtual void Open(
        void
) = 0;
```

Description

Close XML configuration file.

Parameter

None.

Parameter

None.

2.2.3 Write()

```
virtual int32_t Write(
```

```
        const char *pKey,
        char *pValue
) = 0;
```

Description

Write Configuration.

Parameter

-. pKey : configuration key.

-. pValue : configuration value.

Parameter

0 is successful. -1 is failed.

2.2.4 Read()

```
virtual int32_t Read(
        const char *pKey,
        char **ppValue
) = 0;
```

Description

Read Configuration.

Parameter

-. pKey : configuration key.

-. ppValue : configuration value.

Parameter

0 is successful. -1 is failed.

2.2.5 Remove()

```
virtual int32_t Read(
        const char *pKey
) = 0;
```

Description

Remove Configuration.

Parameter

-. pKey : configuration key.

Parameter

0 is successful. -1 is failed.

2.2.6 Dump()

```
virtual void Dump(
        void
) = 0;
```

Description

Dump configuration for debugging.
Parameter None.
Parameter None.

Chap 3. SQL

3.1 Overview

Application 내에서 Database 를 읽기 위한 용도로 사용할 수 있는 SQLite Wrapper 를 제공하여 준다. 이는 해당 database 내의 table 전체에 대해서 query 하여 읽도록 설계되어있다. SQLite 는 File 기반의 database 로 하나의 process 가 database 에 접근하는 동안 data 의 무결성을 보장한다.

3.2 APIs

3.2.1 NX_SQLiteGetData()

```
int32_t NX_SQLiteGetData(
        const char *pDatabase,
        const char *pTable,
        int32_t (*cbFunc)(void*, int32_t, char**, char**),
        void *pObj = NULL,
) = 0;
```

Description

Access database using SQLite.

Parameter

-. pDatabase : database name.
-. pTable : table name.
-. cbFunc : result data callback
int32_t cbFunc(void *pObj, int32_t iColumnNum, char **ppColumnValue, char **ppColumnName)
-. pObj : private handle
-. iColumnNum : column number of table.
-. ppColumnValue: column value of table.
-. ppColumnName: column name of table.
-. pObj : private handle.

Return Value

0 is successful, -1 is failed.

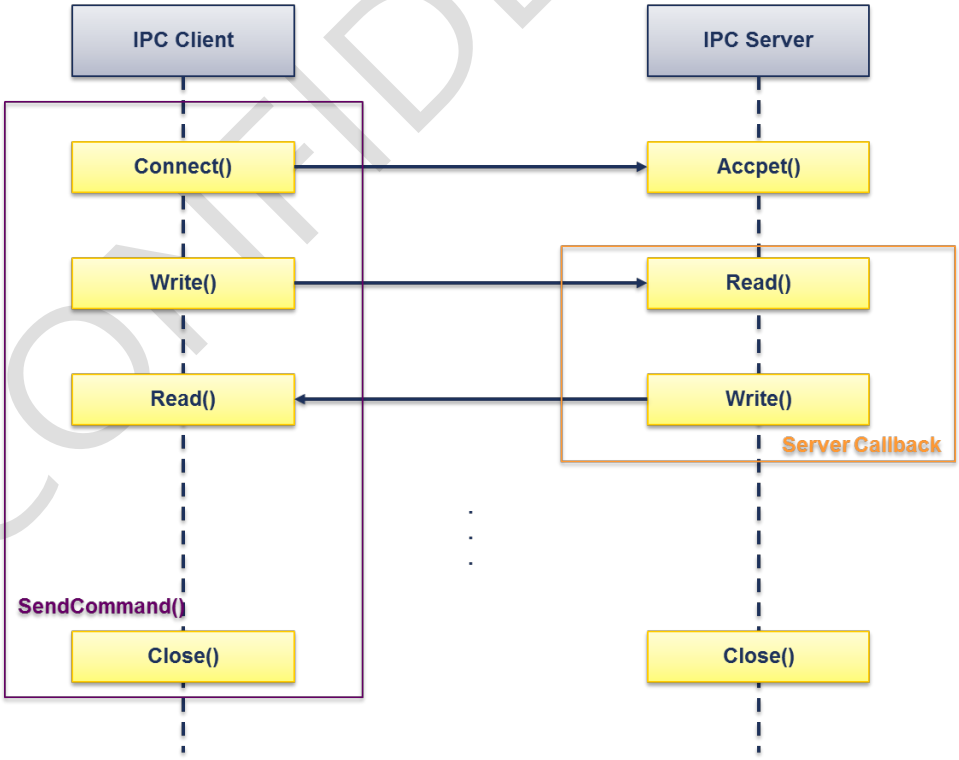
Chap 4. IPC

4.1 Overview

Display Audio Manager 와 개별 Application 간의 통신을 위한 IPC Engine 을 제공한다. Display Audio 내에서는 이를 통하여 Display Audio Manager 와 통신을 하며 이를 통하여 화면 전환 및 기타 Command 들을 전달하는 용도로 사용한다.
제공되는 IPC Engine 은 Unix Domain Socket 기반이며, 동인한 Socket Name 에 대한 단일 connection 만을 지원하도록 설계되어있다.

4.2 Block Diagram

IPC 는 Server 와 Client 관련 API 를 제공하며, 아래와 같은 구조로 되어있다.



4.3 APIs

4.3.1 IPC Manager

IPC 통신을 위한 기본적인 Library 이다.

4.3.1.1 GetIpcManagerHandle()

```
extern NX_IIpcManager* GetIpcManagerHandle(
        void
);
```

Description

Get IPC Manager handle.

Parameter

None.

Return Value

NX_IIPcManager NULL is failed

4.3.1.2 Write()

```
virtual int32_t Write(
        int32_t iSock,
        int32_t *pBuf,
        int32_t iSize
) = 0;
```

Description

Write data.

Parameter

-. iSock : socket file descriptor.

-. pBuf : buffer for writing.

-. iSize : writing size.

Return Value

If it is successful, return value is written size.

4.3.1.3 Read()

```
virtual int32_t Read(
        int32_t iSock,
        int32_t *pBuf,
        int32_t iSize
) = 0;
```

Description

Read data.

Parameter

-. iSocket	: socket file descriptor.
-. pBuf	: buffer for reading.
-. iSize	: buffer size.

Return Value

If it is successful, return value is read size.

4.3.1.4 StartServer()

```
virtual int32_t StartServer(
        const char *pSock
) = 0;
```

Description

Start IPC server.

Parameter

-. pSock	: socket name.

Return Value

If it is successful, return value is zero.

4.3.1.5 StopServer()

```
virtual int32_t StopServer(
        void
) = 0;
```

Description

Stop IPC server.

Parameter

None.

Return Value

If it is successful, return value is zero.

4.3.1.6 RegServerCallbackFunc()

```
virtual void RegServerCallbackFunc(
        int32_t (*cbFunc)( int32_t, uint8_t *, uint8_t *, int32_t, void * ),
        void *pObj;
) = 0;
```

Description

Register callback for Processing server data.

Parameter

-. cbFunc	: processing server data function.

int32_t (*cbFunc)(int32_t iSock, uint8_t *pSendBuf, uint8_t *pRecvBuf, int32_t iMaxBufSize, void *pObj)

-. iSock	: connected client socket.
-. pSendBuf	: buffer for sending.

-. pRecvBuf : buffer for receving. -. iMaxBufSize : Max buffer size for receving / sending -. pObj : private handle. -. pObj : private handle.
Return Value None.

4.3.1.7 SendCommand()

`virtual void SendCommand(`
`const char *pSock,`
`uint8_t *pSendBuf,`
`int32_t iSendSize,`
`uint8_t *pRecvBuf,`
`int32_t iRecvMaxSize`
`) = 0;`

Description Send IPC Command for single transaction. (single write and single read)
Parameter -. pSock : socket name of server. -. pSendBuf : buffer for sending. -. iSendSize : buffer size of sending. -. pRecvBuf : buffer for receving. -. iRecvMaxBufSize : max buffer size of receiving.
Return Value If it is successful, return value is actual reading size.

`virtual void SendCommand(`
`const char *pSock,`
`int32_t (*cbFunc)( int32_t, uint8_t*, uint8_t*, int32_t, void *),`
`void *pObj`
`) = 0;`

Description Send IPC Command for multiple transaction. (multiple write and single read)
Parameter -. pSock : socket name of server. -. cbFunc : callback for multiple writing and reading. int32_t (*cbFunc)(int32_t iSock, uint8_t *pSendBuf, uint8_t *pRecvBuf, int32_t iMaxBufSize, void *pObj) -. iSock : connected client scoekt. -. pSendBuf : buffer for sending. -. pRecvBuf : buffer for receving. -. iMaxBufSize : Max buffer size for receving / sending

-. pObjf : private handle. -. pObj : private handle
Return Value If it is successful, return value is return value of callback.

4.3.2 IPC Packet

IPC 통신을 위한 Packet 을 만들거나 읽기 위한 Library 로서, Packet 의 구조는 다음과 같다.

-. Key(4 Bytes) : Packet 을 구분하기 위한 Key Value.

-. Payload Size(2Bytes) : Payload Size. (2 Byte 값으로 최대 65535 개)

-. Payload Buffer : Payload Buffer. (Big Endian)

KEY (4Bytes)	Payload Size (2Bytes)	Payload Buffer (n Bytes) : buffer[0] .. buffer[n]

4.3.2.1 NX_IpcMakePacket()

```
int32_t NX_IpcMakePacket(
        uint32_t iKey,
        void *pPayload,
        int32_t iPayloadSize,
        void *pOutBuf,
        int32_t iOutMaxSize
);
```

Description

Make packet for IPC.

Parameter

-. iKey : key value.

-. pPayload : buffer for payload.

-. iPayloadSize : payload size.

-. pOutBuf : output buffer for making packet.

-. iOutMaxSize : max output buffer size.

Return Value

On Success, the number of byte is returned. Otherwise, -1 is returned.

4.3.2.2 NX_IpcParsePacket()

```
int32_t NX_IpcParsePacket (
        void *pInBuf,
        int32_t iInBufSize,
```

```
        uint32_t *iKey,
        void *ppPayload,
        uint32_t *iPayloadSize
);
```

Description

Parse packet for IPC.

Parameter

-. pInBuf	: buffer
-. iInBufSize	: buffer size.
-. iKey	: key value of received buffer.
-. ppPayload	: payload value for received buffer.
-. iPayloadSize	: payload size for received buffer.

Return Value

On Success, zero is returned. Otherwise, -1 is returned.

4.3.2.3 NX_IpcDumpPacket()

```
void NX_IpcDumpPacket (
        void *pInBuf,
        int32_t iInBufSize,
        const char *pFunc = NULL,
        int32_t iLien = 0
);
```

Description

Dump Packet for debugging.

Parameter

-. pInBuf	: buffer
-. iInBufSize	: buffer size.
-. pFunc	: function name by calling this function. (__FUNCTION__)
-. iLine	: line by calling this function. (__LINE__)

Return Value

None.

4.3.3 IPC Utils

Display Audio 에서 쓰기 쉽게 IPC 통신과 관련된 기능을 쓰기 쉽게 Wrapping 한 library 이다.

4.3.3.1 NX_GetProcessInfo()

```
int32_t NX_GetProcessInfo(
        NX_PROCESS_INFO *pInfo
);
```

Description

Make process information for IPC.
Parameter -. pInfo : Process Information for IPC.
Return Value On Success, zero is returned. Otherwise, -1 is returned.

4.3.3.2 NX_RequestCommand()

```
int32_t NX_RequestCommand(
        NX_IIpcManager* pIpcManager,
        NX_PROCESS_INFO* pInfo,
        int32_t iCommand
);
```

Description Send command to Display Audio Manager.
Parameter -. pIpcManager : IPC manager handle by making GetIpcManagerHandle(). -. pInfo : Process Information by making NX_GetProcessInfo().. -. iCommand : Reserved command for communication.
Return Value On Success, received key value is returned. Otherwise, -1 is returned.

```
int32_t NX_RequestCommand(
        NX_IIpcManager* pIpcManager,
        void *pPayload,
        int32_t iPayloadSize,
        int32_t iCommand
);
```

Description Send payload to Display Audio Manager.
Parameter -. pIpcManager : IPC manager handle by making GetIpcManagerHandle(). -. pPayload : payload for sending to Display Audio Manager. -. iPayloadSize : payload size for sending. -. iCommand : Reserved command for communication.
Return Value On Success, received key value is returned. Otherwise, -1 is returned.

4.3.3.3 NX_DumpHex()

```
int32_t NX_DumpHex(
        const void *pData,
        int32_t iSize
```

);
Description Dump data for debugging.
Parameter -. pData : buffer for dump. -. iSize : buffer size for dump.
Return Value None.

Chap 5. History

5.1 Known Issue.

Not Yet.

5.2 To Do List

Not Yet.