XEngine\_StreamMedia Service Docment

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# Preface

## Reader

Development ,tester,qa

## **Overview**

This document contains related technical descriptions and interface definitions

## Related modules

This service uses XEngine as the development package. To use this service code, the XEngine development environment must be configured and installed.

# 一 Technical structure

The Service implemented through c/c++,Protocol use to tcp.,Each protocol has its own separate processing process, and pushes the stream to the streaming media service through the unified CenterApp.

XEngine\_CenterApp: Streaming server

XEngine\_JT1078App: JT1078 Streaming Service

XEngine\_SDKApp: Device manufacturer SDK transcoding stream service

XEngine\_ForwardApp:Stream Forward Service,pull other stream or device push to other stream service(recommend)

# 二 Configure Environment

## 2.1 XEngien Env

Need to download XEngine.

Download address:https://gitee.com/xyry/libxengine

<https://github.com/libxengine/xengine>

Configure the environment as described in the XEngine Readme file

### 2.2 Windows

### 2.1.2 complie and run

When you complete with configuration.you can come in code path.open XEngine.sln by vs

If environment not have error.complie is succesed

And you need copy file under XEngine\_Release to your complied dir.next step copy file under XEngine depend module to your complied dir.

Note: You can run the program directly, the system will prompt you what you need, you can directly enter the XEngine directory to search,you can also use vscopy-\*.bat to copy dependent module.

## 2.2 LINUX

### 2.2.1 Evnironment Configure

If you use linux.you must running on ubuntu20.04 or centos8.x(Compatible with Centos-like systems)...

### 2.2.2 Complie and Run

Configure complete.you can complie it.open terminal in you xengine\_storage dir and execute command.

complie:make

install:make FLAGS=InstallAll

clean:make FLAGS=CleanAll

If there is no error.you can see complied XEngine\_\*App file in XEngine\_Release

## 2.3 Version Requirements

### 2.3.1 System Version

Minimum version requirements:

WINDOWS: win7 sp1

Ubuntu:20.04

Centos:8.x

MacOS:12

### 2.3.2 Software Version

Minimum version requirements:

XEngine:V7.38

## 2.4 How To Use

According to your needs, you need to enable different services, XEngine\_CenterApp is mandatory, and other services are optional. Each service has a separate configuration file, which can only be used after the user has successfully configured it

# 三 Interface Protocol

For specific protocols, please refer to the header file:XEngine\_UserProtocol.h

## 3.1 X Stream Protocol

### 3.3.1 Craete Stream

The TOKEN field for creating a stream protocol is optional. If filled in, it indicates the unique ID of the stream, so that users can clearly know their push stream ID. For example, if the stream ID is 123, then your push address is: http://192.168.1.10 /live/123

#### 3.3.1.1 Request

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REQCREATE

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE)

byVersion = 0

byIsReply = TRUE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:

//Device information, if the token is not specified, the play address is composed according to this field: \*/device\_channel\_live, and the XENGINE\_PROTOCOLDEVICE structure is not required.

XENGINE\_PROTOCOLDEVICE

//Audio and video parameter protocol. This option is not required, it can be attached or not, no audio is attached

XENGINE\_PROTOCOL\_AVINFO

#### 3.3.1.2 Reply

Reply only when reply is 1

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REPCREATE

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE)

byVersion = 0

byIsReply = TRUE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:

//The reply content is the request content

### 3.3.2 Destory Stream

#### 3.3.2.1 Request

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REQDESTROY

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE)

byVersion = 0

byIsReply = TRUE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:

XENGINE\_PROTOCOLDEVICE

#### 3.3.2.2 Reply

Reply only when reply is 1

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REPDESTROY

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE)

byVersion = 0

byIsReply = TRUE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:

//The reply content is the request content

### 3.3.3 Push Stream

#### 3.3.3.1 Request

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REQPUSH

unPacketSize = AVDATA

byVersion = 0

byIsReply = TRUE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:AV Code Datas

#### 3.3.3.2 Reply

none

### 3.3.4 Pull Stream

#### 3.3.4.1 Request

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REQPULL

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE)

byVersion = 0

byIsReply = TRUE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:

XENGINE\_PROTOCOLDEVICE

#### 3.3.4.2 Reply

The wReserver field is 0 means success, and other values is failure. The failed values are as follows:

1:not found stream id

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_REPXPULL

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE)

byVersion = 0

byIsReply = FALSE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:

//The reply content is the request content

### 3.3.5 Notify Protocol

The notification protocol is used to handle the push-pull state, inform the other party of the current status of receiving and processing data, and let the sender or receiver adjust the sending frequency!

The pull-stream protocol is the same as the push-stream protocol, but the CODE value is different, which will not be demonstrated in the following.

Also note: the push stream protocol is not used for pull stream, similarly, the pull stream notification protocol cannot be used for push stream

Protocol Header:

wHeader = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_HEADER

xhToken = Stream Token

unOperatorType = ENUM\_XENGINE\_COMMUNICATION\_PROTOCOL\_TYPE\_SMS

unOperatorCode = XENGINE\_COMMUNICATION\_PROTOCOL\_OPERATOR\_CODE\_SMS\_STATPUSH

unPacketSize = sizeof(XENGINE\_PROTOCOLDEVICE) + sizeof(XENGINE\_SMSPROTOCOL)

byVersion = 0

byIsReply = FALSE

wReserve = 0

wPacketSerial = 0

wTail = XENGIEN\_COMMUNICATION\_PACKET\_PROTOCOL\_TAIL

Protocol Body:sizeof(XENGINE\_PROTOCOLDEVICE) + sizeof(XENGINE\_SMSPROTOCOL)

## 3.2 JT1078 Stream Protocol

Refer to the JT1078-2014 (2016) document customized for the platform of the Ministry of Communications

## 3.3 GB28181 Stream Protocol

Refer GB/T28181-2016 Docment

## 3.4 SDK Stream Protocol

The Protocol Applies to XEngine\_SDKApp

### 3.4.1 Play

#### 3.4.1.1 Request

Interface:HTTP

Method:GET

Address:http://127.0.0.1:5601/api?function=play&token=10001001&channel=1&live=1&audio=1

Parament:function:Operator Method

Token:Plugin configure to token

Channel:Channel number

Live:1 is live,2 is record

audio:1 enable audio.0 disable audio

#### 3.4.1.2 Reply

Code 0 is sucess,other is failed

{

"code":0,

"msg":"sucess"

}

### 3.4.2 Stop

#### 3.4.2.1 Request

Interface:HTTP

Method:GET

Address:http://127.0.0.1:5601/api?function=stop&token=10001001&channel=1&live=1

Parament:function:Operator Method

Token:Plugin configure to token

Channel:Channel number

Live:1 is live,2 is record

#### 3.4.2.2 Reply

Code 0 is sucess,other is failed

{

"code":0,

"msg":"sucess"

}

## 3.5 Convert Push Stream Protocol

Token is control by yourself or system create,when you stop this stream need this token.otherwise this stream is always exist.

The Protocol Applies to XEngine\_ForwardApp

### 3.5.1 Play

#### 3.5.1.1 Request

Interface:HTTP

Method:POST

Address:http://127.0.0.1:5602/api?function=play&token=100010001

Parament:function:Operator Method

Token:Stream Number

Payload:RTSP or other protocol play address

{

"tszAVUrl":"rtsp://wowzaec2demo.streamlock.net/vod/mp4:BigBuckBunny\_115k.mp4"

}

#### 3.5.1.2 Reply

{

"code":0,

"msg":"success",

"token":"100010001"

}

### 3.5.2 Stop

#### 3.5.2.1 Request

Interface:HTTP

Method:POST

Address:http://127.0.0.1:5602/api?function=stop&token=10001001

Parament:function:Operator Method

Token:Stream Number

#### 3.5.2.2 Reply

{

"code":0,

"msg":"success"

}

### 3.5.3 Enum

Can be enum all play list

#### 3.5.3.1 Request

Interface:HTTP

Method:GET

Address:http://127.0.0.1:5602/api?function=list

Parament:function:Operator Method

#### 3.5.3.2 Reply

{

"Array":[

{

"tszToken":"100010001",

"tszAVUrl":"rtsp://wowzaec2demo.streamlock.net/vod/mp4:BigBuckBunny\_115k.mp4"

}

],

"Count":1,

"code":0,

"msg":"success"

}

# 四 Configure Description

## 4.1 Service Configure

Basic Configure File:XEngine\_Config.json

### 4.1.1 basic configure

* tszSMSUrl:Push Address
* tszIPAddr: location ip address
* bDeamon: 1 deamon process run 0 is terminal run
* nCenterPort:tcp port
* nHttpPort:http port

### 4.1.2 Max Configure

XMax Configure

* nMaxClient Allow Max Client Count
* nMaxQueue Allow Max Queue
* nIOThread:network io process threads number
* nCenterThread:tcp process threads number
* nHttpThread:http process threads number

### 4.1.3 Time Configure

XTime Configure

* nTimeCheck:check time
* nCenterTimeOut:how time check once
* nHttpTimeOut:same nTCPTimeOut

### 4.1.4 Database Configure

XSQL Configure,MYSQL Service

* tszSQLAddr:Database Address
* nSQLPort:Database Port
* tszSQLUser:User
* tszSQLPass:Password

### 4.1.5 Log Configure

XLog Configure

* MaxSize:Log file size
* MaxCount:Log File Number
* LogLeave:Allow save level

## 4.2 JT1078 Service

Configure File:XEngine\_JT1078Config.json

### 4.2.1 Base Configure

* tszIPAddr:Local Address
* bDeamon:1 deamon process run 0 is terminal run
* nAudio:Audio Channle Number,greater than 0 enable
* nStreamPort:Live Stream Port
* nRecordPort:Record Stream Port

### 4.2.2 Max Configure

XMax Configure

* nMaxClient:Allow Max Client Count
* nMaxQueue:Allow Max Queue
* nIOThread:network io process threads number
* StreamThread:Live Stream process threads number
* RecordThread:Record Stream process threads number

### 4.2.3 Time Configure

XTime Configure

* nTimeCheck:check time
* nStreamTimeout:Live Stream Timeout
* nRecordTimeout:Record Stream Timeout

### 4.2.4 Client Configure

XClient Configure

* tszIPAddr:Service Address
* nPort:Server Port
* nMaxConnect:Client Connect Number

## 4.3 SDK Configure

Configure File:XEngine\_SDKConfig.json

### 4.3.1 Base Configure

* tszIPAddr:Local Address
* bDeamon:1 deamon process run 0 is terminal run
* nHttpPort:Server Port

### 4.3.2 Max Configure

XMax Configure

* nMaxClient:Allow Max Client Count
* nMaxQueue:Allow Max Queue
* nIOThread:network io process threads number
* HttpThread:Http threads number

### 4.3.3 Time Configure

XTime Configure

* nTimeCheck:check time
* nHttpTimeout:Http Client Timeout

### 4.3.4 Client Configure

XClient Configure

* tszIPAddr:Service Address
* nPort:Server Port
* nMaxConnect:Client Connect Number

### 4.3.5 Plugin Configure

XPlugin Configure

* PluginEnable:whether to enable
* PluginToken:device handle
* PluginName:name
* PluginAddr:net address
* PluginPort:port
* PluginUser:username
* PluginPass:password
* PluginFile:file address

## 4.4 Stream Forward Configure

Configre File:XEngine\_ForwardConfig.json

### 4.4.1 Base Configure

* tszIPAddr:Local Address
* bDeamon:1 deamon process run 0 is terminal run
* nHttpPort:Server Port

### 4.3.2 Max Configure

XMax Configure

* nMaxClient:Allow Max Client Count
* nMaxQueue:Allow Max Queue
* nIOThread:network io process threads number
* HttpThread:Http threads number

### 4.3.3 Time Configure

XTime Configure

* nTimeCheck:check time
* nHttpTimeout:Http Client Timeout

# appendix

## Appendix update log