PallyCon CLI Packager Guide

(Version 1.0, 2017.08.18)

Table of contents

Overview
Integration Structure and Environment
Command Line Arguments
Error Code
Example

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

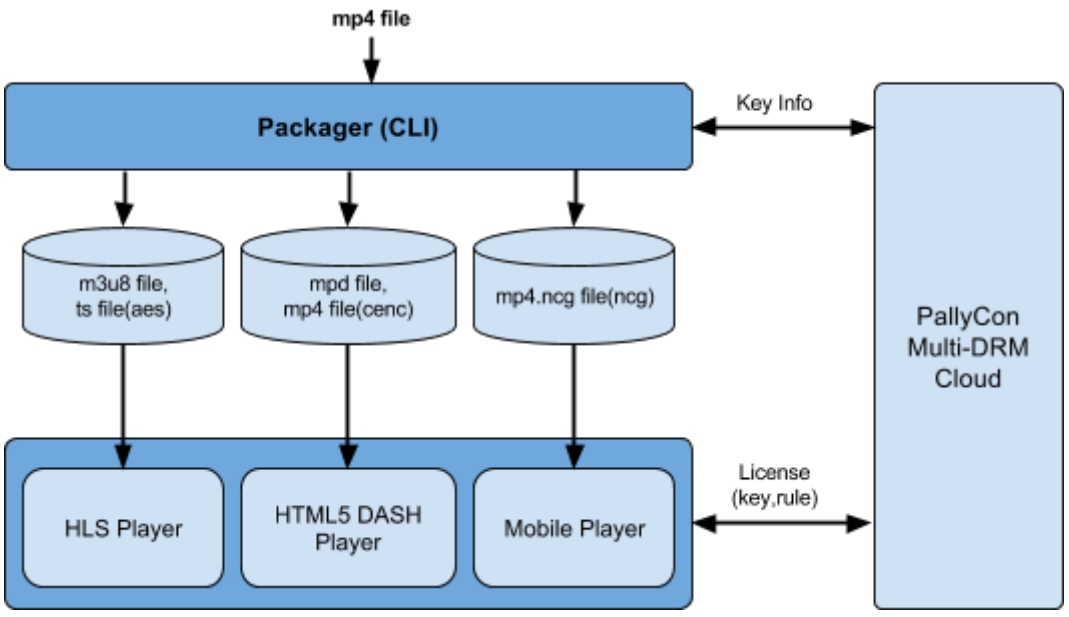
1. Overview

This document explains about PallyCon Multi-DRM cloud service's content packaging concept and how to use the packager tool.

In PallyCon Multi-DRM service, there are four types of content packaging mode.

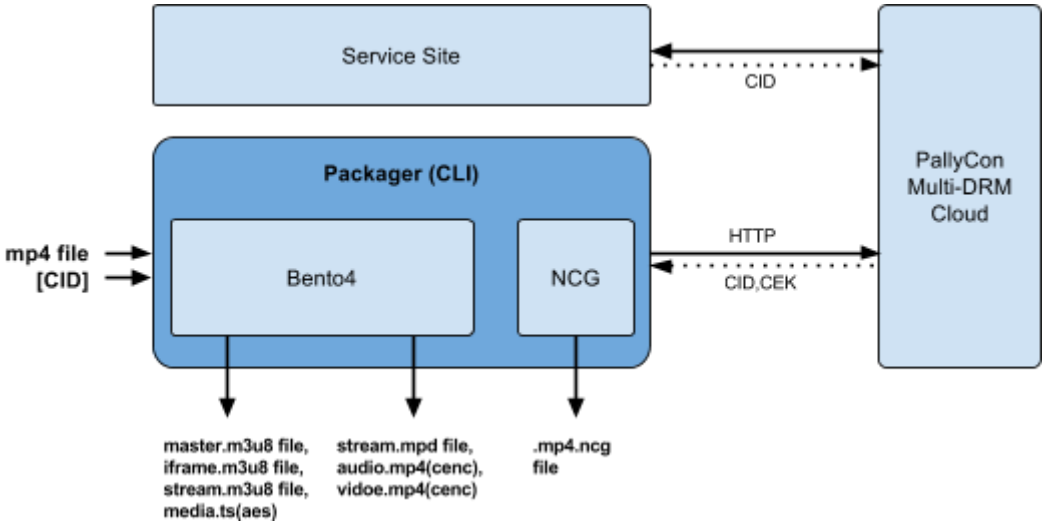
1) --ncg mode which is INKA Entworks' proprietary DRM Spec. (NCG : Netsync Content Guard)
2) --dash mode which is an encryption speck for MPEG-DASH CENC and used with Widevine Modular and PlayReady DRM.
3) --hls mode which is an encryption spec for HLS-AES and used with FPS(FairPlay Streaming) DRM.
4) --hls-ncg mode which is an encryption spec for HLS-AES and used with NCG DRM.

PallyCon Cloud Packager(CLI) supports all of the above DRM specs.
CID(Content ID) can be set by parameter input or CID Issue gateway callback page.



Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

2. Integration Structure and Environment



PallyConPackager executive module runs with PallyCon Multi-DRM Cloud server.
PallyCon Cloud server manage Content Key data by service site, and issues license by finding Key(CEK) bound with CID when Player requests DRM License.

※ There must be available disk space on the system at least two-times larger than contents.

※ The original file name is allowed in English only.

Since HLS-NCG & HLS-AES & DASH-CENC Packager utilizes Bento4 open-source module, the module must be installed on the system as below. (CentOS, Ubuntu and Windows version available)

1) **Install Bento4**
   - Download latest version binary for Linux from the below site.
   https://www.bento4.com/downloads/

   - Extract downloaded file in PallyConPackager folder and rename its folder to “Bento4”.
   PallyConPackager ← exe file
   Bento4 ← directory (has bin, utils folders)

2) **Install Python 2.7x version**
   #python -V (check if the version is 2.7x)

   (To use unicode filename)
   Open usr/lib64/Python2.7/site.py file in editor -> Find setencoding() function and update first if statement from 0 to 1

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

```
[site.py]
...
def setencoding():
        """Set the string encoding used by the Unicode implementation.  The
        default is 'ascii', but if you're willing to experiment, you can
        change this."""
        encoding = "ascii" # Default value set by _PyUnicode_Init()
        if 0:   #<-- replace 0 with 1
        # Enable to support locale aware default string encodings.
        import locale
        loc = locale.getdefaultlocale()
        if loc[1]:
        encoding = loc[1]
        if 0:
        # Enable to switch off string to Unicode coercion and implicit
        # Unicode to string conversion.
        encoding = "undefined"
        if encoding != "ascii":
        # on Non-Unicode builds this will raise an AttributeError...
        sys.setdefaultencoding(encoding) # Needs Python Unicode build !
```

3) **Install glibc 2.14+ version**
   #getconf -a | grep libc

3. Command Line Arguments

Command format

```
./PallyConPackager --site-id value --access-key value --contents-id value --i value --o value --ncg
--dash --hls
```

Arguments

Name	Value	Description
--site-id	string	PallyCon Service Site ID (4 bytes)
--access-key	base64 encoding	Access authentication Key (can be found on PallyCon Admin Site) - Go to 'Settings' page on Admin site

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

--contents-id	string	[Optional] Content ID manual input, maximum 200 bytes If this parameter is omitted, Gateway callback page will be used to get CID for the content
--ncg	None	enable NCG Packaging - output will be ‘filename’.mp4.ncg
--dash	None	enable DASH-CENC Packaging output folder name will be the same as original file, and there will be three files created as below. media-audio-und.mp4, media-video-1.mp4, stream.mpd
--hls	None	Performed HLS-AES Packaging. A folder named 'HLS_source file name_extension' is created and the following files are created below it. media.ts, stream.m3u8, iframe.m3u8, master.m3u8
--hls-ncg	None	Performed HLS-NCG Packaging. A folder named 'HLS-NCG_source file name_extension' is created and the following files are created below it. media.ts, stream.m3u8, iframe.m3u8, master.m3u8 (key.ncg file created when using manual mode)
--i	string	Original filename. When two or more files are input, it is applied to Adaptive-Streaming packaging. For normal Adaptive-Streaming Pack, input files with different bit rates only
--o	string	Output folder name. Full path input required
--manual-mode	None	CID, CEK, and License acquisition URLs are manually entered without being issued through server connection. 1. The --contents-id, --encryption-key entry is required. 2. Default value of LA-URL is PallyCon Cloud. 3. KID is only for DASH packaging. 4. Unnecessary to use --access-key.
--encryption-key	string	Base64 Encoded CEK (16 bytes or 32 bytes) - 32 bytes key format : KEY (16 bytes) + IV (16 bytes). - Manually specified only when --manual-mode is applied. - 32 bytes must required when use --ncg and --hls mode.
--license-url	string	License acquisition URL - Manually specified only when --manual-mode is applied - Default : https://tokyo.pallycon.com/ri/licenseManager.do
--key-id	string	Base64 Encoded key id for CENC encryption (fixed 16 bytes) - Manually specified only when --manual-mode is applied
--fragment-duration	string	Segment duration apply for DASH and HLS (milliseconds) - Packed in segments of duration - This option applies only for dash packaging. - Recommended value : 6000 (ms)

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

Result format

```
<?xml version="1.0" encoding="UTF-8"?>
<PallyconPackager>
<RESULT>0</RESULT>
</PallyconPackager>
```

Error code(RESULT): “0” if succeeded , other code if failed. (refer to ‘4.Error Code’ section)

4. Error Code

Error Code	Description
0	Success
1101	No parameter input
1102	Invalid input parameter (refer to INFO)
1103	Invalid number of parameters
1201	Cannot find the file in the path
1202	Cannot access the file (access right or filename issue)
1203	Failed to create file/folder. (too long path)
1204	Failed to create file/folder. (too long filename)
1205	Failed to create file/folder. (Insufficient disk space)
1206	Failed to move the file to the folder.
1207	Failed to get file size.
2001	An error occurred while sending request to server.
2002	An error returned from server. (refer to INFO)
2003	Invalid block size
2004	No private key found.
2005	Invalid private key

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

5. Example

* You need to sign up on PallyCon cloud service to get your site id and access key.

HLS-NCG Packaging

```
#./PallyConPackager --site-id ‘your site id’ --access-key ‘your access key’ --contents-id testcid
--hls-ncg --i test.mp4 --o /root/output

packaging result
#cd /root/output/HLS_test_mp4 (below four files will be created in the folder)
  media-1/media.ts
  media-1/stream.m3u8
  media-1/iframe.m3u8
  master.m3u8
```

HLS-AES Packaging

```
#./PallyConPackager --site-id ‘your site id’ --access-key ‘your access key’ --contents-id testcid
--hls --i test.mp4 --o /root/output

packaging result
#cd /root/output/HLS_test_mp4 (below four files will be created in the folder)
  media-1/media.ts
  media-1/stream.m3u8
  media-1/iframe.m3u8
  master.m3u8
```

DASH-CENC Packaging

```
#./PallyConPackager --site-id ‘your site id’ --access-key ‘your access key’ --contents-id testcid
--dash --i test.mp4 --o /root/output

packaging result
#cd /root/output/test_mp4 (below three files will be created in the folder)
  media-audio-und.mp4
  media-video-1.mp4
  stream.mpd
```

NCG Packaging

```
#./PallyConPackager --site-id ‘your site id’ --access-key ‘your access key’ --contents-id testcid
--ncg --i test.mp4 --o /root/output

packaging result
#cd /root/output (below one file will be created in the folder)
  test.mp4.ncg
```

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved

DASH-CENC, HLS-AES Adaptive-Streaming Packaging

#./PallyConPackager --site-id ‘your site id’ --access-key ‘your access key’ --contents-id testcid --dash --hls **--i test.mp4 test_4Mbps.mp4 test_8Mbps.mp4** --o /root/output

packaging results
#cd /root/output/ (below each output files and directories will be created in the folder)
HLS_test_mp4
DASH_test_mp4

NCG Packaging (using manual mode)

#./PallyConPackager --ncg --site-id ‘your site id’ **--manual-mode --contents-id testcid --encryption-key ‘your fixed 32 bytes ncg cek’ --license-url ‘your license acquisition url’** --i test.mp4 --o /root/output

packaging result
#cd /root/output (below one file will be created in the folder)
test.mp4.ncg

DASH, HLS Packaging (using manual mode)

#./PallyConPackager --dash --hls --site-id ‘your site id’ **--manual-mode --contents-id testcid --encryption-key ‘your 32 bytes cek’ --key-id ‘your 16 bytes kid’ --license-url ‘your license acquisition url’** --i test.mp4 --o /root/output

packaging result
#cd /root/output/ (below each output files and directories will be created in the folder)
HLS_test_mp4
DASH_test_mp4

DASH Packaging (using fragment duration)

#./PallyConPackager --site-id ‘your site id’ --access-key ‘your access key’ --contents-id testcid **--dash --fragment-duration ‘duration(milliseconds)’** --i test.mp4 --o /root/output

packaging result
#cd /root/output/DASH_test_mp4 (below three files and folders under the folder)
audio
video
stream.mpd

Copyright © 2016 INKA Entworks, Inc. All Rights Reserved