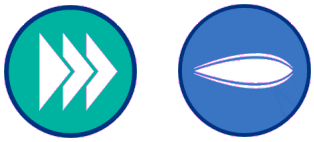

Packet Ship *Streamline* Media Server

Release Note

3.1 "Antigua" Update 3

Package	Version	Revision
ps-streamd	**3.1.3**	**1**
ps-index-mpeg2ts	**3.1.3**	**1**
ps-analyse-mpeg2ts	3.1.2	1

Release Note

The 3.1 “Antigua” Update 3 release of the Packet Ship Streamline media server contains a critical fix to the HLS server, support for indexing files before encryption, fixes to the indexer to handle some unusual encodings, and an extended URL syntax for catch-up TV:

- Fix crash in HLS controller when client uses large numbers of parallel connections
- Fix crash on stream with empty playlist
- Other HLS optimisations
- Allow for indexes with no I-frames
- Allow indexer to copy frames to an external frames file
- Make trimming PMT in trick play optional
- Handle unusual encodings better in indexer and server
- Allow RAW/RAW/TCP transport to specify TCP interleave in RTSP
- Extended URL syntax for Timeline capture integration
- Configurable live delay

This update is critical for any server using HLS, optional for any other protocol unless specific encoding support is required.

HLS crash fix

If a client used large numbers of simultaneous connections using the same session ID it was possible for the HLS controller to crash – this has been fixed.

The server also now protects itself from a client using multiple simultaneous connections to avoid creation of large numbers of streams. If a client requests a chunk using the same session ID as is already active on another connection, the new request will be failed.

Empty playlist crash fix

If through misconfiguration a playlist had nothing in it, a stream requesting it would fail but could crash the server – this has been fixed.

HLS optimisations

The HLS server has been optimised to avoid unnecessary index file accesses when a client is streaming sequentially. The logging of HLS accesses has also been improved to log the client address and avoid spurious 'end of stream' messages at log level 2.

Allow for indexes with no I-frames

Although the indexer can output an index for a non-video or encrypted video file with “`--seek-only`” or “`--seek-pcr-only`”, the server would still try to align to a video I-frame on seek, which would end up seeking to the end of the file. I-frame alignment can now be disabled by setting **`<iframe align="no"/>`** in the **`<index>`** section of the **`<file>`** input. If not present, it defaults to 'yes' and gives the previous behaviour.

```
<inputs>
  <file>
    <index>
      …
      <iframe align="no"/>
      …
    </index>
  </file>
</inputs>
```

External frames files

With some types of Conditional Access encryption it may not be possible to index the encrypted asset, either because the frame structure the indexer needs is hidden by the encryption, or because the encryption cannot survive the frame selection process necessary for trick play, or both.

In this case, in the old (2.x) indexing system it was possible to index the asset before encryption and then use the index containing the unencrypted I-frames. With the move to the smaller indexes which just refer to data in the original asset in 3.x, this option was no longer available.

Indexer options

To reinstate this option the indexer can now extract the I-frame data to an external 'frames file', conventionally given the suffix “.psf”. The new “`--index-external-frames`” or “`-Ix`” option allows this, and creates a frames file with the name of the original asset plus the “`.psf`” suffix, alongside the usual “`.psi2`” file. Both files need to be distributed along with the original asset to enable trickplay.

A specific frames filename instead of the default '.psf' can be specified with “`--index-external-file <file>`” or “`-IX <file>`”, which also automatically turns on external frames generation.

Server configuration

The new ps-streamd server has been updated to allow use of external frames files. The fact that an external frames file has been used is signalled in the '.psi2' index, but the filename is generated from the asset filename with a suffix in the same way as the index file itself. By default the suffix is of course also '.psf' but this can be changed with an <frames suffix> option in the <directory> section:

```
<directory>
  <index suffix=".psi2"/>
  <frames suffix=".psf"/>
  …
</directory>
```


Synchronising offsets

One problem with indexing the asset before encryption is that if the encryption system changes the size of the asset file – for example by adding CA packets, or padding – then the offsets for seeking will no longer be correct in the index. This can result both in seeks to the wrong place (getting worse towards the end of the file) and also missing I-frame alignment, which may cause display errors on some clients.

To solve this, the indexer can synchronise the offsets in the index to the encrypted asset rather than the original one, even through it is indexing the original. This is done with a new "`--offset-file <file>`" or "`-O <file>`" option, where <file> is the encrypted version of the file.

Trimming PMT in trick play

When the video server generates I-frame data for trick play it has the option (usually enabled) to filter out any non-video packets, other than CA packets. In previous 3.x versions the indexer would also trim the PMT to indicate this.

However, some clients get confused by the change in PMT, and fail to re-establish audio on return to trick play. Hence this has now been made optional with a "`--trim-pmt`" or "`-T`" option, since presence of PIDs in the PMT that are not in fact in the stream is not really a problem. The default behaviour is now more like the 2.3 indexer which did not modify the PMT at all.

If this option is set, the PCR PID in the PMT is now forced to the video PID if it was not already on it. The PMT version number is also incremented.

Unusual encodings

The new versions of the indexer and server can handle various unusual encodings (both valid and invalid) which prevented proper trick play for some assets:

- The indexer can handle assets that are not Transport Stream packet aligned, for cases where files have been arbitrarily split up
- The **`<ts-cc-adjust>`** filter no longer increments the Continuity Counter for completely empty TS packets, as stated in the standard. It also resets the discontinuity_indicator bit that the trick play process sets at the start of each frame.
- Multiple PCR values within a single I-frame would make the indexer repeat a single TS packet in the frame data – this has been fixed.
- The indexer now handles the case where there is a separate PCR PID containing only empty TS packets.
- The server's **`<adjust timing>`** and **`<ts-timing-adjust>`** features which modify PES PTS values now properly handle large (>64KB) PES packets which require use of indeterminate length encoding, and PES headers which use padding.

RTSP RAW/RAW/TCP transport

Although existing clients we have tested against use the rather odd RAW/RAW/UDP/TCP to select raw (non-RTP) TCP interleaved streaming, the plain “RAW/RAW/TCP” seemed more sensible. This has now been added and is our recommended transport type for new RTSP/TCP clients.

URLs for Timeline captures

The URL syntax for the **<capture>** directory provider has been extended to provide access to additional features provided by the Timeline IPTV Recorder (`ps-captured` v. 1.2.x). The URLs now take the form of a command line sequence, or mini-command language, with options and parameters separated by '/'. For example:

```
rtsp://server/tv/BBC1/event/1234
rtsp://server/tv/BBC1/from/20120105T113000/to/20120105T120000
rtsp://server/tv/BBC1/from/20120105T113000/for/30mins
```

The options are:

Option	Parameter	Effect
event	Event ID (decimal number)	Selects the given EPG event
from	ISO timestamp	Selects from the given time
to	ISO timestamp	Selects until the given time
for	Integer seconds or 'duration' format – e.g. “30mins”, “1hour”	Selects the given duration from the 'from' time

If no options are given, the latest real-time position is selected – e.g.

```
rtsp://server/tv/BBC1
```

The old format with just a timestamp is still supported:

```
rtsp://server/tv/BBC1/20120105T113000
```

which is equivalent to:

```
rtsp://server/tv/BBC1/from/20120105T113000
```

Configurable live delay

When a URL of the form `rtsp://server/tv/BBC1` is used to get the nearest position to the live stream, a delay needs to be imposed to allow for disk buffering, otherwise the stream buffering will be inefficient and the stream may end unexpectedly. This was previously fixed at 30 seconds, but is now configurable in a **<live delay>** option in the **<capture>** directory provider:

```
<capture>
  <live delay="30"/>
</capture>
```

