Timeshift Caching Functional Specification

Version 0.1a

2009/09/17

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Revision History

Version	Issue date	Editor	Comment
0.1a	2009/09/17	Ashton	Make initial draft

Table of Contents

1. Introduction

The exceptional time-shift streaming feature stores pre- and post-event images temporarily on a buffer memory in the camera, giving the user a view of events leading up to and after incidents.

2. Feature

- Let users to play video streaming of seconds ago.
- Let users to record pre-event and post-event video when event is triggered.
- Saves bandwidth by streaming with maximum frame rate in active range.

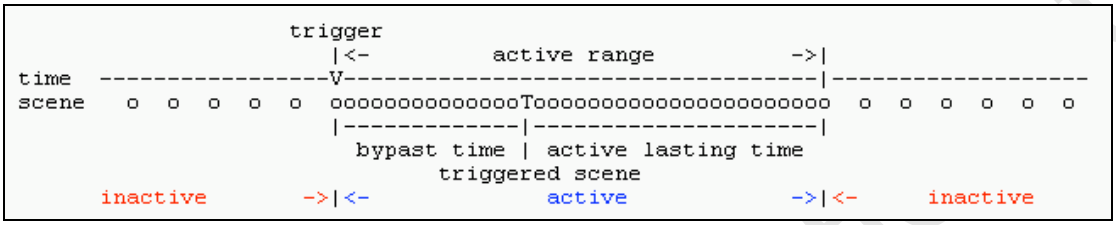

Figure 1

3. Functional Specification

3.1. Streaming type

1. **Live Streaming**
2. **Normal history recording mode**

   The same as below besides always in active region.
3. **Adaptive recording mode**

   Refer to Figure 1, we define two periods :
   - **Active period** : a (pre-defined) active range **(R)** after trigger
   - **Inactive period** : anytime outside active period

   where **Trigger** is a kind of action combined in application.

   Assume **maximum queued time** Q and **requested bypass time** P
   - Case 1: Q > P, send out buffer always P time ago.
   - Case 2: P > Q, always send out oldest buffer in queue.

   In inactive period, for saving bandwidth, sends fewer frames as following. Otherwise, in active period, sends all frames.
   - MPEG4: **I frame** only
   - MJPEG: 1 FPS

3.2. Access name usage

Access name example:

rtsp://10.0.0.1/live.sdp?maxsft=10&minsft=7&forcechk&tsmode=adaptive&reftime=12:29

Parameter	Format	Default Value	Description
maxsft	***maxsft=10*** (10 seconds ago)	0	How many seconds ago from now to stream.
minsft	***minsft=7*** (at least 7 seconds ago)	0	If maxsft time before is not achievable, how many seconds before is acceptable by client.
tsmode	***tsmode=normal*** ***tsmode=adaptive***	normal	History streaming mode: Normal-history or Adaptive-record
reftime	***reftime=aa:bb***	Signaling time	Reference time for max-shift and min-shift
forcechk	***forcechk***	No check	Force camera to check if the stream supports timeshift request and return the result to client. Please refer to section 3.3.

Unknown parameters are always ignored

3.3. Return Code

Code	Description
400 Bad Request	Request is rejected because some parameter values are illegal.
415 Unsupported Media Type	When forcechk is enabled, minsft time is not achievable or the timeshift feature of the target stream is not enabled.

3.4. Return Status

- Use **Server** header
- Carry timeshift information when timeshift parameters exists as ***timeshift=***
  - timeshift=-1, when timeshift is disabled
  - timeshift=$$, which means current queued seconds

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