WIDEVINE®

CYPHER FOR DIGITAL MEDIA

HEARTBEAT FEATURE

VERSION: 1.0

CONTENTS

Revision History

Version	Date	Description	By
1.0	08/30/2010	Initial release	Alex Lee

Purpose

The purpose of this document is to describe the heartbeat functionality which is used to limit the number of simultaneous streams allowed for a subscriber.

1. TERMS AND ABBREVIATIONS

- **Asset -** Physical media such as an H.264-encoded movie
- **Catcher** - A temporary storage device used to collect on- demand files and request missing parts (due to unreliable transport) prior to provisioning of content to the video delivery servers
- **Container -** A container format is a computer file format that can contain various types of data, compressed by means of standardized audio/video codecs
- **Content -** Assets and metadata files

2. FILE LOCATIONS

Sample heartbeat Perl CGI scripts

a. 4.4.4
    i. http://wstfcps005.shibboleth.tv/demo/444/heartbeat.444213.tar.gz
b. 4.4.5
    i. http://wstfcps005.shibboleth.tv/demo/445/heartbeat.4451114.tar.gz

3. HEARTBEAT

In order to implement simultaneous stream and/or asset playback detection, the Service Provider must have a subscriber and device management system. Without this, there is no way to relate Devices to a Subscriber.

If configured, an HTTP(s) heartbeat message is sent from the client to the Service Provider's e-portal at a configurable interval. The heartbeat message is a CGI request message sent to the e-portal to indicate the client is still in the playing state.

Heartbeat is not enabled by default; it is an option in the policy.

4.   HEARTBEAT.CGI URL EXAMPLE

The following URL is an example of what the Widevine client will send to the Service Providers e-portal:

> http://<portalurl>/widevine/cypherpc/cgi-bin/Heartbeat.cgi?ver=1&assetid=1000000&clientid=Xn4x4K0xKJKYU0F94X6sb&nonce=12345&userdata=ip:192.168.100.100,streamid:100,deviceid:10a50fg,optdata:some%20data

The heartbeat request has the following values:

CGI field	Description	Type
Ver	Request version	Int32
Assetid	The Widevine internal asset ID.	uint32
Clientid	Unique value identifying the client.	string(32)
Nonce	One time use number	uint32
Userdata	In the case of GetEMMs.cgi, this is the User Data field sent in the GetEMMs.cgi request this acknowledgement applies to. This is composed of a number of subfields: **ip**: IP address of the device **streamid**: Stream ID **deviceid**: Unique device identifier **optdata**: Optional free text field	string (1024)

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5. HEARTBEAT RESPONSE

When a client on a Device sends a Heartbeat message to the e-portal, an HTTP response to the client is expected. The return status from the Heartbeat request is base64 encoded and is handled by the client device. The e-portal should return a 4-byte status value indicating an action followed by the asset ID and nonce. The lack of a valid response will result in the default action (stop operation) which will stop the video teardown the current session. The status values are defined as:

Value	Description
0	No action, continue current operation
1 (default)	Stop operation. If currently playing, stop video and teardown current session
2	Stop sending heartbeat message for this session.
3	Increase heartbeat interval for this session by 100%. If current interval is 30 seconds, new interval will be 60 seconds.
4	Decrease heartbeat interval for this session by 50%. If current interval is 30 seconds, new interval will be 15 seconds.

Below is an example of a response for a heartbeat message using base64 encoded where:

- ➢ Raw Data (4 bytes each):
  2 (status), 1000000 (assetid), 12345 (nonce)

- ➢ Host to network bit stream (hex):
  00 00 00 02 00 0f 42 40 00 00 30 39

HTTP/1.1 200 OK
Date: Mon, 24 Nov 2008 22:10:28 GMT
Server: Apache/2.0.52 (Red Hat)
Length: 12
Encoding: base64
Connection: close
Transfer-Encoding: chunked
Content-Type: text/plain; charset=ISO-8859-1
16
AAAAAgAPQkAAAADA5

6.   HEARTBEAT EXAMPLE

This example outlines limiting the number of simultaneous streams. In this example the maximum number of simultaneous streams is two (2). To implement this limitation on the account, the Service Provider can use the Heartbeat messages. The interval in this case is thirty (30) seconds. If the E-portal receives more than two heartbeats (2) within the interval the maximum number of allowable simultaneous streams has been passed and the Service Provider can enforce the business rule.

The first Heartbeat message in this case is sent and the E-portal notes there is one stream and returns a 0 (zero) status indicating the client continue. The second Heartbeat message tells the E-portal there are two streams being played on the Account and the E-portal notes the maximum has been reached. The third Heartbeat message tells the E-portal the maximum has been passed so the return is a one (1) which will stop the video and enforce the business rules.
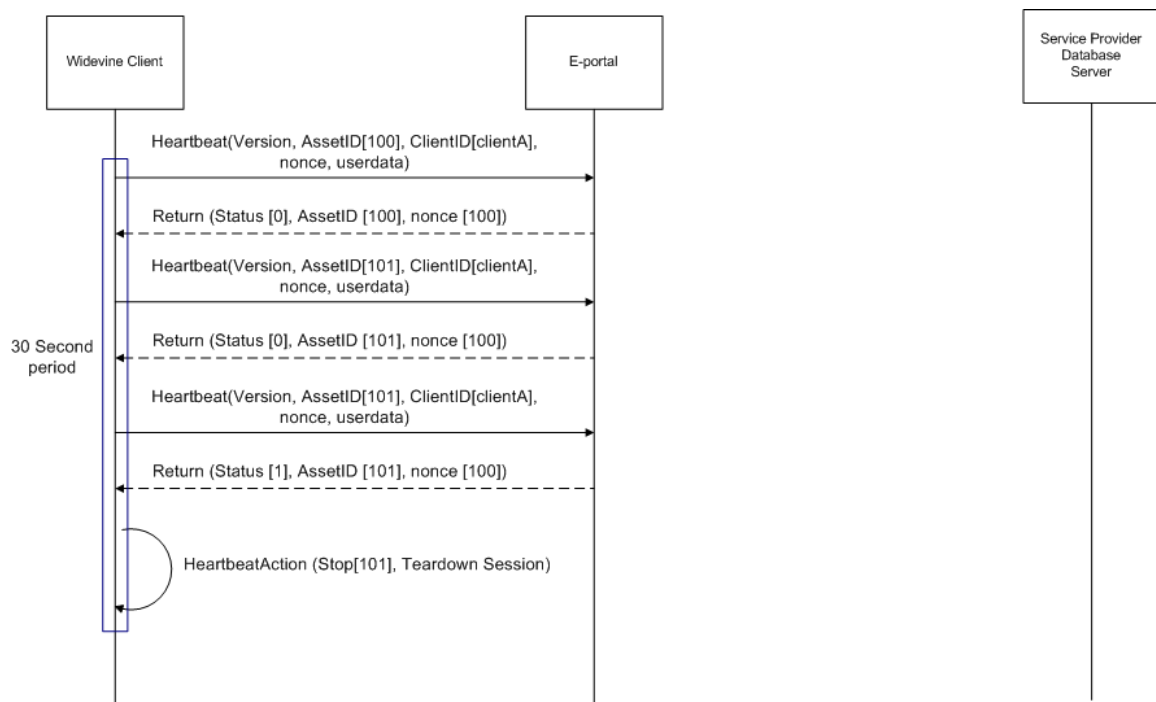

FIGURE 1 – HEARTBEAT SEQUENCE DIAGRAM