OnStream MediaPlayer+ Device Capability File (cap.xml)

Application Guide for All Platforms

SDK Version 3.5

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April, 2013

Version 1.0

201304001

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1 About This Manual

1.1 Overview

This application guide provides a reference manual for the device capability file (cap.xml), which can be used with the OnStream® MediaPlayer+ to optimize playback of variant playlists on devices with specific characteristics.

1.2 Revision History

Rev	Product Version	Date	Description
1.0	V3.5	2013-04-26	Document Creation

1.3 Related Documents

The following documents (included with your installation package) provide additional information related to this application guide:

- *OnStream MediaPlayer+ Player API Reference Manual for Android Platforms*
- *OnStream MediaPlayer+ Player API Reference Manual for iOS Platforms*
- *OnStream MediaPlayer+ Player API Reference Manual for Windows Browser Plugin Platforms*
- *OnStream MediaPlayer+ Player SDK Integration Guide for Android Platforms*
- *OnStream MediaPlayer+ Player SDK Integration Guide for iOS Platforms*
- *OnStream MediaPlayer+ Player SDK Integration Guide for Windows Browser Plugin Platforms*

2 Introduction

The device capability file (*cap.xml*) is an Extensible Markup Language (XML) file that specifies the maximum bit rate the SDK will try to play when targeting a variant playlist (multiple tracks of the same content) on a specific type of device. The maximum bit rate defined in the device capability file will override the default initial bit rate selection. The maximum bit rate will also be respected by the SDK bit rate adaptation algorithm.

Note: The bit rate cap defined in the *cap.xml* file is only applied when targeting a variant playlist. If there is only a single audio/video track, the bit rate cap will not apply.

Clusters or groups of devices can be identified in the device capability file by their platform characteristics. Platforms characteristics include: the number of cores, the availability of optimizations, and the CPU frequency. The device capability file can be packaged with the application or be downloaded at runtime, and is support across all platforms (Android, iOS, and Windows Browser Plugin).

2.1 API IMPLEMENTATION

A bit rate cap can also be implemented using the Player API. The Player API can be used to manually get the platform characteristics and set the bit rate cap.

Note: For more information on the Player API and its integration, refer to the platform-specific *OnStream MediaPlayer+ Player API Reference Manual* and *OnStream MediaPlayer+ Player SDK Integration Guide*.

3 XML Syntax

The device capability file uses a simple XML syntax to describe the characteristics and maximum bit rates of one or more platforms. The basic syntax is described below.

```
<?xml version="1.0" encoding="UTF-8"?><!--CPU Cap XML file.-->
<CapData><!--Begin cap data-->
   <item><!--Begin platform configuration-->
      <Core><!--Number of cores--></Core>
      <Neon><!--Neon available 1:yes|0:no--></Neon>
      <Frequency><!--Frequency (khz)--></Frequency>
      <CodecType><!--Codec type (see next section)--></CodecType>
      <BitRate><!--Bit rate (bps)--></BitRate>
      <VideoWidth><!--(Optional, currently ignored) Video width
         (px)--></VideoWidth>
      <VideoHeight><!--(Optional, currently ignored) Video height
         (px)--></VideoHeight>
      <ProfileLevel><!--(Currently ignored) Profile
         level--></ProfileLevel>
      <FPS><!--(Currently ignored) Frame rate (fps)--></FPS>
   </item><!--End platform configuration-->
   <!--More items-->
</CapData><!--End cap data-->
<!--End Cap XML file-->
```

3.1 CODECTYPE DEFINITIONS

The `CodecType` uses the same definitions as the `VOOSMP_VIDEO_CODINGTYPE` enumerated type, shown below.

```
typedef enum {
   VOOSMP_VIDEO_CodingUnused = 0, /*!< Value when coding is N/A */
   VOOSMP_VIDEO_CodingMPEG2,      /*!< A.K.A. H.262 */
   VOOSMP_VIDEO_CodingH263,       /*!< H.263 */
   VOOSMP_VIDEO_CodingS263,       /*!< S.263 */
   VOOSMP_VIDEO_CodingMPEG4,      /*!< MPEG-4 */
   VOOSMP_VIDEO_CodingH264,       /*!< H.264/AVC */
   VOOSMP_VIDEO_CodingWMV,        /*!< All versions of Windows Media Video
   */
   VOOSMP_VIDEO_CodingRV,         /*!< All versions of Real Video */
   VOOSMP_VIDEO_CodingMJPEG,      /*!< Motion JPEG */
   VOOSMP_VIDEO_CodingDIVX,       /*!< DIV3 */
   VOOSMP_VIDEO_CodingVP6,        /*!< VP6 */
   VOOSMP_VIDEO_CodingVP8,        /*!< VP8 */
   VOOSMP_VIDEO_CodingVP7,        /*!< VP7 */
   VOOSMP_VIDEO_CodingVC1,        /*VC1: WMV3, WMVA, WVC1 */
   VOOSMP_VIDEO_CodingH265,       /*!< H265 */
   VOOSMP_VIDEO_Coding_Max     = 0X7FFFFFFF
}VOOSMP_VIDEO_CODINGTYPE;
```

3.2 EXAMPLE #1

Platform characteristics: two core device with Neon enabled and a frequency of 1GHz
Maximum bit rate: 1.5Mbps from the variant playlist
Item definition:

```
<item>
   <Core>2</Core>
   <Neon>1</Neon>
   <Frequency>1000000</Frequency>
   <CodecType>5</CodecType>
   <BitRate>1500000</BitRate>
   <VideoWidth>640</VideoWidth>
   <VideoHeight>480</VideoHeight>
   <ProfileLevel>1</ProfileLevel>
   <FPS>30</FPS>
</item>
```

4 Recommended Bit Rate Caps

Table 4-1 lists recommended bit rate caps for platforms without hardware acceleration.

Table 4-1: Recommended Bit Rate Caps

Number of cores	Neon optimization	Frequency (kHz)	Recommended bit rate cap (kbps)	Resolution (width x height)	Framerate (fps)
1	No	600	300	320x240	30
1	No	800	500	480x320	30
1	Yes	1000	800	640x480	30
1	Yes	1500	1000	640x480	30
2	No	1000	1500	720x480	30
2	No	1500	1800	720x480	30
2	Yes	800	1400	720x480	30
2	Yes	1000	1600	720x480	30
2	Yes	1200	1800	720x480	30
2	Yes	1700	2000	720x480	30
4	Yes	1000	2500	1280x720	30
4	Yes	1500	3000	1280x720	30
4	Yes	2000	4000	1280x720	30

Note: These values are general recommendations only. Your hardware/software platform requirements may differ.

5 Known Limitations

Currently, the values for video width/height, profile level, and frame rate are ignored.