

AAMP CLOSED CAPTIONING SUPPORT

INTRODUCTION:

Applications making use of AAMP for playback have the provision to use closed captioning. AAMP have inband caption support for CEA-608, CEA-708 captions. Currently AAMP support closed captioning via two methods, the first one is using RDK CC Manager module and the later one is using AAMP native CC Manager. The second method needs the playback to be done using UVE APIs.

1. RDK CC MANAGER :

XRE Receiver has CC Manager module which can be used by apps to render closed captioning while doing playback using AAMP. An XREReceiver Object will be available at run time and it can be used to enable closed captioning and also to specify closed captioning styles and track.

- **Turn Closed Captioning ON/OFF:**

- XRE Receiver object can be used to enable closed captioning. Calling onClosedCaptions event of receiver and passing enable as true will turn on the closed caption.

```
XREReceiver.onEvent("onClosedCaptions", { enable: true });
```

- The same XRE Receiver object can be used to disable closed captioning. Calling onClosedCaptions event of receiver and passing enable as false will turn off the closed caption.

```
XREReceiver.onEvent("onClosedCaptions", { enable: false });
```

- **Set Closed Captioning Track:**

Closed captioning module have the provision to select the track based on track index. Passing the track ID along with setTrack API will change the closed caption track.

```
XREceiver.onEvent("onClosedCaptions", { setTrack: trackID });
```

- **Set Closed Captioning Style:**

- Closed captioning module have the provision to modify the closed captioning text styles like font size, color, opacity etc. The different properties that can be set are,

- 1) textItalicized
- 2) textEdgeStyle
- 3) textEdgeColor
- 4) textSize
- 5) windowFillColor
- 6) fontStyle
- 7) textForegroundColor
- 8) windowFillOpacity
- 9) textForegroundOpacity
- 10) textBackgroundColor
- 11) textBackgroundOpacity
- 12) windowBorderEdgeStyle
- 13) windowBorderEdgeColor
- 14) textUnderline

- setOptions API can be used to pass a JSON object which specifies the cc option parameters and it's values.

```
const defaultCCOptions = {  
  textItalicized: false,  
  textEdgeStyle: "none",  
  textEdgeColor: "black",  
  textSize: "small",
```

```
        windowFillColor: "black",
        fontStyle: "default",
        textForegroundColor: "white",
        windowFillOpacity: "transparent",
        textForegroundOpacity: "solid",
        textBackgroundColor: "black",
        textBackgroundOpacity: "solid",
        windowBorderEdgeStyle: "none",
        windowBorderEdgeColor: "black",
        textUnderline: false
    };

    XRReceiver.onEvent("onClosedCaptions", { setOptions: defaultCCOptions});
```

2. AAMP NATIVE CC MANAGER:

AAMP have Native CC Rendering module which can be used for CEA 608/708 captioning. The support is available on playback using UVE APIs where a native rendering flag has to be enabled via inticonfig before loading the asset. Native CC Rendering is not available for videotag based playback.

- **Enable Native CC Rendering:**

By default AAMP native CC rendering will be disabled and it needs to be enabled by setting the nativeCCRendering flag of defaultInitConfig to true and passing it via initConfig UVE API. Input to the initConfig() API needs to be a JSON object and all the initConfig properties are optional.

```
var player = new AAMPMediaPlayer();

var defaultInitConfig = {
    nativeCCRendering: true
}

player.initConfig(defaultInitConfig);
player.load(url, true);
```

- **Turn Closed Captioning ON/OFF:**

- setClosedCaptionStatus UVE API can be used to turn on the closed captioning by passing true.

```
player.setClosedCaptionStatus(true);
```

- The same setClosedCaptionStatus UVE API can be used to turn off the closed captioning by passing false.

```
player.setClosedCaptionStatus(false);
```

- **Set Closed Captioning Track:**

AAMP support changing the closed caption track during playback. Passing the track ID to the setTextTrack API will change the closed caption track.

```
player.setTextTrack(trackIdx);
```

- **Set Closed Captioning Style:**

- Native AAMP CC module gives the provision to modify the closed captioning text styles like font size, color, opacity etc. The different properties that can be set are,

1. penItalicized
2. textEdgeStyle
3. textEdgeColor
4. penSize
5. windowFillColor
6. fontStyle
7. textForegroundColor
8. windowFillOpacity
9. textForegroundOpacity

10. textBackgroundColor
 11. textBackgroundOpacity
 12. windowBorderEdgeStyle
 13. windowBorderEdgeColor
 14. penUnderline
- setTextStyleOptions() API can be used to pass a JSON object which specifies the cc option parameters and it's values. The JSON object first needs to be converted into a JSON string before passing into the API.

```
const ccOption = {
  "penItalicized":false,
  "textEdgeStyle":"none",
  "textEdgeColor":"black",
  "penSize":"small",
  "windowFillColor":"black",
  "fontStyle":"default",
  "textForegroundColor":"white",
  "windowFillOpacity":"transparent",
  "textForegroundOpacity":"solid",
  "textBackgroundColor":"black",
  "textBackgroundOpacity":"solid",
  "windowBorderEdgeStyle":"none",
  "windowBorderEdgeColor":"black",
  "penUnderline":false
};

player.setTextStyleOptions(JSON.stringify(ccOption));
```

- **Closed Captioning During Player Switching:**
 - AAMP support player switching feature making use of multiple AAMP objects. During the player switching for CDAI, need to send initConfig with nativeCCRendering set to true for enabling the closed caption.

- It is mandatory that the nativeCCRendering flag to be set to true for all individual assets. Turning on closed captioning will not have an effect if native cc rendering is not enabled.

```
var bgPlayer = new AAMPMediaPlayer();
var defaultInitConfig = {
    nativeCCRendering: true
}

bgPlayer.initConfig(defaultInitConfig);
bgPlayer.load(url, false);

...

player.detach();
bgPlayer.play();
```

- No need to individually turn on closed captioning using setClosedCaptionStatus for each asset. The closed captioning status will be preserved across multiple aamp objects. If the closed caption is getting displayed for the main content it will be displayed during Ad switching also.
- setTextTrack() API needs to be used to change the track of the CDAI switched content.
- Closed caption styles will be persisting across the playbacks and no need to call setTextStyleOptions() for each asset unless need to change the style options during the Ad switching operation.