Streaming Dynamic Content using Amazon CloudFront

Step1: Environment Preparation

We will be using a sample video file to configure a dynamic stream.

1. In the AWS Management Console, on the Services menu, choose S3.An S3 bucket containing the string *awstrainingreinvent* should be present. Open the bucket.
2. Open the input folder. It contains a video file named AmazonS3Sample.mp4.

Step 2: Create an Amazon CloudFront Distribution

3. On the Services menu, choose CloudFront.
4. Choose Create a CloudFront distribution.
5. Under Origin Settings section of the page, enter the follow information:
   ○ Select the Origin domain field. A list of S3 buckets will appear. Choose the one that was created earlier that has awstrainingreinvent as part of the file name.
   ○ Leave Origin access as Public.
   ○ Under Web Application Firewall (WAF) select. Don't enable security protections.
6. The warning message under Custom SSL certificate - optional can be safely ignored.
7. Scroll to the bottom of the page, then choose Create Distribution.

Step 3: Create an Amazon Elastic Transcoder Pipeline

In this section, you will create a pipeline that will manage the jobs to transcode the input file.

8. In the AWS Management Console, on the Services menu, choose Elastic Transcoder.
9. In the navigation bar of the Amazon Elastic Transcoder console, select the same Region that the S3 bucket was created in.
10. On the Pipelines page, choose Create a new Pipeline.
11. For Pipeline Name, enter InputPipeline
12. For Input Bucket, select the awstrainingreinvent S3 bucket.
13. For IAM Role, under other roles, select AmazonElasticTranscoderRole.
14. In the Configuration for Amazon S3 Bucket for Transcoded Files and Playlists section, enter the following information:
    ○ Under Bucket, select the awstrainingreinvent S3 bucket.
    ○ Under Storage Class, select Standard.
15. In the Configuration for Amazon S3 Bucket for Thumbnails section, enter the following information:
    ○ Under Bucket, select the awstrainingreinvent S3 bucket.

        ○   Under Storage Class, select ReducedRedundancy.
16. Choose Create Pipeline.

In this section, create a job under the Amazon Elastic Transcoder pipeline that was just created. The job does the work of transcoding the input file into multiple bit-rates as selected.

17. On the Pipelines page, choose Create New Job to create a transcoding job. You create the job in the pipeline (queue) that you want to use to transcode the video file.
18. For Pipeline, select InputPipeline.
19. For Output Key Prefix, enter output/.
20. For Input Key, select the input file labeled input/AmazonS3Sample.mp4.

<u>Configure Output Details</u>

21. For Preset:, select System preset: HLS 2M
22. For Segment Duration, enter 10 (which is the HLS default).
23. For Output Key, enter the unique prefix HLS20M to name the segments created using this preset.
24. Click + Add Another Output and repeat the steps above to generate segments for presets HLS 1.5M and HLS 1M and then provide the respective prefix names:
        ○   HLS15M
        ○   HLS10M

<u>Configure a Playlist</u>

The playlist will combine all the individual bit-rate playlists and provide a single URL for the devices to playback the stream. To configure a playlist, do the following:

25. Under Playlists (Adaptive Streaming), choose Add Playlist, then configure:

        ○   Master Playlist Name primary
        ○   Playlist Format: *HLSv3*

26. Select all the three outputs, which were entered in the previous section, to include them in this playlist by selecting the + option.

27. Choose Create New Job. The transcoding process should complete within a minute.

<u>Step 4: Test Playback of the Dynamic (Multi Bit-Rate) Stream</u>

Construct the Playback URL

The playback URL that plays through Amazon CloudFront is comprised of two components:

- Amazon CloudFront domain name
- Path of the playlist file in the S3 bucket (output generated by Elastic Transcoder):

http://\<CloudFront domain name>/\<playlist file path in Amazon S3 bucket>

To obtain an Amazon CloudFront domain name:

28. In the AWS Management Console, on the Services menu, choose CloudFront.

29. Select the Amazon CloudFront distribution that was previously created, and verify that the Status has changed from *InProgress* to *Enabled*.Proceed to the next step only after the Status changes to *Enabled*.

30. Select the Distribution and under Settings. Copy the Distribution domain name and paste it into a text editor.

To obtain the playlist file path:

31. On the Services menu, choose S3.

32. Select the awstrainingreinvent S3 bucket.

33. Open the output folder (which contains the output of the transcoding job) and select the primary.m3u8 playlist file.This is the file that you will play on your mobile device.
Next, you must create the URL to the file from CloudFront.

34. In a text editor, construct the URL by appending /output/primary.m3u8 to the end of your CloudFront domain name.
The new URL should look similar to: *d1ckwesahkbyvu.cloudfront.net/output/primary.m3u8*

35. Type the URL into the default browser of an iOS or Android device. If you do not have a mobile device available, type the URL into a browser on your computer.

36. The stream should start playing on your device and dynamically request the relevant segments based on your bandwidth and CPU conditions.