



# Module 11 Lab: Streaming Dynamic Content using Amazon CloudFront

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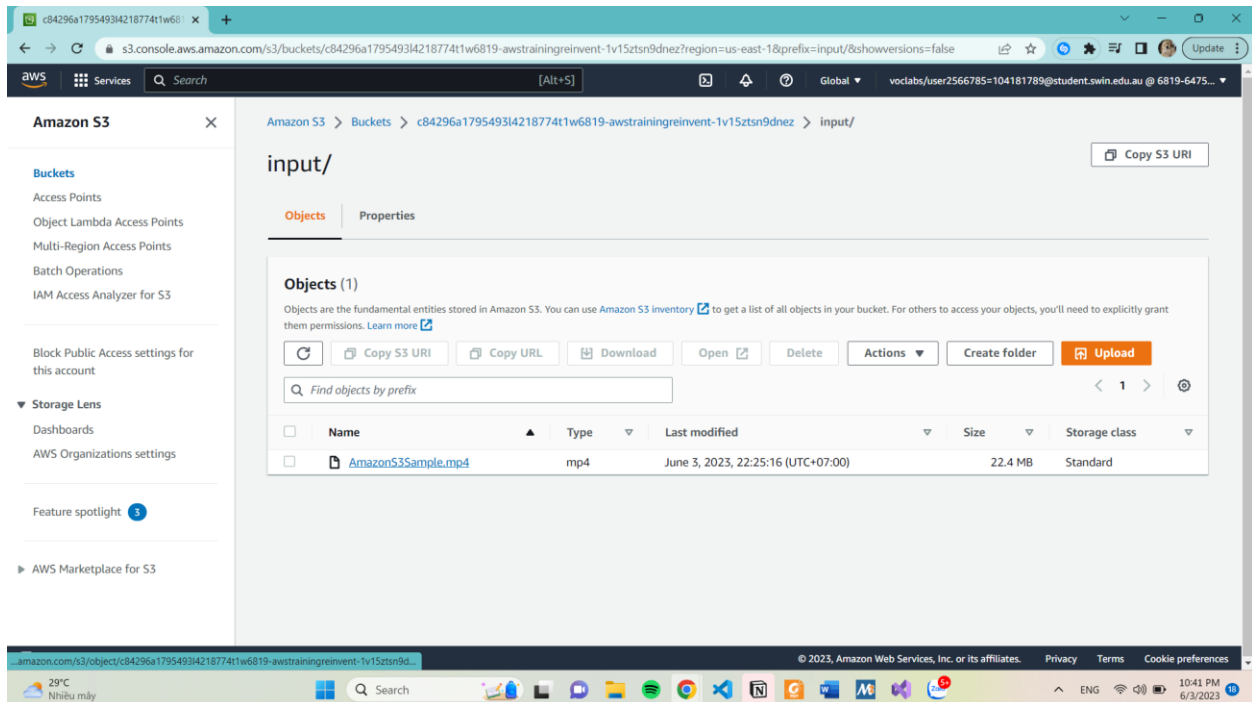
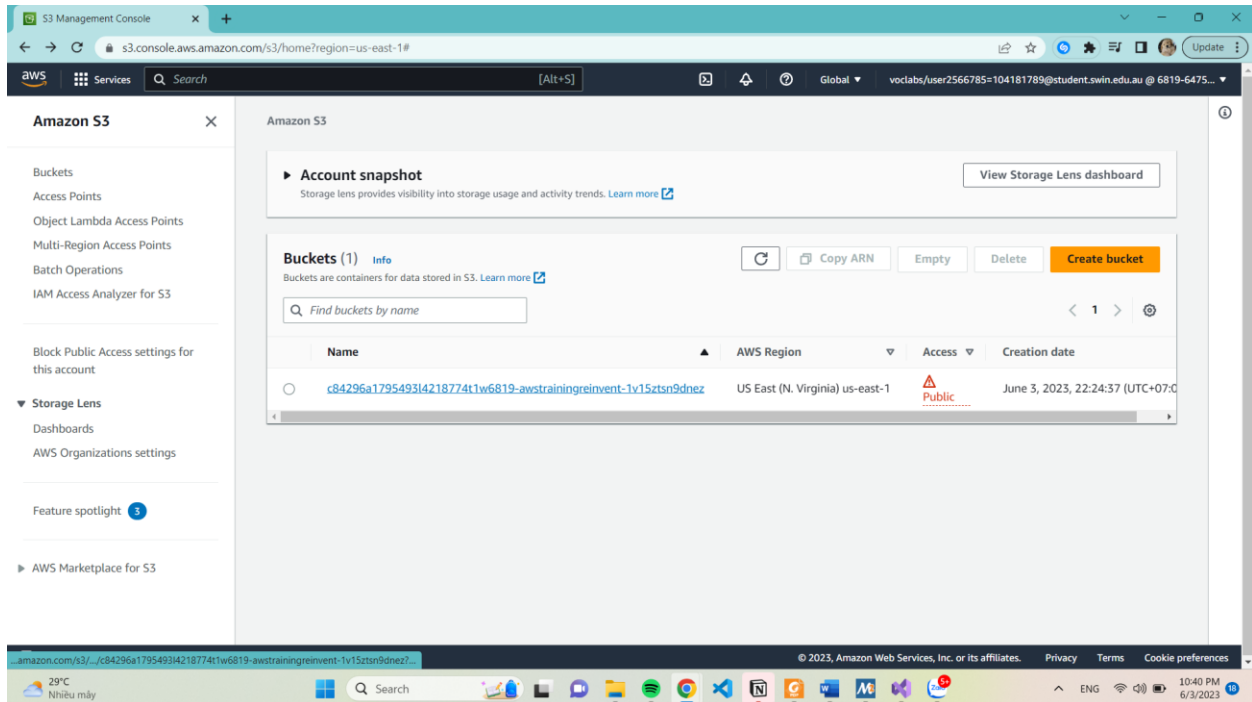
COS 20019- Cloud Computing Architecture

Nguyen Manh Dung

2/6/2023

So this is all my step to complete Module 11 Lab, with detailed explanation.

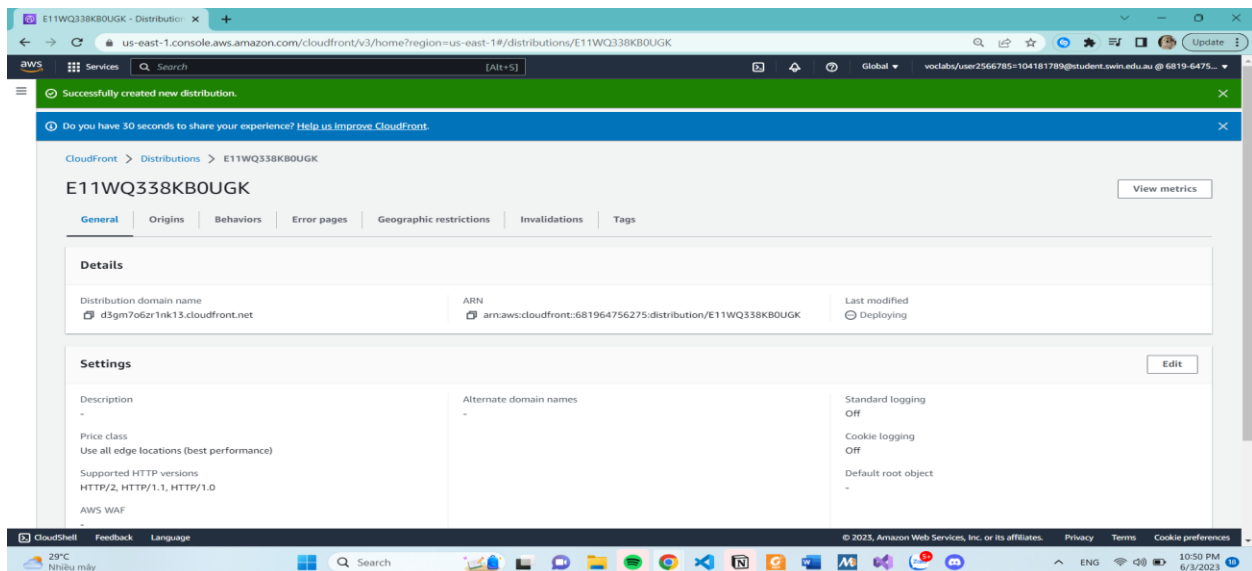
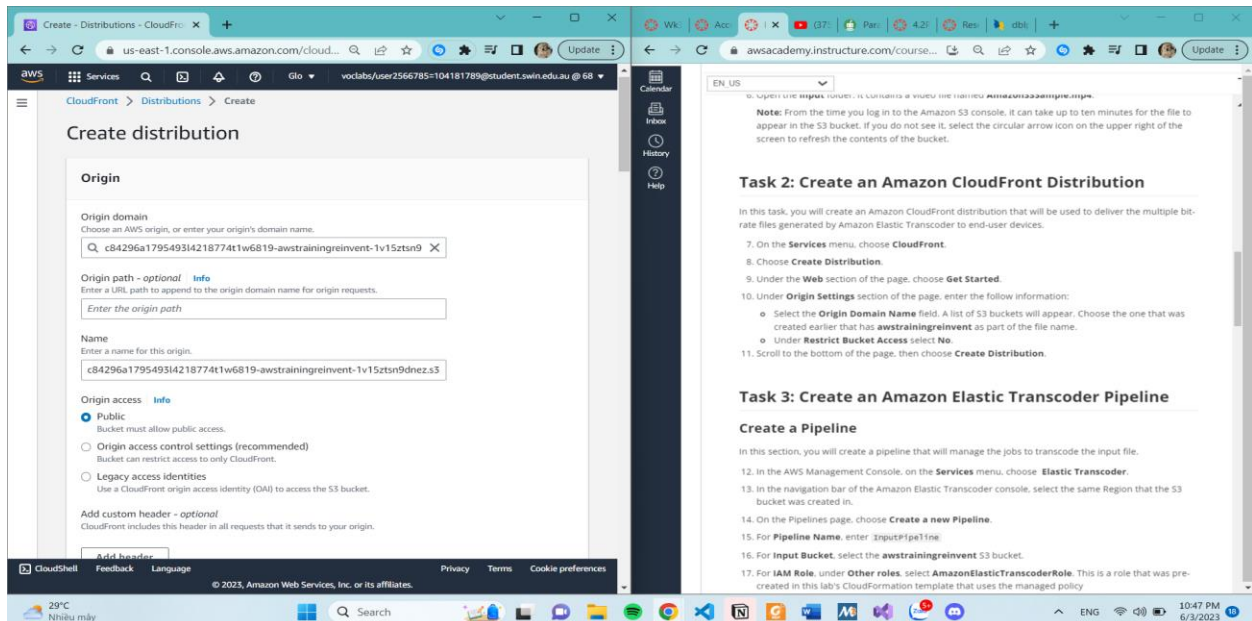
## Task 1: Lab Preparation



## Task 2: Create an Amazon CloudFront Distribution

### 7-10. On the Services menu, choose CloudFront.

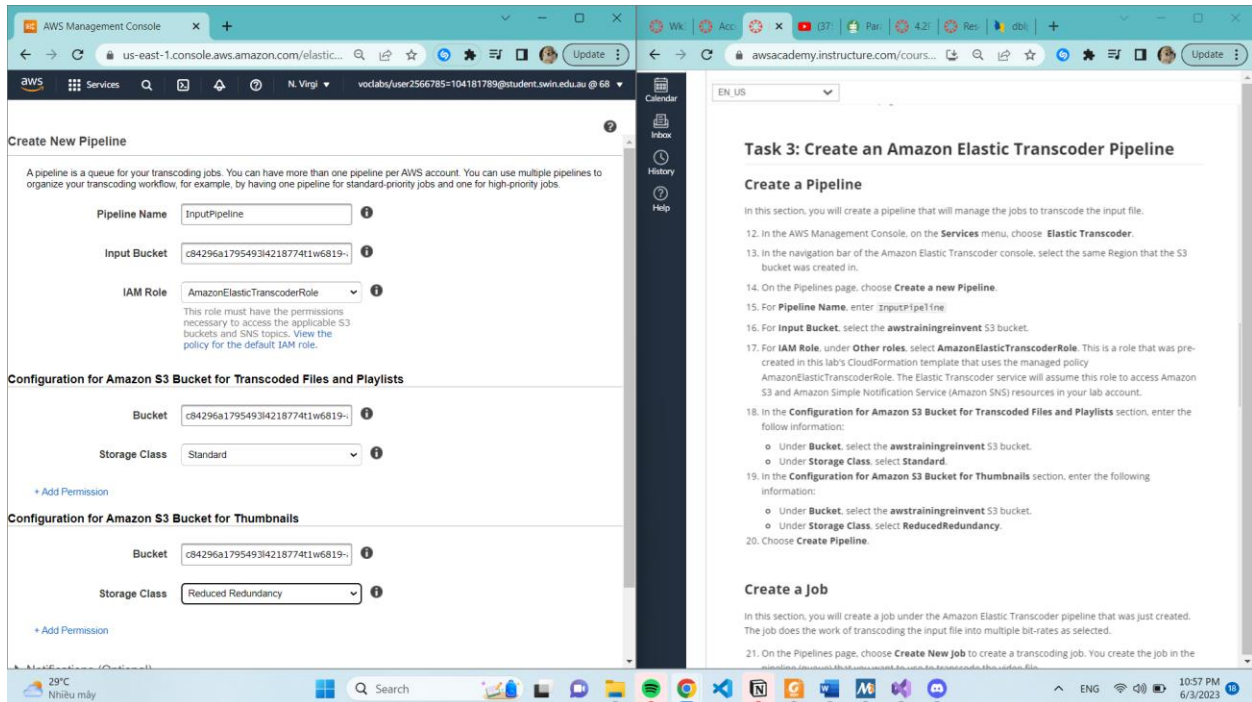
- Choose **Create Distribution**.
- Under the **Web** section of the page, choose **Get Started**.
- Under **Origin Settings** section of the page, enter the follow information:
- Select the **Origin Domain Name** field. A list of S3 buckets will appear. Choose the one that was created earlier that has **awstrainingreinvent** as part of the file name.
- Under **Restrict Bucket Access** select **No**.
- Scroll to the bottom of the page, then choose **Create Distribution**.



### Task 3: Create an Amazon Elastic Transcoder Pipeline

12-20: In the AWS Management Console, on the **Services** menu, choose **Elastic Transcoder**.

- On the Pipelines page, choose **Create a new Pipeline**
- For **Pipeline Name**, enter InputPipeline
- For **Input Bucket**, select the awstrainingreinvent S3 bucket.
- For **IAM Role**, under **Other roles**, select **AmazonElasticTranscoderRole**.
- In the **Configuration for Amazon S3 Bucket for Transcoded Files and Playlists** section:
  - Under **Bucket**, select the awstrainingreinvent S3 bucket.
  - Under **Storage Class**, select **Standard**.
- 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**.
- Choose **Create Pipeline**.



## Create Job

22. For **Pipeline**, select **InputPipeline**.

23. For **Output Key Prefix**, enter output/.

24. For **Input Key**, select the input file labeled **input/AmazonS3Sample.mp4**.

The screenshot displays the AWS Management Console interface for creating a new transcoding job. The left pane shows the 'Create a New Transcoding Job' form with the following details:

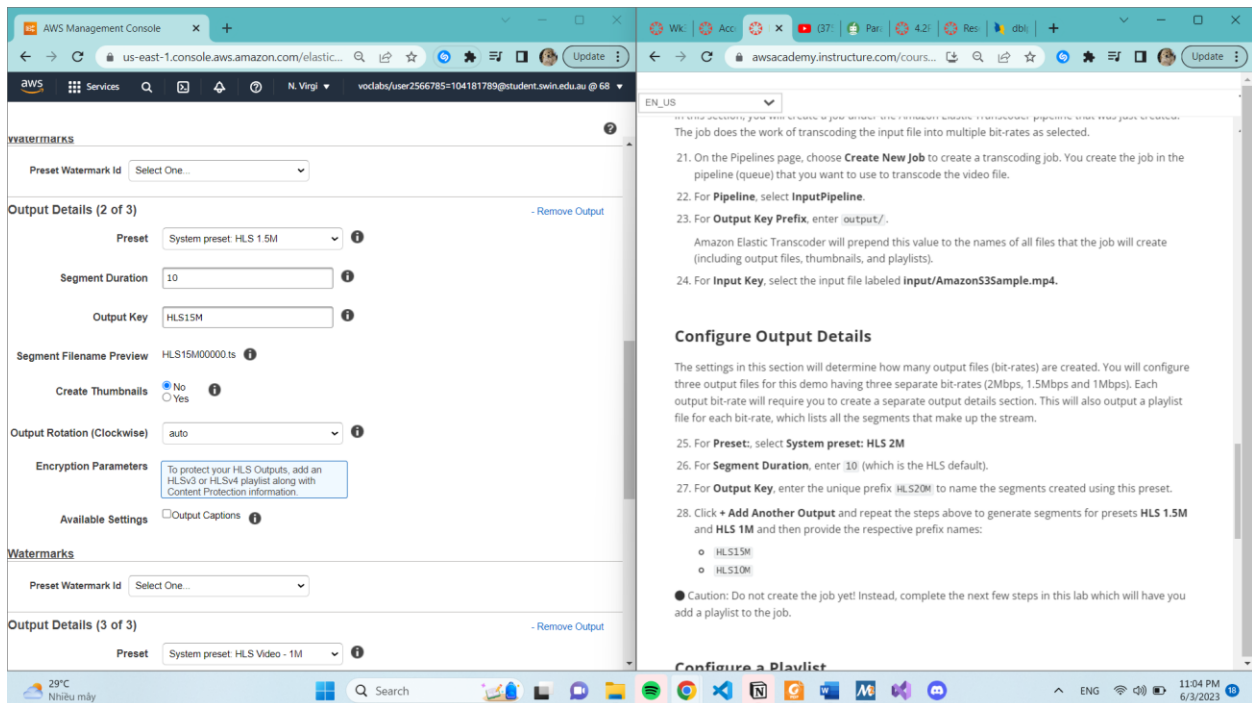
- Pipeline:** InputPipeline
- Output Key Prefix:** output/
- Input Details (1 of 1):**
  - Input Key:** input/AmazonS3Sample.mp4
  - Decryption Parameters:** None (selected)
  - Available Settings:** Clip, Input Captions
- Output Details (1 of 1):**
  - Preset:** Select One...
  - Output Key:** (empty field)
  - Encryption Parameters:** None (selected)
  - Available Settings:** Output Captions
- Playlists (Adaptive Streaming):** (Section header with a note about master playlists)

The right pane shows a list of instructions for creating a job, including steps for selecting the pipeline, output key prefix, and input key. The bottom of the screen shows a Windows taskbar with the date and time as 11:00 PM on 6/3/2023.

## Configured Output Detail

25-28.

- For **Preset**:, select **System preset: HLS 2M**
- For **Segment Duration**, enter 10 (which is the HLS default).
- For **Output Key**, enter the unique prefix HLS20M to name the segments created using this preset.
- 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



The image shows a side-by-side comparison of two web interfaces. The left window is the AWS Management Console, displaying the 'Output Details' configuration page for an Elastic Transcoder job. The right window is the AWS Academy instructor page, providing a step-by-step guide for configuring the job.

**AWS Management Console - Output Details (3 of 3)**

- Preset:** System preset: HLS Video - 1M
- Segment Duration:** 10
- Output Key:** HLS10M
- Segment Filename Preview:** HLS10M000001.ts
- Create Thumbnails:** No
- Output Rotation (Clockwise):** auto
- Encryption Parameters:** To protect your HLS Outputs, add an HLSv3 or HLSv4 playlist along with Content Protection information.
- Available Settings:** Output Captions
- Watermarks:** Preset Watermark Id: Select One...
- Playlists (Adaptive Streaming):** Add Playlist

**AWS Academy Instructor Page**

The job does the work of transcoding the input file into multiple bit-rates as selected.

21. 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.
22. For **Pipeline**, select **InputPipeline**.
23. For **Output Key Prefix**, enter `output/`.
24. For **Input Key**, select the input file labeled `input/AmazonS3Sample.mp4`.

**Configure Output Details**

The settings in this section will determine how many output files (bit-rates) are created. You will configure three output files for this demo having three separate bit-rates (2Mbps, 1.5Mbps and 1Mbps). Each output bit-rate will require you to create a separate output details section. This will also output a playlist file for each bit-rate, which lists all the segments that make up the stream.

25. For **Preset**, select **System preset: HLS 2M**.
26. For **Segment Duration**, enter `10` (which is the HLS default).
27. For **Output Key**, enter the unique prefix `HLS20M` to name the segments created using this preset.
28. 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:
  - o `HLS15M`
  - o `HLS10M`

Caution: Do not create the job yet! Instead, complete the next few steps in this lab which will have you add a playlist to the job.

**Configure a Playlist**

## Configure Playlist

29-31

- Under **Playlists (Adaptive Streaming)**, choose **Add Playlist**, then configure:
  - **Playlist Name** primary
  - **Playlist Format**: HLSv3
- Choose **Create New Job**.

The screenshot shows two side-by-side browser windows. The left window displays the AWS Management Console 'Add Playlist' configuration page. The right window shows a lab instruction page with steps 27-31 and a task title.

**AWS Management Console Configuration:**

- Encryption Parameters:** To protect your HLS Outputs, add an HLSv3 or HLSv4 playlist along with Content Protection information.
- Available Settings:** ☐ Output Captions
- Watermarks:** Preset Watermark Id: Select One... [+ Add Another Output](#)
- Playlist (1 of 1):** [- Remove Playlist](#)
  - Master Playlist Name:** primary
  - Playlist Format:** HLSv3
  - Outputs in Master Playlist:** HLS20M, HLS15M, HLS10M
  - Content Protection:** ☒ None ☐ HLS AES ☐ PlayReady DRM
- User Metadata (Optional):** [+ Add Playlist](#)
- Buttons:** Cancel, **Create New Job**

**Lab Instruction Page:**

27. For **Output Key**, enter the unique prefix **HLS20M** to name the segments created using this preset.

28. 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**

● Caution: Do not create the job yet! Instead, complete the next few steps in this lab which will have you add a playlist to the job.

### Configure a Playlist

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:

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

- **Playlist Name** primary
- **Playlist Format**: HLSv3

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

31. Choose **Create New job**.

The transcoding process should complete within a minute.

### Task 4: Test Playback of the Dynamic (Multi Bit-Rate) Stream

In this module, you will test the playback of the dynamic stream generated in the previous section using an iOS or Android device. You can also use an Android 4.x device to test the below exercise.

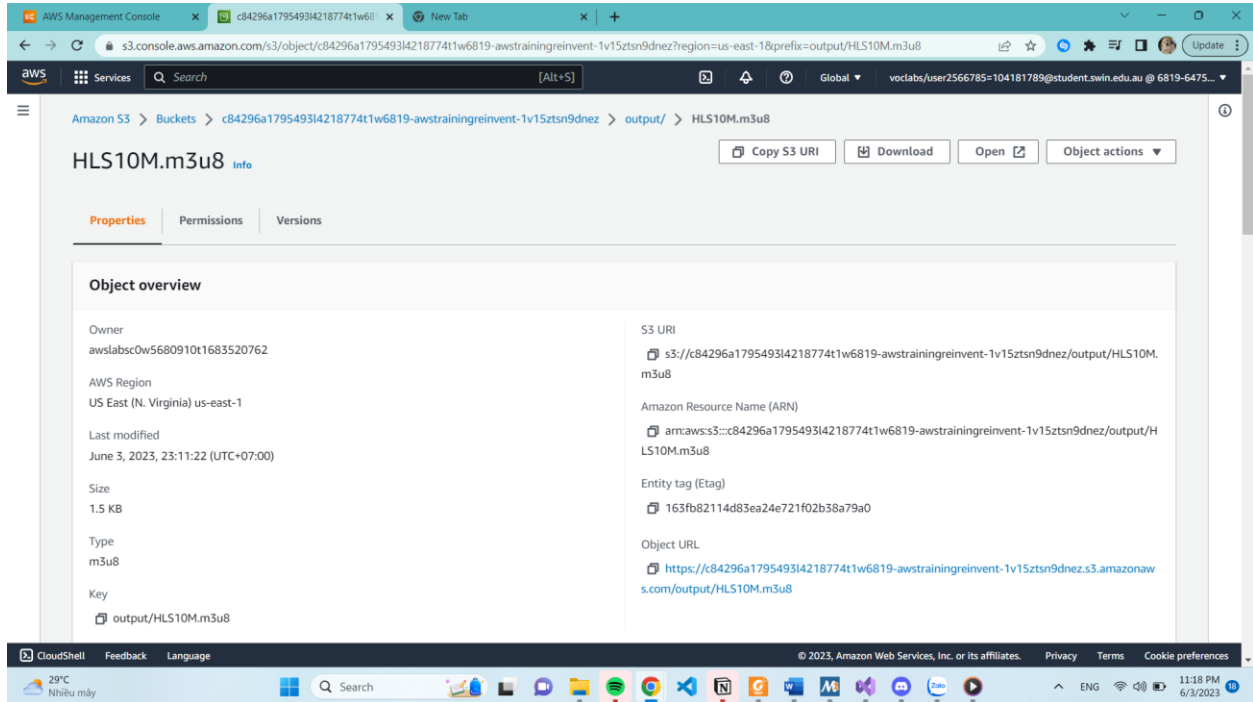
**Note** Certain browsers may not support this feature. Use the default web browser in the device to test.



The screenshot shows two side-by-side browser windows. The left window displays the AWS Management Console 'Create New Job' page for Elastic Transcoding. Under 'Encryption Parameters', there is a note about adding HLSv3 or HLSv4 playlist information. The 'Available Settings' section shows 'Output Captions' is disabled. The 'Watermarks' section has a 'Preset Watermark Id' dropdown. The 'Playlist (1 of 1)' section shows 'Master Playlist Name' as 'primary', 'Playlist Format' as 'HLSv3', and three 'Outputs in Master Playlist' as 'HLS20M', 'HLS15M', and 'HLS10M'. The 'Content Protection' is set to 'None'. The right window shows a lab page titled 'Configure a Playlist' with instructions on how to configure a playlist by selecting the outputs and creating a new job. Below this, it introduces 'Task 4: Test Playback of the Dynamic (Multi Bit-Rate) Stream'.

## Task 4: Test Playback of the Dynamic (Multi Bit-Rate) Stream

The screenshot shows two side-by-side browser windows. The left window displays the AWS Management Console 'Details' page for a CloudFront distribution named 'E11WQ338KBOUGK'. A tooltip indicates 'Distribution domain name copied'. The 'Details' section shows the domain name 'd3gm7o6zr1nk13.cloudfront.net' and the ARN 'arn:aws:cloudfront:68196:4756275:distribution/E11WQ338KBOUGK'. The 'Settings' section shows the description 'Use all edge locations (best performance)'. The right window shows a lab page titled 'Obtain an Amazon CloudFront Domain Name' and 'Obtain the Playlist File Path'. It provides instructions on how to obtain the domain name and the playlist file path from the CloudFront distribution settings.



<https://d3gm7o6zr1nk13.cloudfront.net/output/primary.m3u8>