aws elemental

AWS ELEMENTAL LIVE TO AWS ELEMENTAL MEDIALIVE TO AWS ELEMENTAL MEDIAPACKAGE

Workflow Example

CONTENTS

INTRODUCTION

This workflow example illustrates how to use an AWS Elemental Live encoder on the ground (the "appliance") as a contribution encoder for the AWS Elemental MediaLive service (in the cloud).

In this scenario, you will set up the AWS Elemental Live appliance to produce an RTP output that contains a high definition (HD) feed with forward error correction (FEC) enabled. This output is the input into AWS Elemental MediaLive. You will then set up AWS Elemental MediaLive to produce an HLS output that contains an ABR stream set. This output is the input into AWS Elemental MediaPackage.

Note: To use this workflow in production, it is highly recommended you use the AWS Elemental MediaPackage endpoint as an origin for a CDN such as Amazon CloudFront. The AWS Elemental MediaPackage console includes an option to create a CloudFront distribution during channel creation.

REQUIREMENTS

To perform this procedure, you must know how to use AWS Elemental Live, including how to configure an event with input information, output groups, outputs, and streams.

Additionally, you need access to an AWS Elemental Live encoder on the ground. This encoder feeds the redundant inputs of AWS Elemental MediaLive.

ORDER OF WORK

1. Obtain needed information.
2. Create a channel in AWS Elemental MediaPackage.
3. Create an input in AWS Elemental MediaLive.
4. Create an event in AWS Elemental Live ("the appliance").
5. Create a channel in AWS Elemental MediaLive.
6. Start the video stream.

The following sections provide detailed instruction for these steps.

PREREQUISITE: OBTAIN NEEDED INFORMATION

Obtain the public IP address (or addresses) from the appliance that you will use to send the feed to the AWS Elemental MediaLive input.

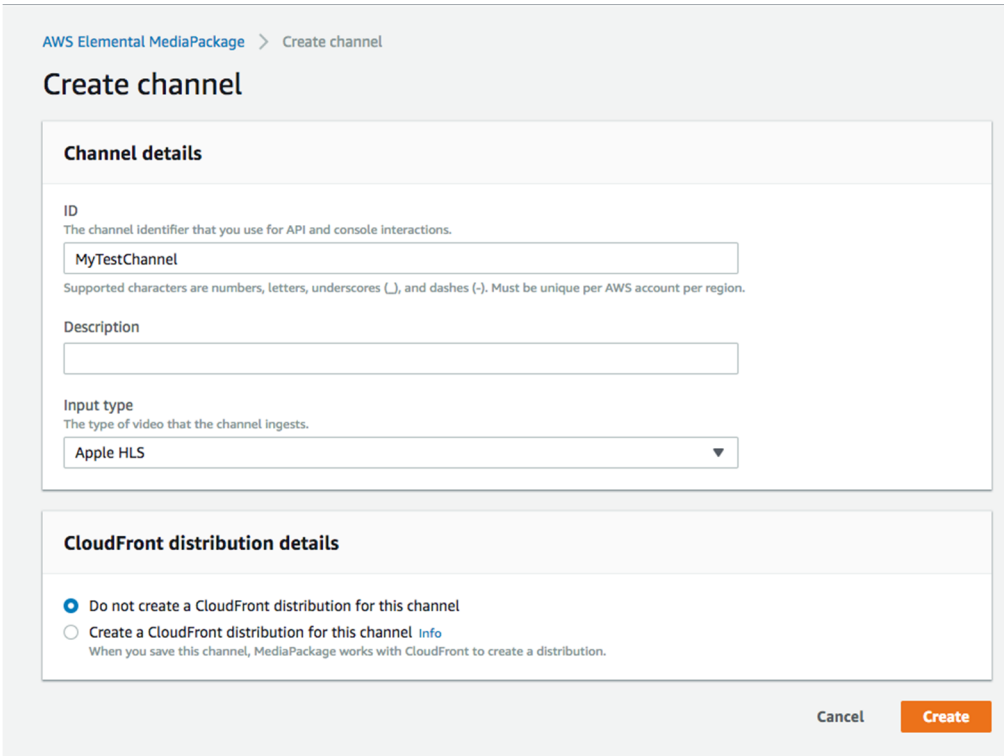
Note: If there is a firewall between the appliance and the internet (highly recommended), the public IP addresses will likely be different from those that the appliance reports. If so, you need to determine the external address being used. The appliance network may also be configured to utilize a pool of external IP addresses. In this case, you will need the CIDR range for the entire pool to include in the Input Security Group.

STEP A: CREATE A CHANNEL IN AWS ELEMENTAL MEDIAPACKAGE

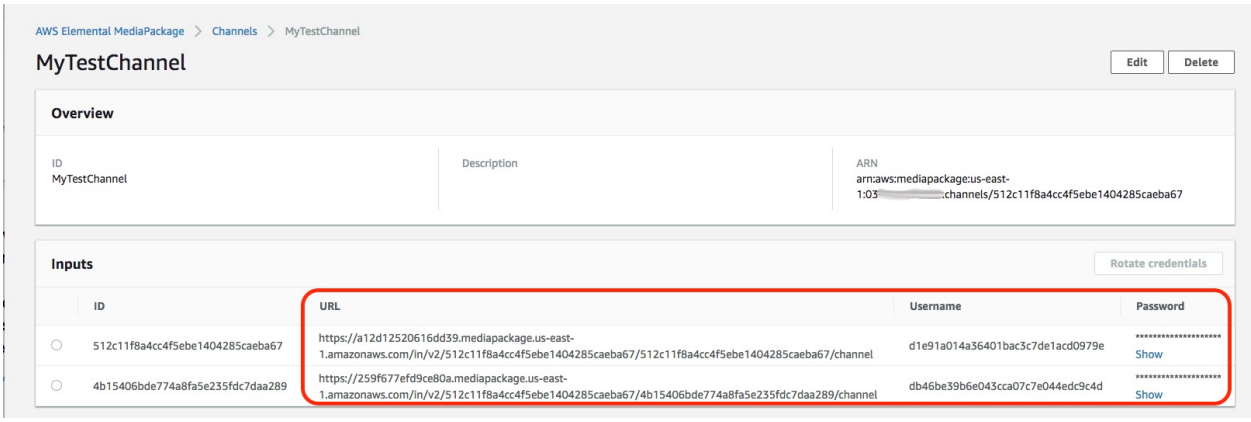
In order to create your AWS Elemental MediaLive channel, you must first know the destination URLs and credentials for your output(s). For this example, use AWS Elemental MediaPackage as your destination.

MediaLive requires two output destinations per output group, and MediaPackage provides two inputs per channel:

1. Log into the AWS Elemental MediaPackage console for the same region where you will be using AWS Elemental MediaLive.
2. If you have previously created channels in MediaPackage, the channel listing view will appear. Otherwise the introductory landing page will appear.
    a. From the landing page, enter a channel name and choose **Next Step**.
    b. From the Channel Listing page, choose **Create Channel**.
3. For either case above, you should now see the Create channel page:

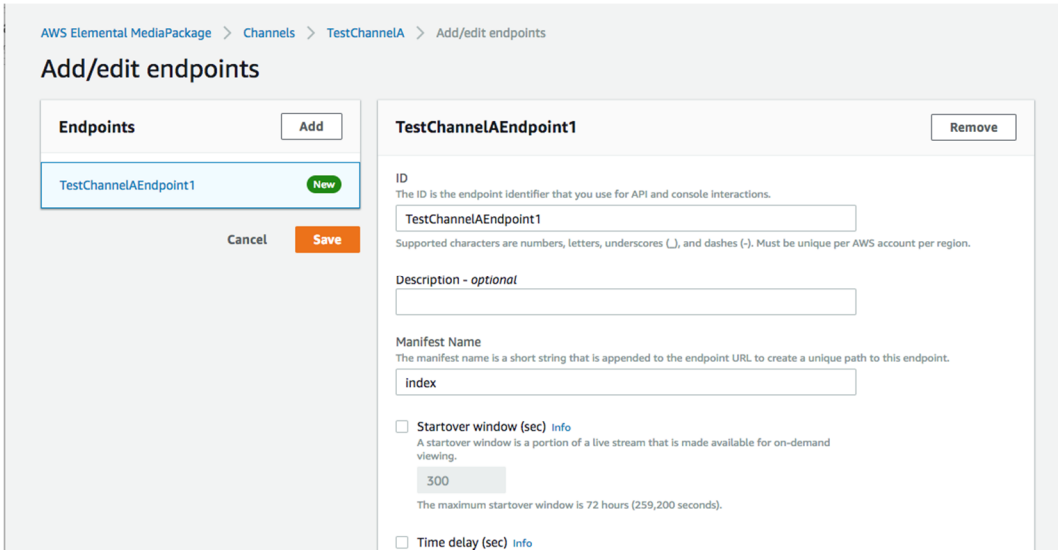


4. Add a description if desired. Note that there is an option to create a CloudFront distribution to work with this channel. For production workloads it is important to place a content distribution network (CDN) in front of the MediaPackage endpoints. Choose **Create** to save and create the channel. The channel detail page appears.



Make a note of the **Input URL**, **Username**, and **Password** for each of the two inputs (use the **show** button to reveal the password) as you will need to use these values when creating your AWS Elemental MediaLive channel.

5. Just below the channel detail tile choose **Add endpoints** to create an appropriate endpoint to be able to view your channel. For this example it is sufficient to create a simple HLS endpoint so just give it a unique name in the **ID** field and choose **Save** to create the endpoint.



When the MediaLive channel is up and running you will be able to point an HLS compatible player or browser at the endpoint (or the CloudFront URL if you enabled CloudFront at channel creation) to view the channel, or you can preview if from inside the MediaPackage console.

6. Keep this browser session active so you can easily come back later to check your channel.

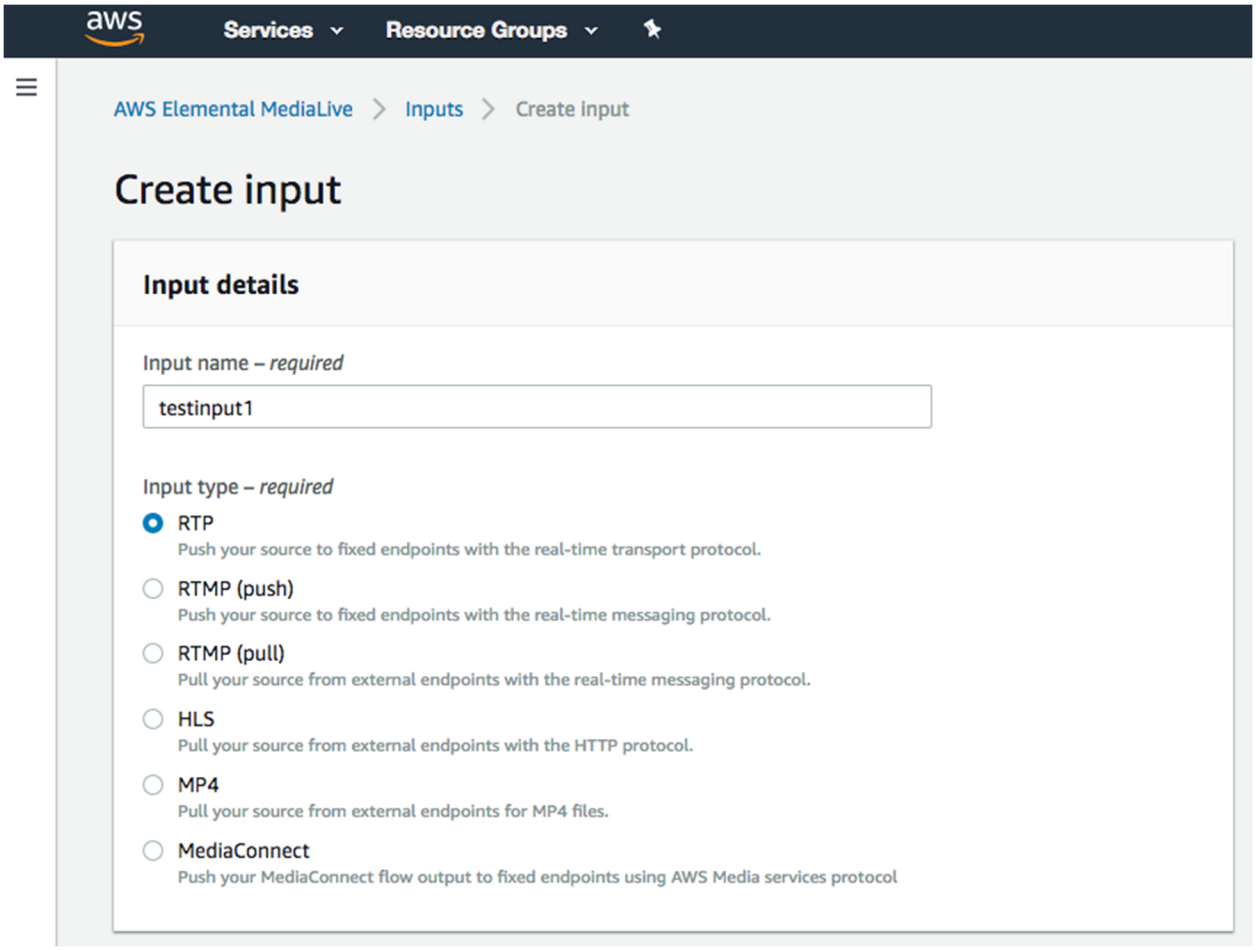
STEP B: SET UP INPUTS IN AWS ELEMENTAL MEDIALIVE

1. In a new browser tab or window, log into the AWS Elemental MediaLive console for the same region you just used to create your AWS Elemental MediaPackage channels and endpoints.
2. Take the appropriate action:

- If the standard service page appears, choose **Inputs** from the navigation panel on the left side.
- If the service landing page appears, expand the left-hand menu by choosing the three horizontal lines near the top just below the AWS icon. Choose **Inputs**.

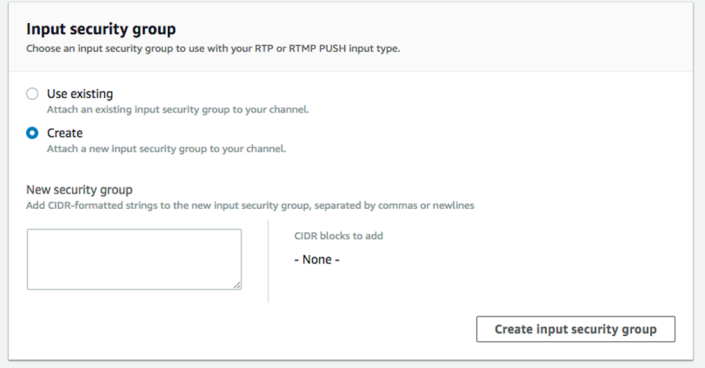
The Input listing page appears.

3. Choose **Create input**. The Create input page appears.



4. Complete the fields as follows:

- **Input name**: Assign a meaningful name.
- **Input type**: Choose **RTP**.
- **Note**: Forward Error Correction (FEC) is always enabled on MediaLive inputs, so there is no option to enable or disable it.
- **Input security group**: Choose **Create**.

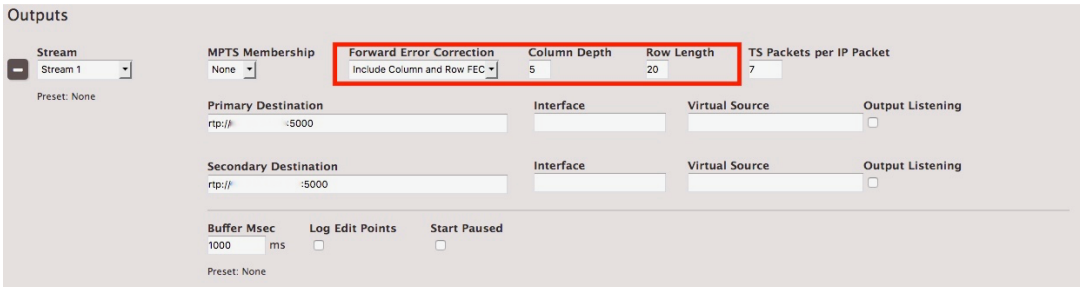


- **New security group**: Using CIDR format, type the set of IP addresses from the Prerequisite step in this document. If you're entering a range, specify a mask that encompasses all of the addresses, or enter several CIDR entries to encompass all of the addresses.

5. Choose **Create input security group**. The tile changes to show the newly created group.
6. Choose **Create**. The new input appears in the list of inputs.
7. Make a note of the endpoint URLs. You will need these when you're creating the AWS Elemental Live event.
8. Leave this page open. You will return to it in a later step.

STEP C: CREATE AN EVENT IN THE APPLIANCE

1. On another browser window or tab, display the web interface for your AWS Elemental Live appliance.
2. Create a new event with:
   - As many **inputs** as you require. For example, if you are using file inputs, you may have multiple files that you want to encode from, each of these would be an input to this event.
   - One **UDP/TS output group**.
   - One **output** with:
     - **Forward Error Correction** set to **Include Column and Row FEC.** Change the values to 5 for **Column Depth** and 20 for **Row Length.**
     - **Primary Destination** and **Secondary Destination**: paste or type the two endpoint URLs from the AWS Elemental MediaLive input (from step 7 above).

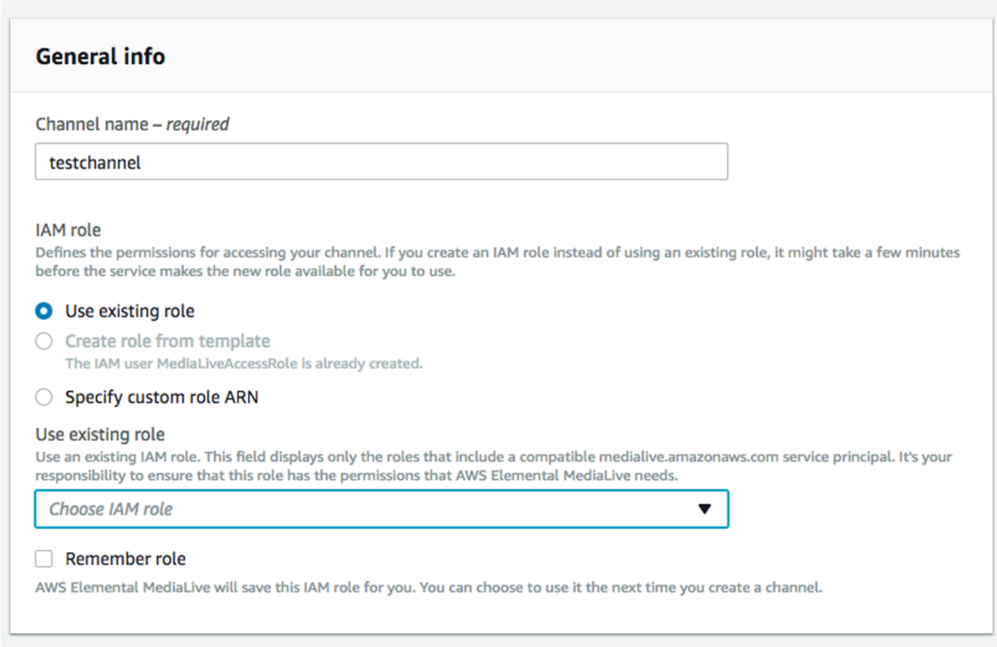


   - One **stream** using these settings:
     - **Resolution**: Set as appropriate.
     - **Video codec**: MPEG-2, MPEG-4 AVC (H.264), or HEVC (H.265).
     - **Advanced > Bitrate**: Change the default if desired. Keep in mind that the redundant pair of inputs (on AWS Elemental MediaLive) require approximately two times the specified bandwidth, plus 25% overhead for FEC.
3. Leave this page open. You will return to it in a later step.

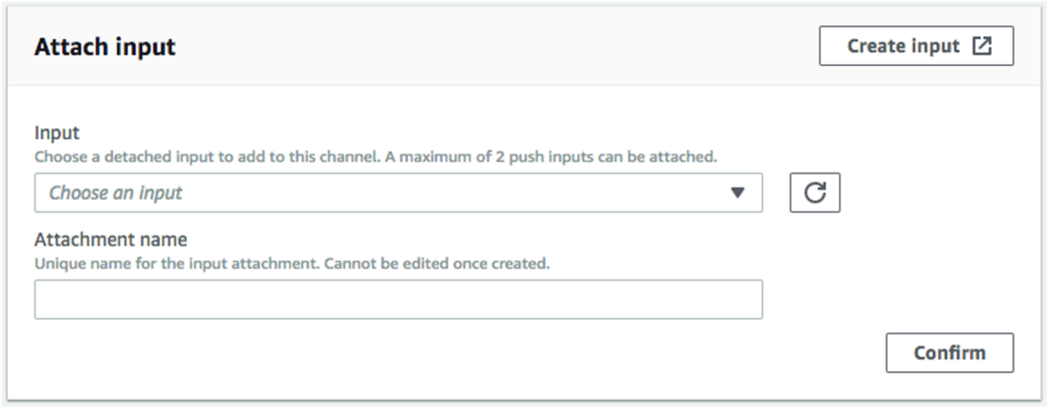
STEP D: CREATE A CHANNEL IN AWS ELEMENTAL MEDIALIVE

1. Switch back to the AWS Elemental MediaLive console.
2. Choose **Channels** from the left-hand column, then choose **Create channel**. The Create channel page appears.
3. For **Channel name**, type a meaningful identifier for the channel.
4. In the **Channel template** section at the bottom, choose **HTTP Live Streaming**. The Channel navigation panel is populated with:
   - One output group named TN2224 (HLS)
   - Ten outputs that all belong to that output group.
5. In the IAM role section, take the appropriate action:
   - If the **Create role from template** option is *enabled*, select that option and choose **Create IAM role**. The role is created. Once the creation process is complete, the role is automatically selected from the **Use existing role** drop-down.

- If the **Create role from template** option is *grayed out*, select **Use existing role** and then select **MediaLiveAccessRole** from the dropdown.



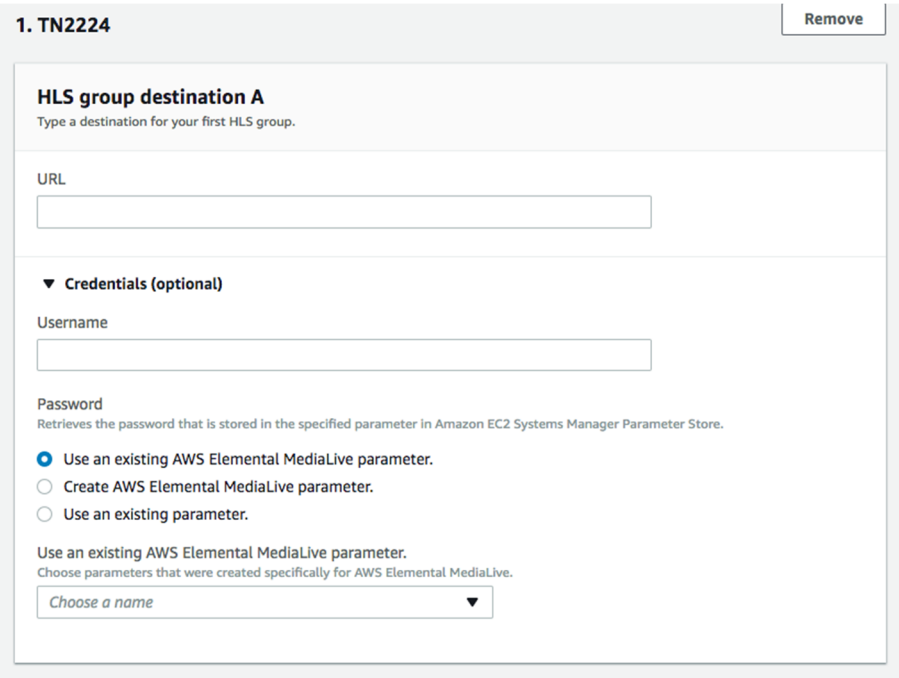
6. Under Input specifications, adjust the Maximum input bitrate, input resolution, and codec as appropriate for the content you will be sending from your appliance.
7. In the left-hand column choose the Add button beside **Input attachments**. The Attach input card appears to the right. Choose the input you created earlier from the drop-down and then choose Confirm. Additional options appear to configure the network input settings, which you can adjust if necessary for your particular source.



8. In the left hand column, navigate to “output groups” and choose the group named TN2224 (HLS). The Output Group details appear to the right.
9. In the **HLS group destination A** section, expand the **Credentials** sub-section, then complete the fields with the information from the *first* input of the AWS Elemental MediaPackage channel you created earlier (as described in Step A, part 4).

    - **URL**: Type the first URL.

- **Username**: Type the first username.
- From the list of **Password** options, choose **Create AWS Elemental MediaLive parameter.** In **Name**, enter a meaningful name for the EC2 parameter store entry where your credentials will be stored.
- **Password**: Type the first password from the AWS Elemental MediaPackage channel. The password will be stored securely in the AWS EC2 parameter store under the name medialive/<name you entered above>.
- Choose the **Create AWS Elemental MediaLive parameter** button to create it.



10. Repeat step 8 for **HLS group destination B**, completing the fields with the information from the *second* input of the AWS Elemental MediaPackage channel.
11. Under HLS settings, change “Input Loss Action” from EMIT_OUTPUT to PAUSE_OUTPUT. This will allow AWS Elemental MediaPackage to detect a loss of input on one of the MediaLive pipelines and switch any endpoints using the failed pipeline to use the other redundant pipeline.
12. This channel template includes a WebVTT captions output. However, we didn’t define a caption selector on the input, nor did we configure captions on the source appliance. Navigate to the HLS outputs card and choose the X to the right of Output 10 (_webvtt) to delete the captions output.
13. Choose the **Create channel** button.

STEP E: START STREAMING THE VIDEO

Because the AWS Elemental MediaLive channel uses RTP in this workflow example, you can start either the AWS Elemental Live appliance event or the AWS Elemental MediaLive channel first. The order doesn’t matter. (Note that for other protocols, the order is important.)

1. In AWS Elemental MediaLive, on the **Channels** page, choose the radio button next to your new channel. The buttons along the top are enabled.
2. Choose **Start**. The channel state changes to Starting, and then to Running.
3. Switch to the web page for the AWS Elemental Live appliance web interface. **Start** the event.

Video should start streaming from the appliance to AWS Elemental MediaLive, then to AWS Elemental MediaPackage, where you can view it in a preview window.