

AWS Elemental Live to AWS Elemental MediaLive to
AWS Elemental MediaPackage

Workflow Example



CONTENTS

Introduction.....	3
Requirements	3
Order of work.....	3
Prerequisite: Get needed information	3
Step B: Set up inputs in AWS Elemental MediaLive	5
Step C: Create an event in the appliance	8
Step D: Create a channel in AWS Elemental MediaLive	8
Step E: Start streaming the video.....	10
Step F: Clean up.....	10

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 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 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, you must 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.

Note: You can configure your contribution feed (the signal path from your on-premises device to the cloud) using many different protocols. You can use additional services such as AWS Elemental MediaConnect to create a highly-resilient contribution feed that you can distribute to multiple locations, and even across accounts. In this example, we use a basic workflow that is straightforward to implement.

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. Get 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: GET NEEDED INFORMATION

You need the public IP address (or addresses) from the appliance that you 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 are likely different from those reported by the appliance. If so, determine the external address being used. The appliance network may also be configured to use a pool of external IP addresses. In this case, you need the CIDR range for the entire pool to include in the Input Security Group.

STEP A: CREATE A CHANNEL IN AWS ELEMENTAL MEDIAPACKAGE

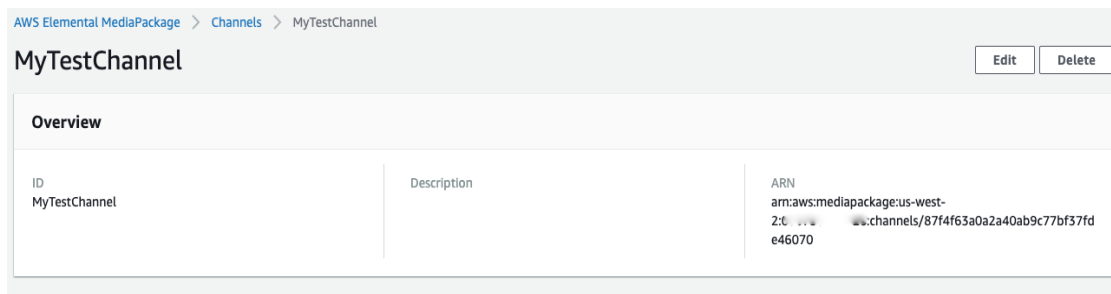
In order to create your AWS Elemental MediaLive channel, you must have a destination for that channel's output. For this example, use AWS Elemental MediaPackage as your destination.

By using the MediaPackage output group type, you can configure the channel in MediaLive using only the name of the MediaPackage channel:

1. Log in to 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 appears. If not, the introductory landing page appears.
 - a. From the landing page, enter a unique channel name and choose **Next Step**.
 - b. From the Channel Listing page, choose **Create Channel**.
3. For either case, you should now see the Create channel page:

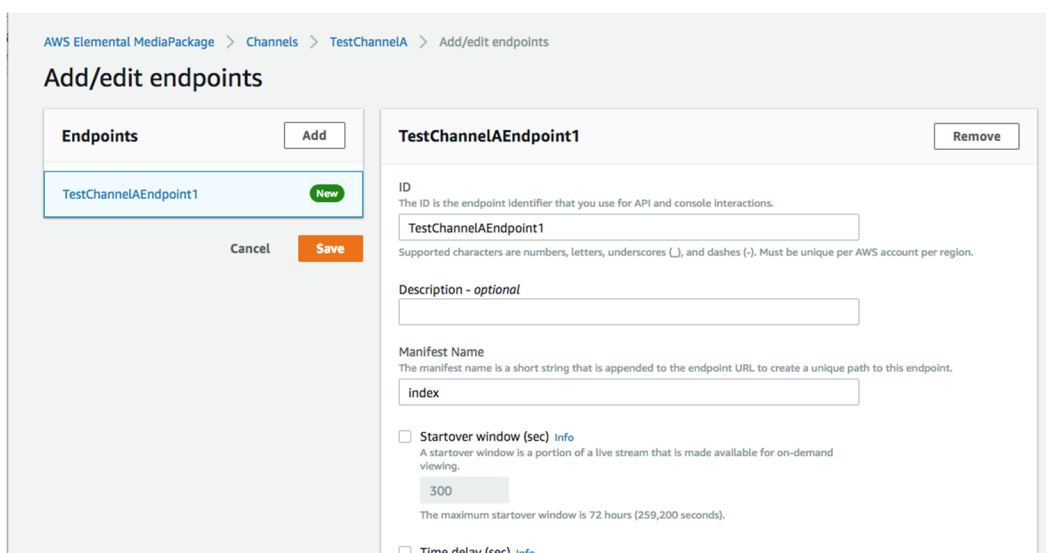
The screenshot shows the 'Create channel' page in the AWS Elemental MediaPackage console. The breadcrumb navigation at the top reads 'AWS Elemental MediaPackage > Create channel'. The main heading is 'Create channel'. The form is divided into two sections: 'Channel details' and 'CloudFront distribution details'. In the 'Channel details' section, there is an 'ID' field with the value 'MyTestChannel' and a description field which is empty. Below the ID field, a note states: 'Supported characters are numbers, letters, underscores (_), and dashes (-). Must be unique per AWS account per region.' The 'Input type' is set to 'Apple HLS' in a dropdown menu. In the 'CloudFront distribution details' section, there are two radio button options: 'Do not create a CloudFront distribution for this channel' (which is selected) and 'Create a CloudFront distribution for this channel' (with an 'Info' link). A note below the second option says: 'When you save this channel, MediaPackage works with CloudFront to create a distribution.' At the bottom right of the form, there are 'Cancel' and 'Create' buttons.

4. Add a description if desired. 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 **ID** as you need it when creating your AWS Elemental MediaLive channel.

- 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. 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 can 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. You can also preview if from inside the MediaPackage console.

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

STEP B: SET UP INPUTS IN AWS ELEMENTAL MEDIA LIVE

- In a new browser tab or window, log in to the AWS Elemental MediaLive console for the same region you just used to create your AWS Elemental MediaPackage channels and endpoints.
- Open the Input listing page:
 - 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.

The screenshot shows the AWS Elemental MediaLive console interface. At the top, there is a navigation bar with the AWS logo, 'Services', and 'Resource Groups'. Below this, a breadcrumb trail reads 'AWS Elemental MediaLive > Inputs > Create input'. The main heading is 'Create input'. Underneath, there is a section titled 'Input details'. This section contains two main fields: 'Input name – required' with a text input field containing 'testinput1', and 'Input type – required' with a list of radio button options: 'RTP' (selected), 'RTMP (push)', 'RTMP (pull)', 'HLS', 'MP4', and 'MediaConnect'. Each option has a brief description of the protocol used.

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

Input security group
Choose an input security group to use with your RTP or RTMP PUSH input type.

Use existing
Attach an existing input security group to your channel.

Create
Attach a new input security group to your channel.

New security group
Add CIDR-formatted strings to the new input security group, separated by commas or newlines

CIDR blocks to add
- None -

Create input security group

- e. **New security group:** Using CIDR format, type the set of IP addresses you gathered in the Prerequisite step. If you're entering a range, specify a mask that includes all of the addresses, or enter several CIDR entries to account for 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 need these when you're creating the AWS Elemental Live event.
8. Leave this page open. You return to it in a later step.

STEP C: CREATE AN EVENT IN THE APPLIANCE

1. In another browser window or tab, display the web interface for your AWS Elemental Live appliance.
2. Create a new event with:
 - a. 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.
 - b. One **UDP/TS output group**.
 - c. One **output** with:
 - i. **Forward Error Correction** set to **Include Column and Row FEC**. Change the values to 5 for **Column Depth** and 20 for **Row Length**.
 - ii. **Primary Destination** and **Secondary Destination**: Paste or type the two endpoint URLs from the AWS Elemental MediaLive input (from step 7 in the previous section).

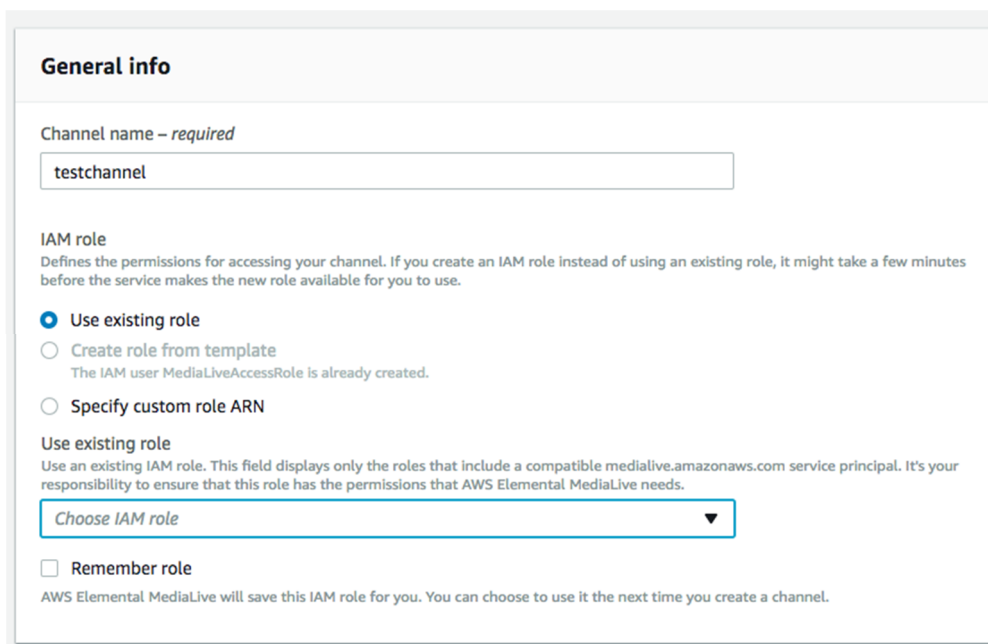
The screenshot shows the 'Outputs' configuration interface. A red box highlights the 'Forward Error Correction' dropdown menu, which is set to 'Include Column and Row FEC'. To its right, the 'Column Depth' is set to 5 and the 'Row Length' is set to 20. Below these settings, there are fields for 'Primary Destination' and 'Secondary Destination', both containing 'rtp://:5000'. There are also checkboxes for 'Output Listening' and 'Start Paused'.

- d. One **stream** using these settings:
 - i. **Resolution**: Set as appropriate.
 - ii. **Video codec**: MPEG-2, MPEG-4 AVC (H.264), or HEVC (H.265).
 - iii. **Audio codec**: For the purposes of this example, use the default AAC stereo audio.
 - iv. **Captions**: For the purposes of this example, do not specify captions in the output.
 - v. **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 return to it in a later step.

STEP D: CREATE A CHANNEL IN AWS ELEMENTAL MEDIA LIVE

1. Switch back to the AWS Elemental MediaLive console.
2. From the left-hand column, choose **Channels**, 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 (MediaPackage)**. The Channel navigation panel shows:
 - a. One output group named MediaPackage group
 - b. Ten outputs that all belong to that output group
5. In the IAM role section, take the appropriate action:
 - a. If the **Create role from template** option is *enabled*, select that option and choose **Create IAM role**. This creates the role. Once you complete the creation process, the role is automatically selected from the **Use existing role** drop-down.

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



General info

Channel name – *required*

testchannel

IAM role
 Defines the permissions for accessing your channel. If you create an IAM role instead of using an existing role, it might take a few minutes before the service makes the new role available for you to use.

Use existing role

Create role from template
 The IAM user MediaLiveAccessRole is already created.

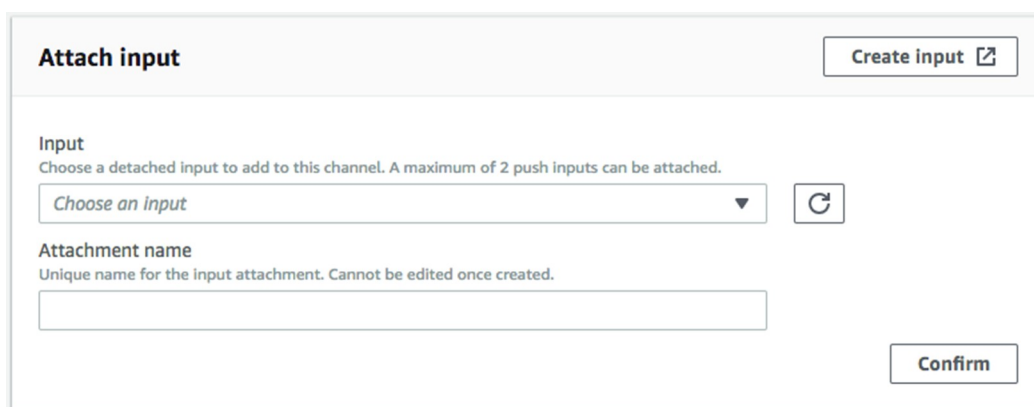
Specify custom role ARN

Use existing role
 Use an existing IAM role. This field displays only the roles that include a compatible medialive.amazonaws.com service principal. It's your responsibility to ensure that this role has the permissions that AWS Elemental MediaLive needs.

Choose IAM role ▼

Remember role
 AWS Elemental MediaLive will save this IAM role for you. You can choose to use it the next time you create a channel.

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



Attach input Create input [↗](#)

Input
 Choose a detached input to add to this channel. A maximum of 2 push inputs can be attached.

Choose an input ▼ ↻

Attachment name
 Unique name for the input attachment. Cannot be edited once created.

Confirm

8. In the left-hand column, navigate to **Output groups** and choose the **MediaPackage group**. The Output Group details appear to the right.
9. In the **MediaPackage destination** section, copy and paste the MediaPackage ID from the channel you created earlier.
10. Delete the captions output. This channel template includes a WebVTT captions output. Since we didn't define a caption selector on the input, nor did we configure captions on the source appliance, we don't need it. Navigate to the **MediaPackage outputs** section and choose the **X** to the right of Output 10 (`_webvtt`) to delete the captions output.
11. 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. For other protocols, the order can be 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 and then to AWS Elemental MediaPackage, where you can view it in a preview window.

STEP F: CLEAN UP

To avoid additional charges, it's important to stop and delete all of the resources you used.

1. In the AWS Elemental MediaPackage console, choose the channel you created. From the **endpoints** section of the channel detail page, select the check-box beside any endpoints and choose **Delete**. If you chose to enable a CloudFront distribution when you created the channel, you need to disable and delete the distribution in the CloudFront console as well.
2. At the top right of the channel detail page, choose **Delete**.
3. In the AWS Elemental MediaLive console, under the channel listing, choose the radio button beside your channel, and then choose the **Stop** button.
4. Once the channel state has changed to **idle**, confirm the radio button is still selected, then from **Channel Actions** drop-down choose **Delete channel**.
5. From the **Inputs** section of the console, choose the radio button beside your input and then choose the **Delete** button from the top right.
6. From the **Input security group** section of the console, choose the radio button beside your input security group and then choose the **Delete** button from the top right.
7. On your Elemental Live appliance, stop and archive your live event.