

The background features a vibrant, multi-colored gradient. It starts with a dark blue on the left, transitions through purple and magenta, and then into bright orange and yellow towards the right. A diagonal line separates the darker blue on the left from the lighter colors on the right.

AWS  
re:Invent

**MDS306-R**

# Building resilient live streaming video workflows

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# The pillar of a resilient live stream architecture

Mezzanine  
encoding

Transport

ABR  
transcoding

Packaging

Origination

Distribution

# The pillar of a resilient live stream architecture

Mezzanine  
encoding

Transport

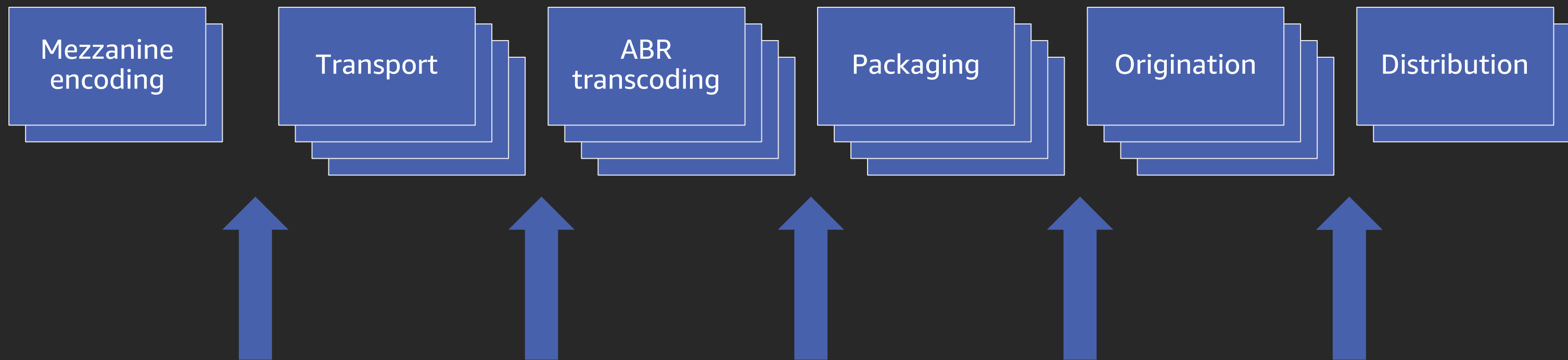
ABR  
transcoding

Packaging

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# The pillar of a resilient live stream architecture



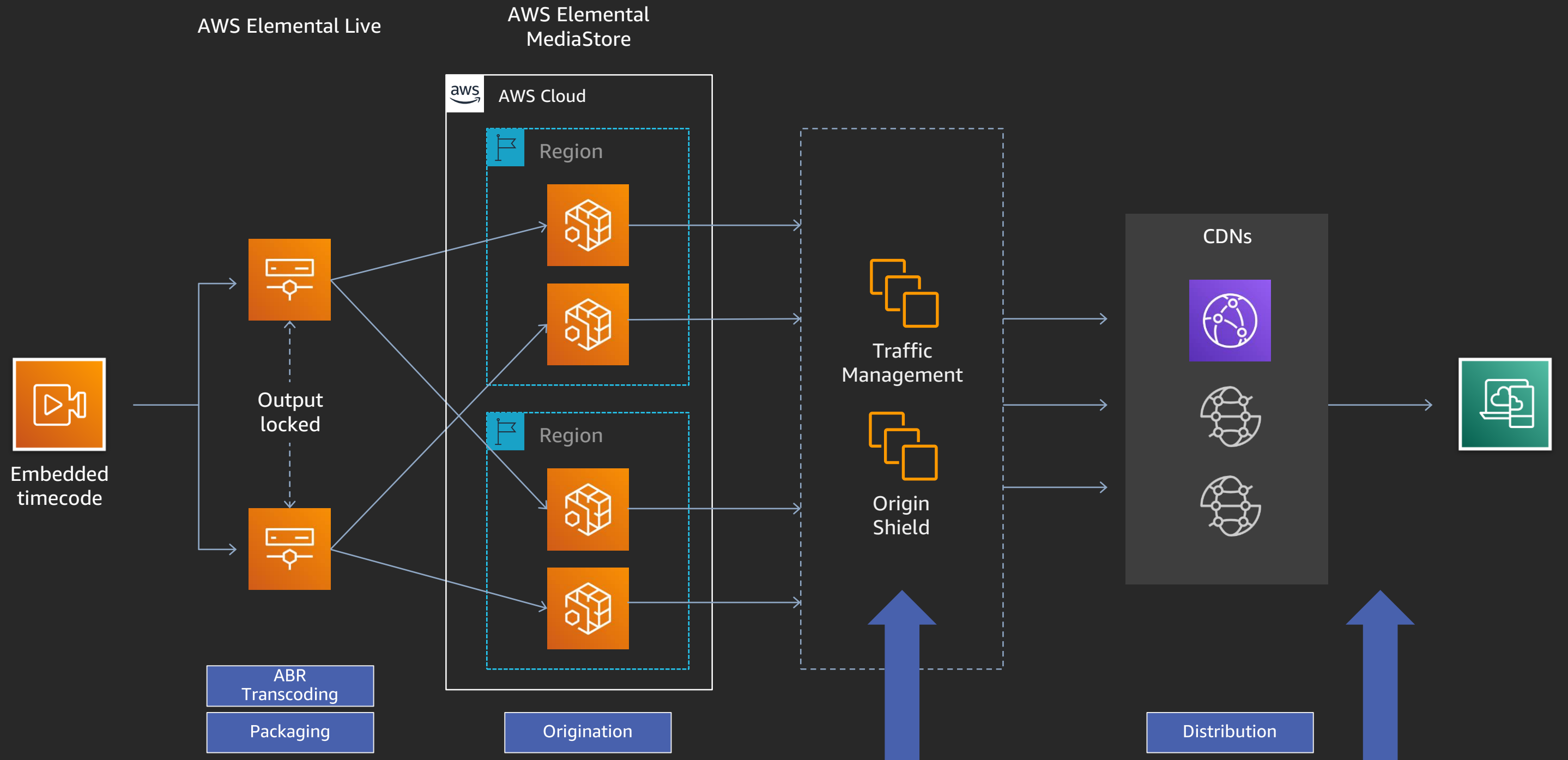
# Survive the chaos

Simple resilience =

Redundancy by duplicating components  
+ Manual failover

Better resilience =

Cloud-native redundancy with autoscaling and healing  
+ Automatic failover



# HLS backup media manifests



Manually crafted HLS master manifests with backup entries for each media manifest path

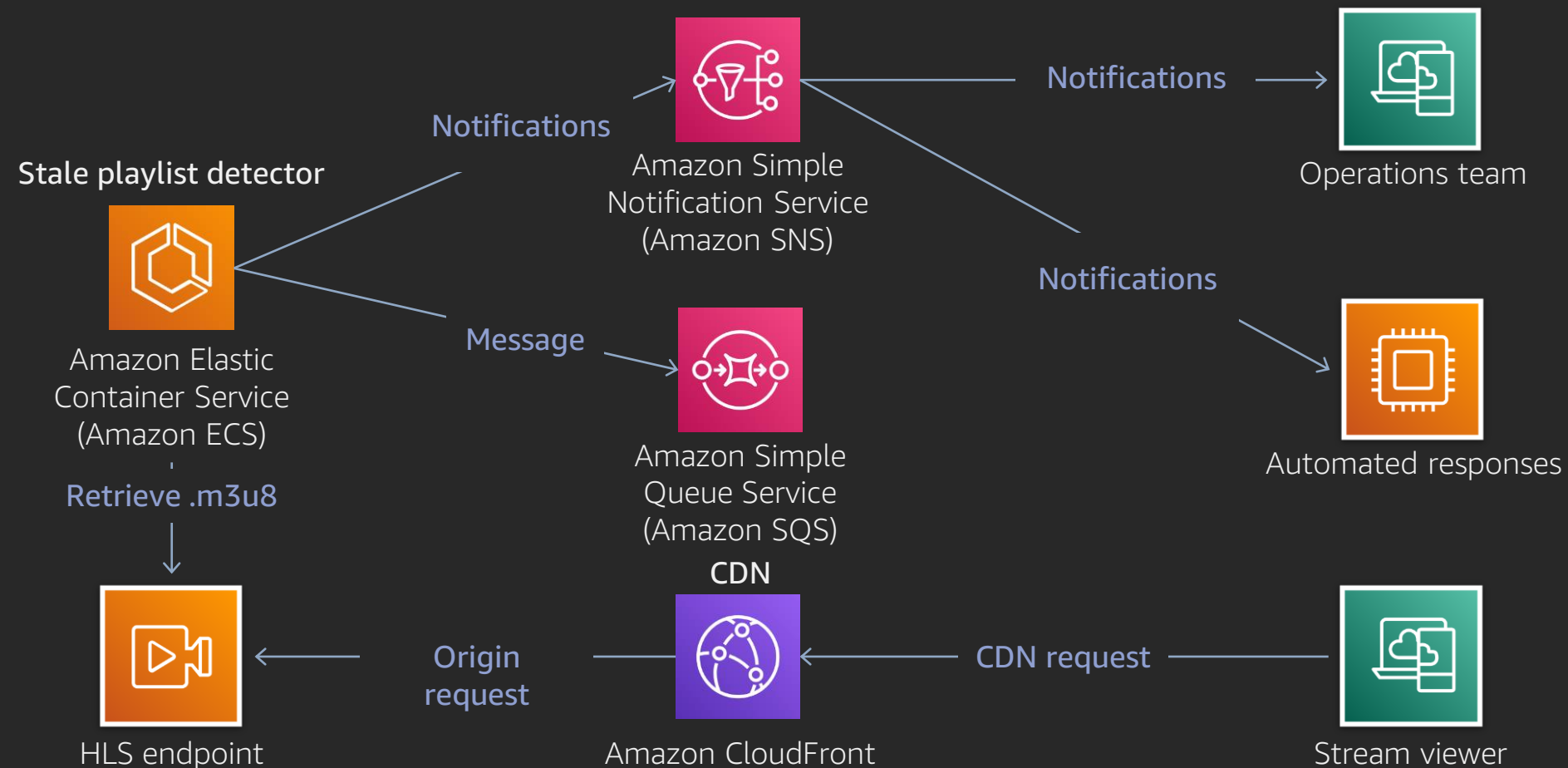


# HLS backup media manifests



Clients will switch to alternative paths when they get a 404 for the first choice

# Stale playlist detection



Actions after stale playlist is detected can be:

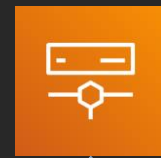
- Change CDN responses for an endpoint to 404s, which will force failover
- Signal CMS to update player to trigger a failover

# Discovery

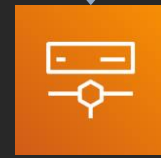


Embedded timecode

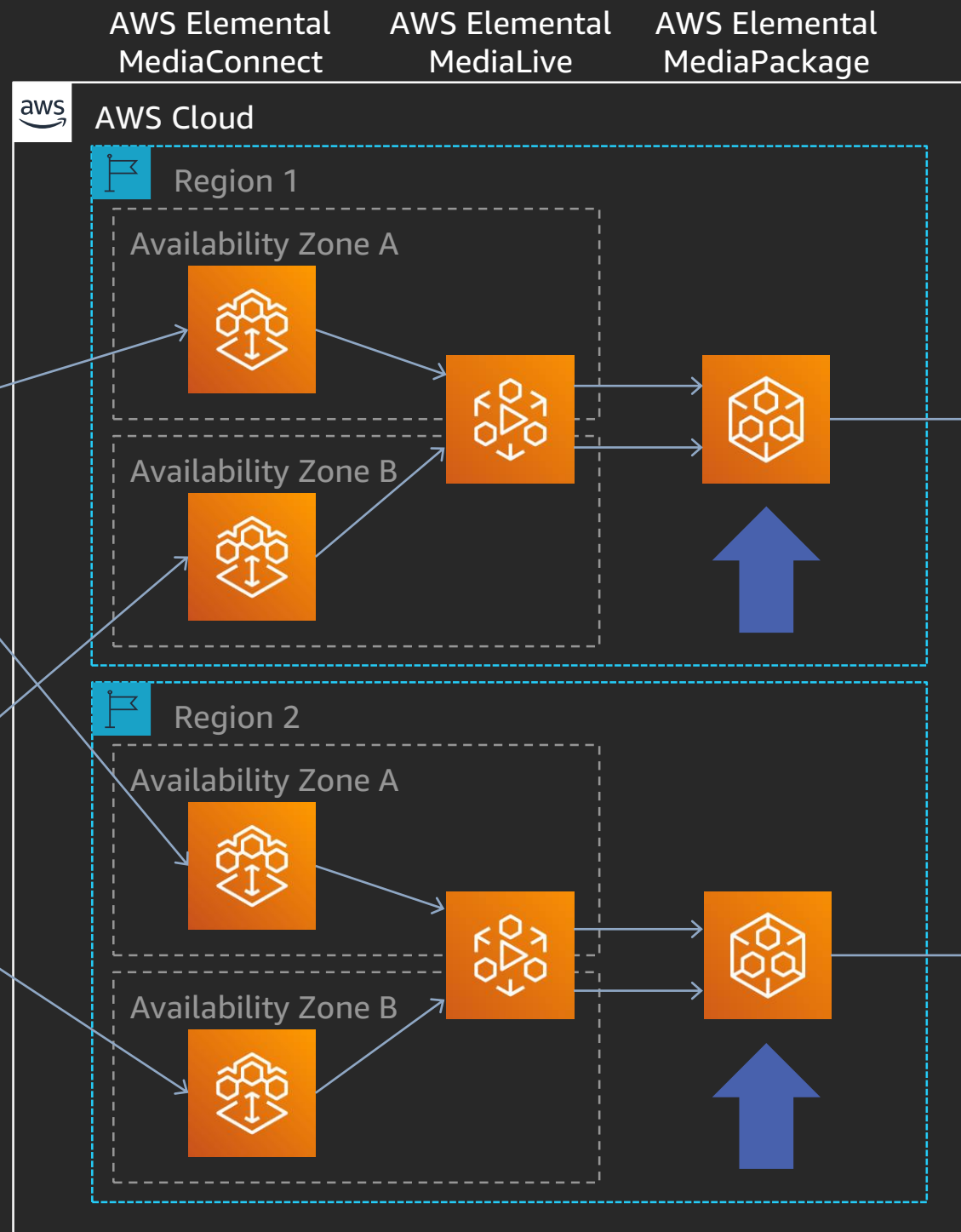
AWS Elemental Live



Output locked



Mezzanine Encoding



Transport

ABR Transcoding

Packaging

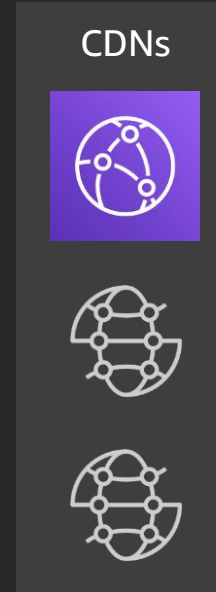
Origination



Traffic Management



Origin Shield

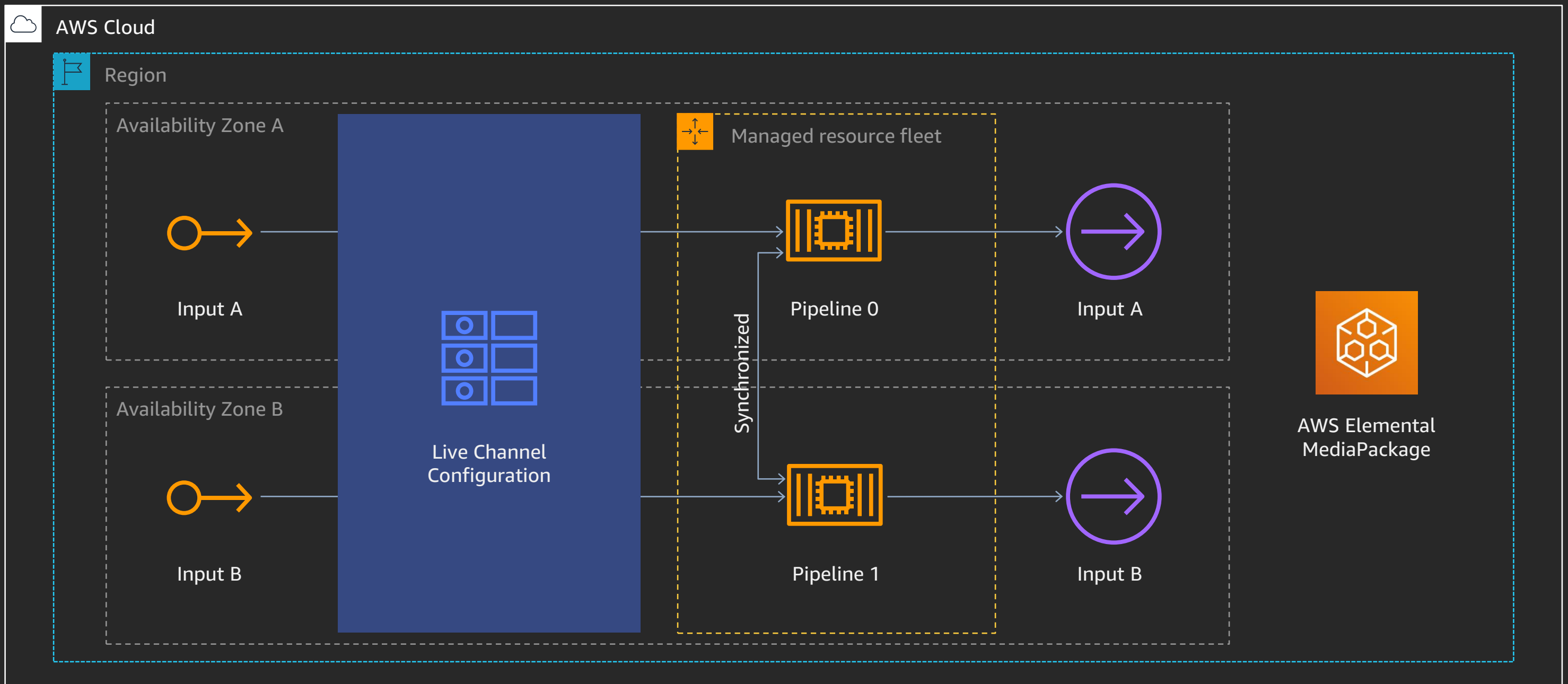


CDNs

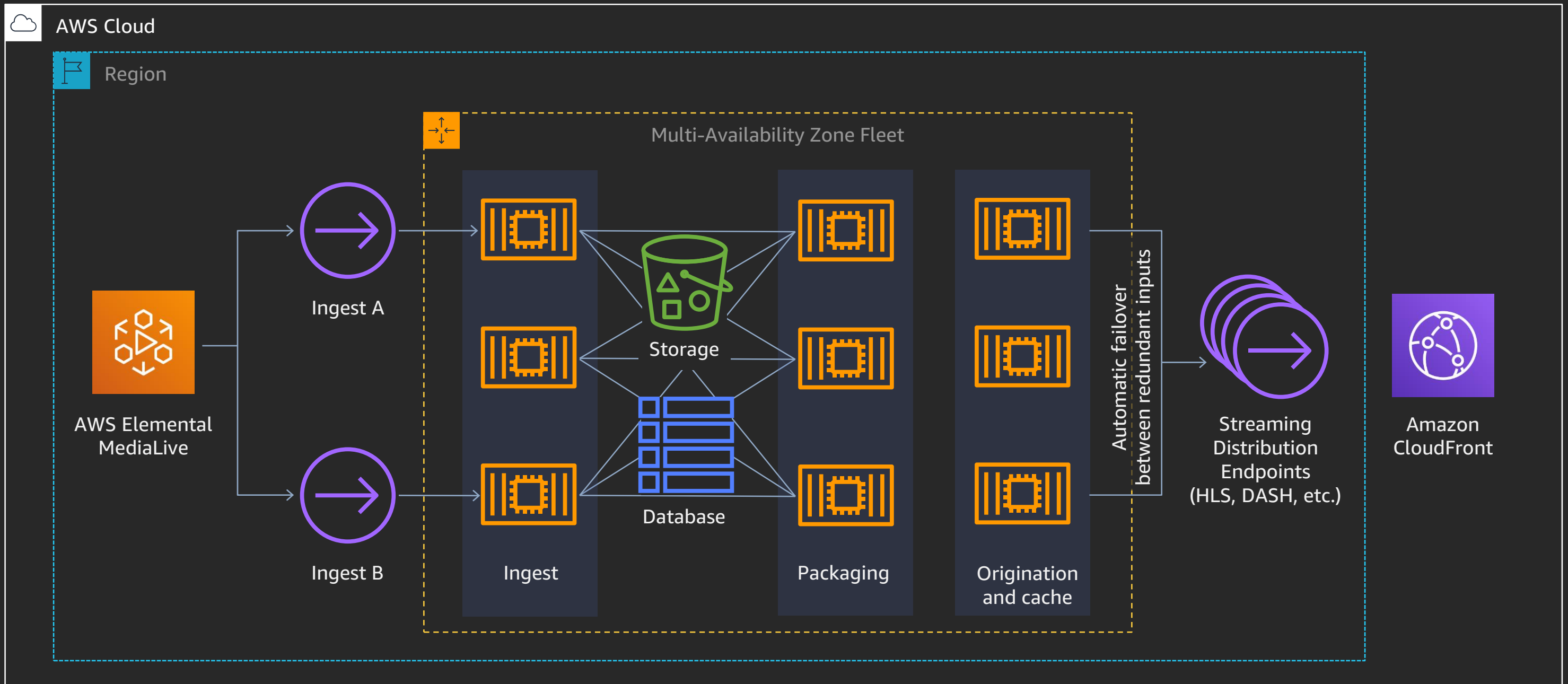


Distribution

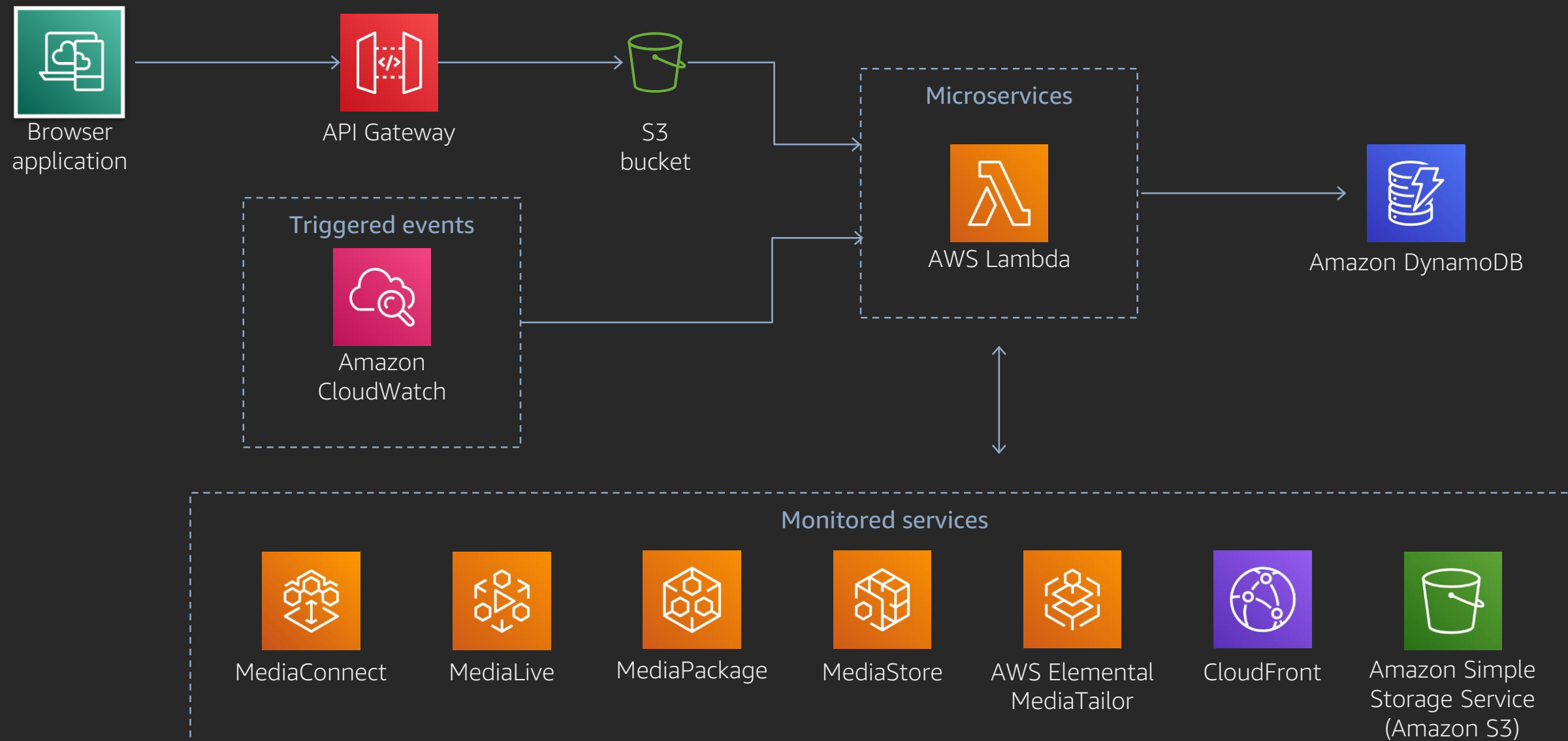
# AWS Elemental MediaLive: not just a single live encoding instance



# AWS Elemental MediaPackage: more than just a packaging and origin instance



# Media services application mapper



Monitor entire live streaming workflow

# How much resilience to do you “need”?

- What does this mean for levels of redundancy?
- What does this mean for ways to failover?
- What is your target recover time/point objective? (RTO/RPO)
  - How long can you accept running at reduced resilience?
  - Can you accept “glitches,” buffering, any dead airtime?
- What trade-off are you willing to make?
  - Higher cost
  - Increases end-to-end latency
  - More complex workflow to monitor and maintain

# Demo



## Acceptable downtime with percentage uptime target

	1 day	30-day month	365-day year
95%	1.2 hours	36 hours	438 hours
	72 minutes	2,160 minutes	26,280 minutes
	4,320 seconds	129,600 seconds	1,576,800 seconds
99%	0.24 hours	7.2 hours	87.6 hours
	14.4 minutes	432 minutes	5,256 minutes
	864 seconds	25,920 seconds	315,360 seconds
99.9%	0.02 hours	0.72 hours	8.76 hours
	1.44 minutes	43.2 minutes	525.6 minutes
	86.4 seconds	2,592 seconds	31,536 seconds
99.95%	0.01 hours	0.36 hours	4.38 hours
	0.72 minutes	21.6 minutes	262.8 minutes
	43.2 seconds	1,296 seconds	15,768 seconds
99.99%	0 hours	0.07 hours	0.88 hours
	0.14 minutes	4.32 minutes	52.56 minutes
	8.64 seconds	259.2 seconds	3,153.6 seconds
99.999%	0 hours	0.01 hours	0.09 hours
	0.01 minutes	0.43 minutes	5.26 minutes
	0.86 seconds	25.92 seconds	315.36 seconds

# Related breakouts

## **MDS202-R1: Optimizing live video feeds to the cloud and the customer**

*Wednesday 11:30 am-12:30 pm | Session*

## **MDS313-R & R1: Hotstar: Live streaming at record scale**

*Wednesday 11:30 am-12:30 pm & Thursday 2:30-3:30 pm | Session*

## **MDS401-R: Achieve ultra-low latency for live video streaming**

*Wednesday 7:00-8:00 pm & Thursday 3:15-4:15 pm | Chalk Talk*

## **MDS201: Latest Media & Entertainment industry news from AWS**

*Thursday 4:00-5:00 pm | Session*

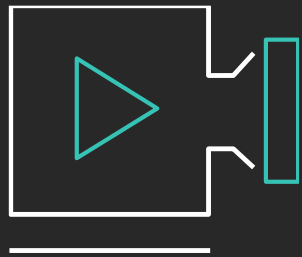
MSAM: <https://aws.amazon.com/solutions/media-services-application-mapper/>

Stale Playlist Detector: <https://github.com/awslabs/aws-stale-playlist-detector>

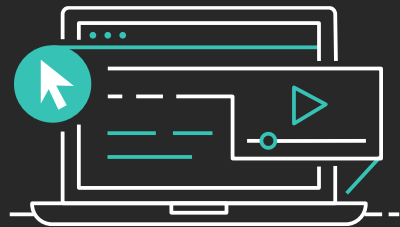
AWS Media blog: <https://aws.amazon.com/blogs/media/>

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