Media Over IP in the Cloud

Jason O'Malley
(he/him)
Sr. Partner Solutions Architect,
Global Media & Telecom Partners
AWS

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Agenda

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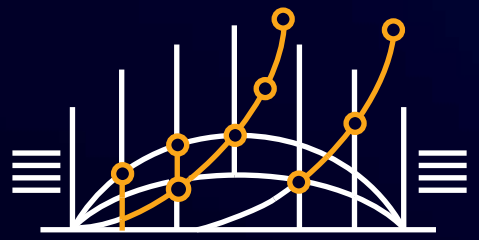
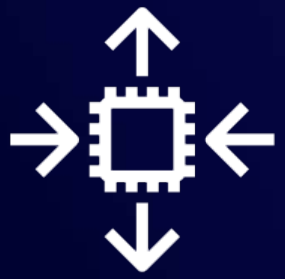
Broadcast Trends



Cost Optimization



Scalability & Agility

Experimentation & Innovation

Sustainable workflows

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Broadcast Workflow

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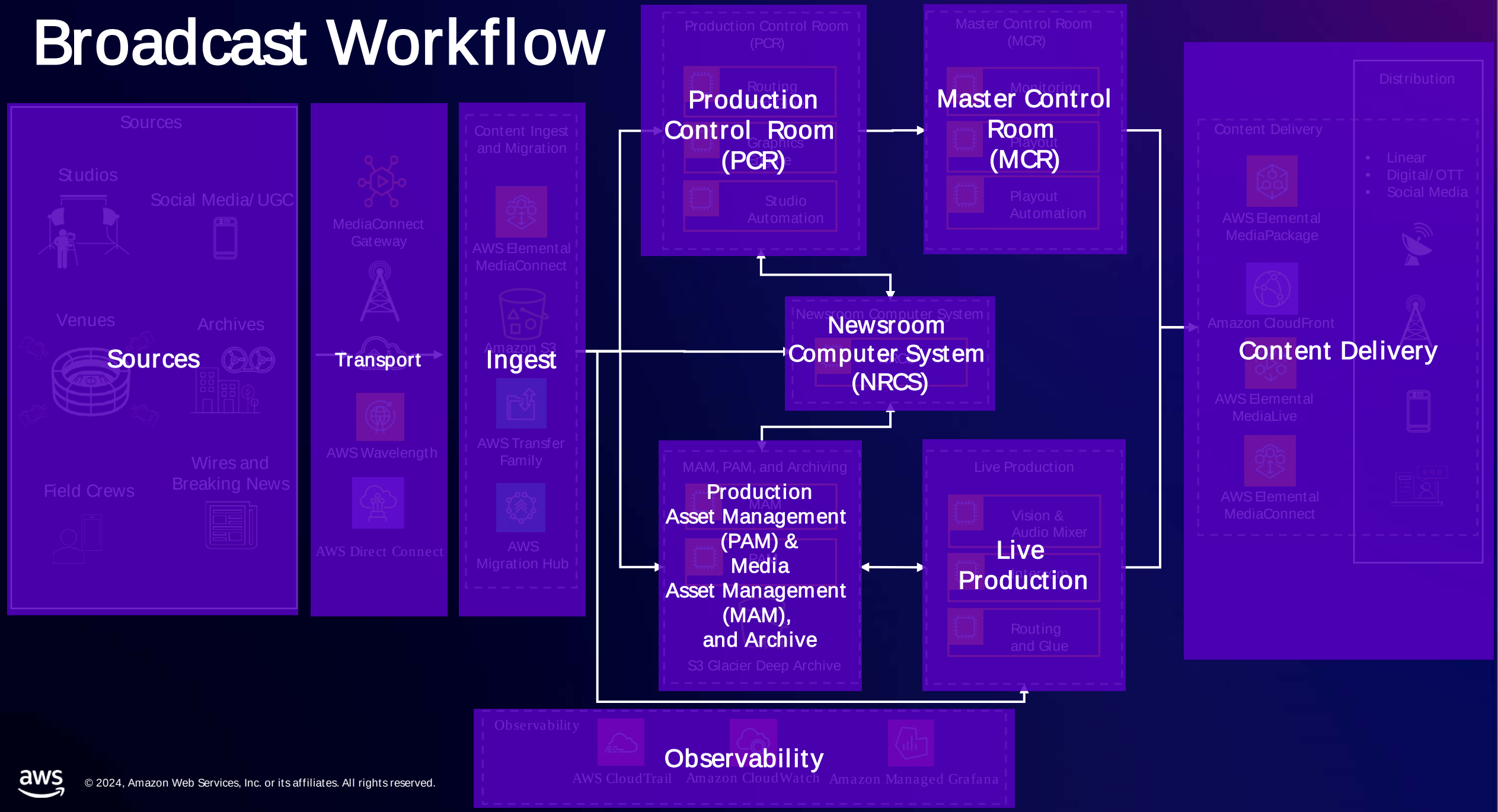
Broadcast Workflow



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Live Streaming

File Transcode and VOD Streaming

Broadcast and B2B Distribution

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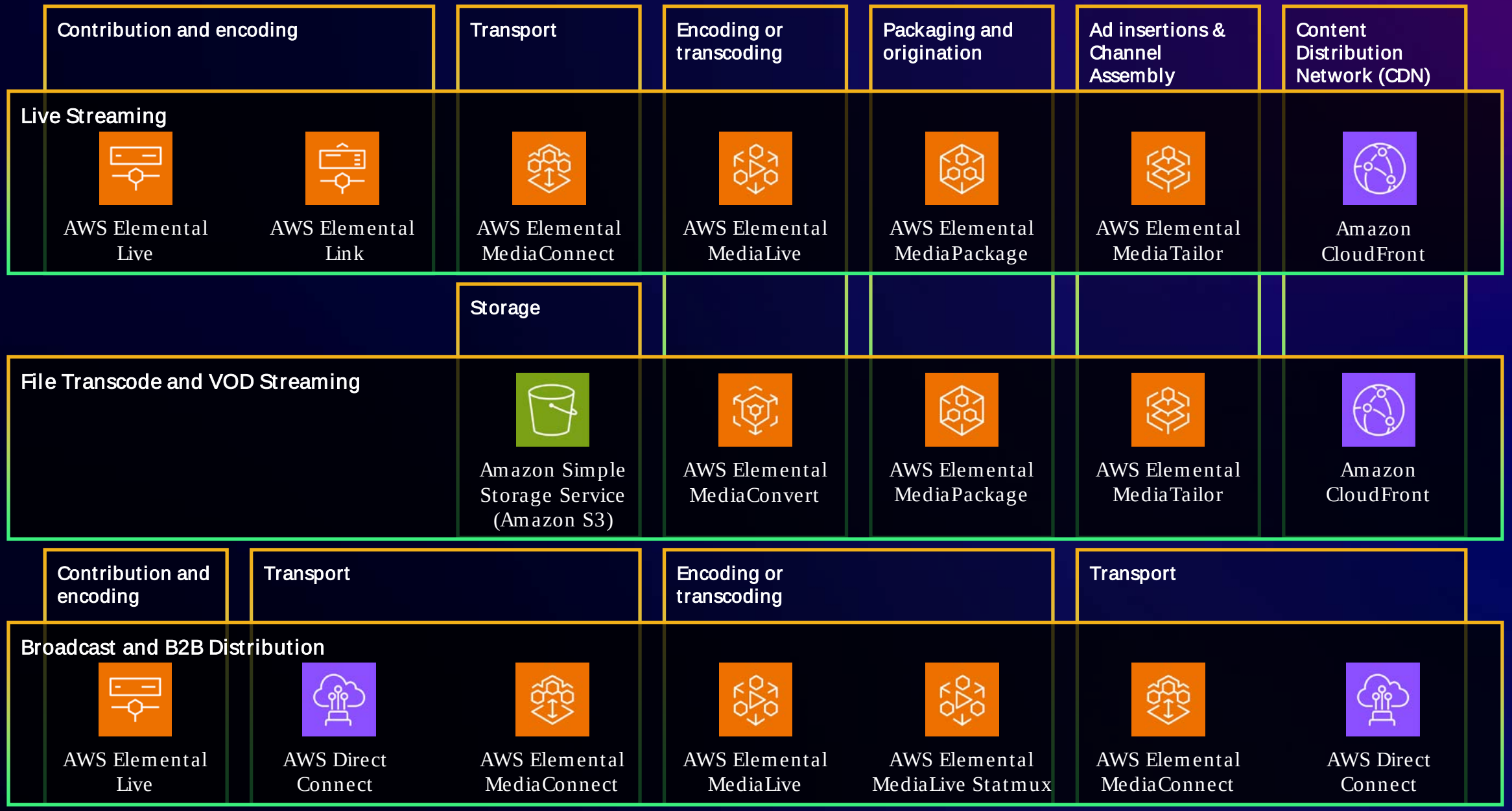

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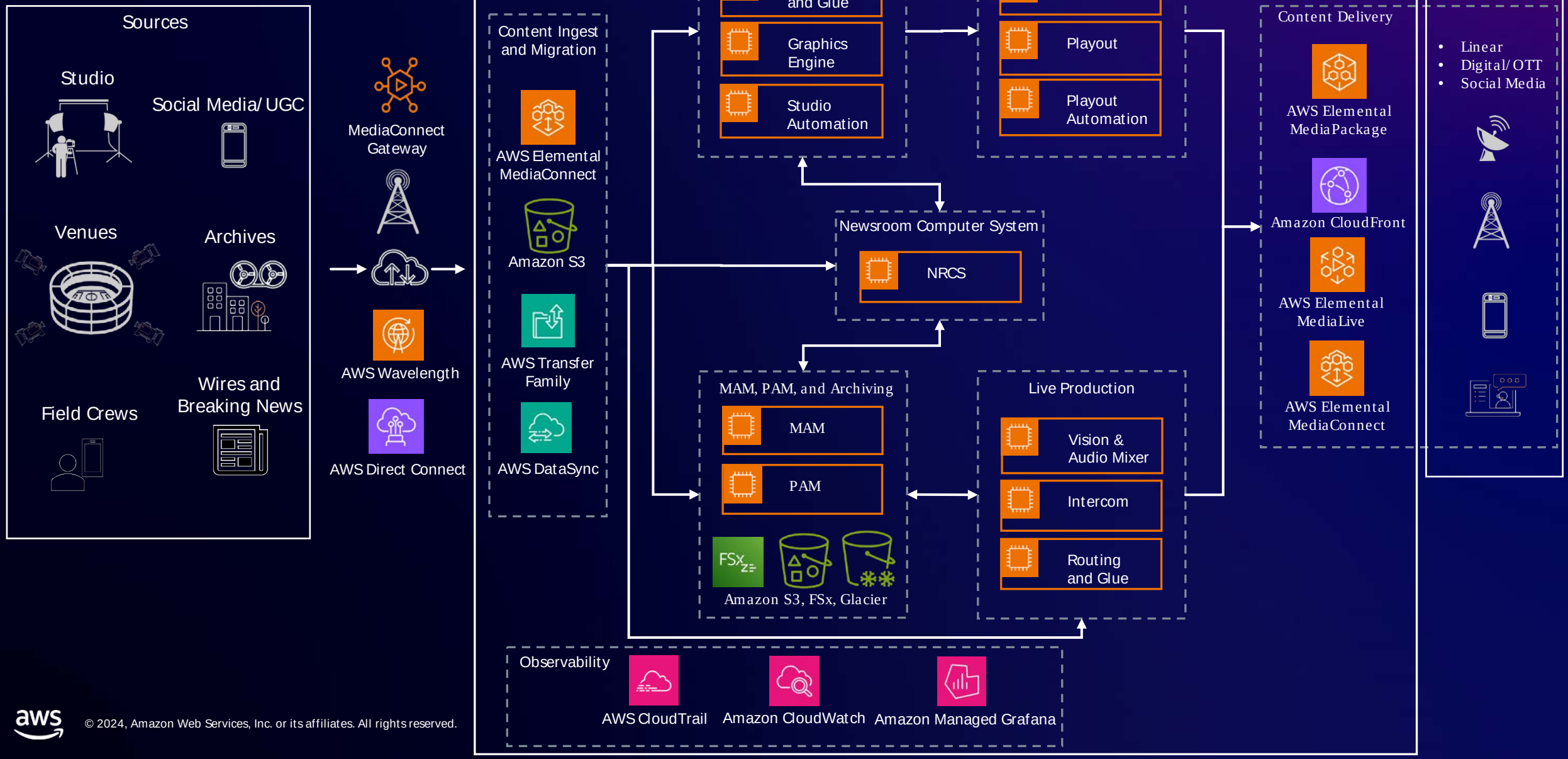
Broadcast Workflow on AWS



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Examples:
Live cloud production

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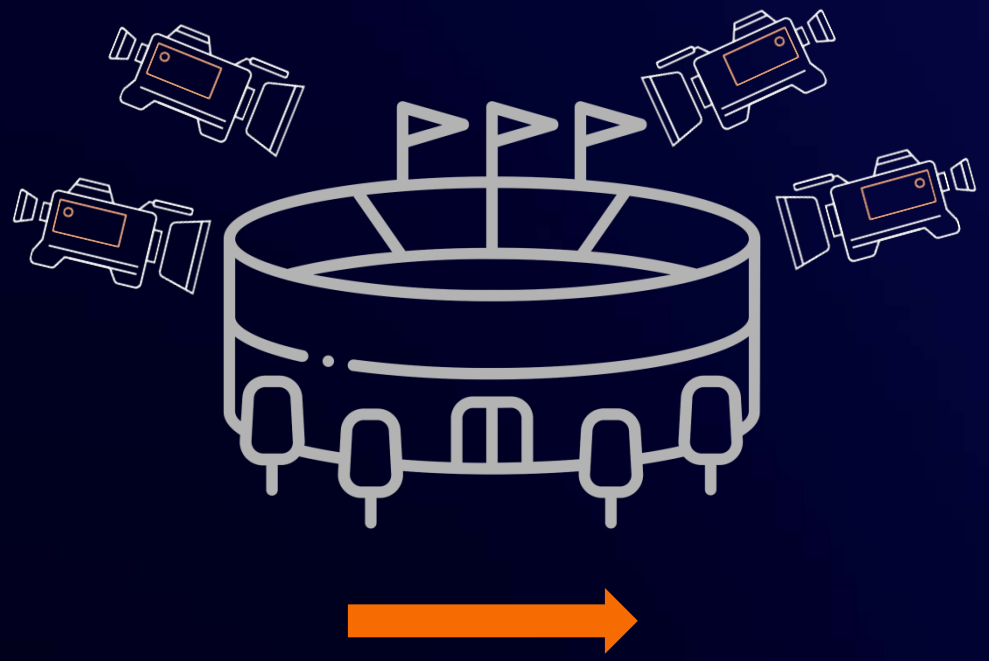
Examples of Live Production



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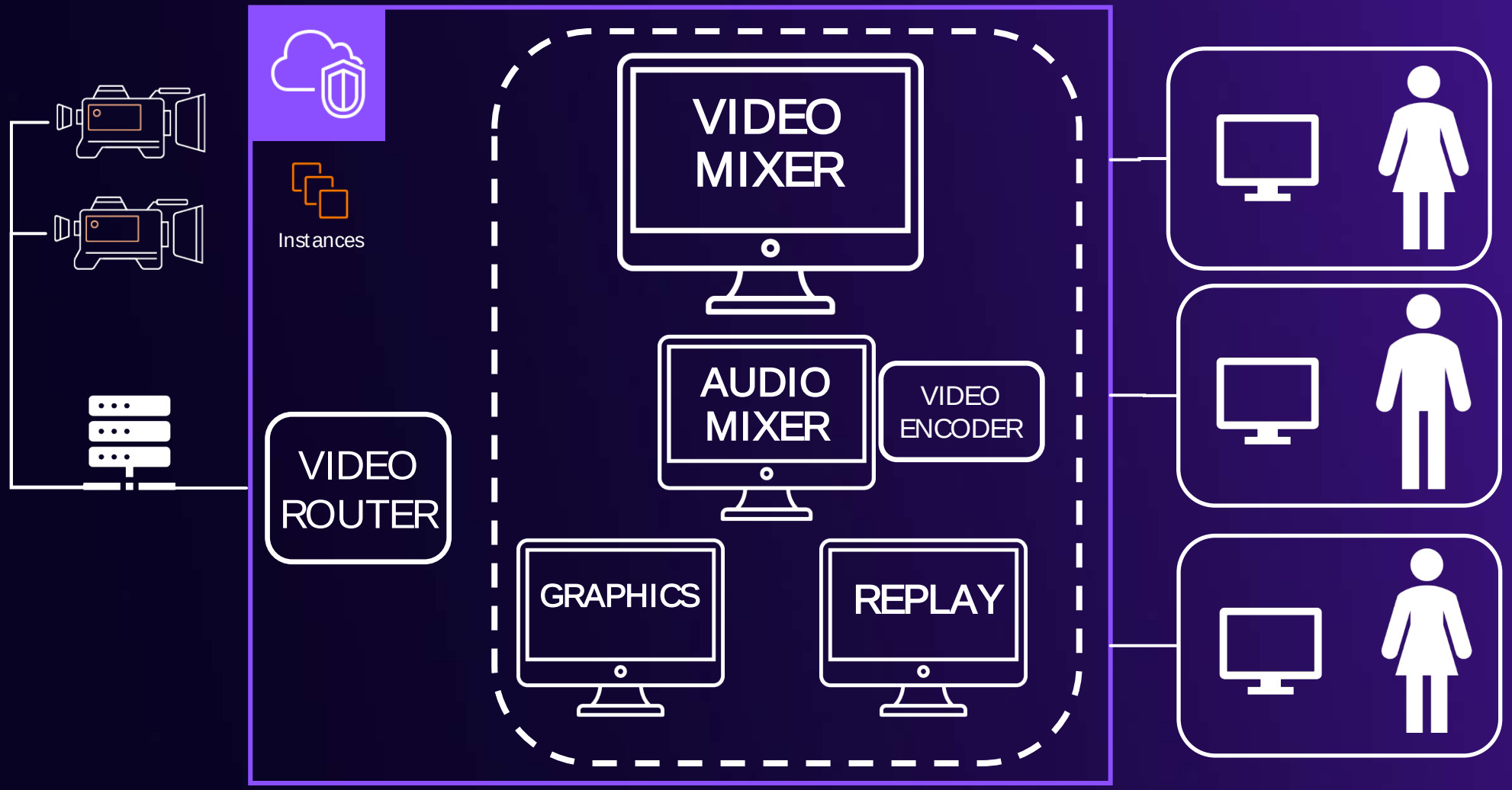
Live Cloud Production



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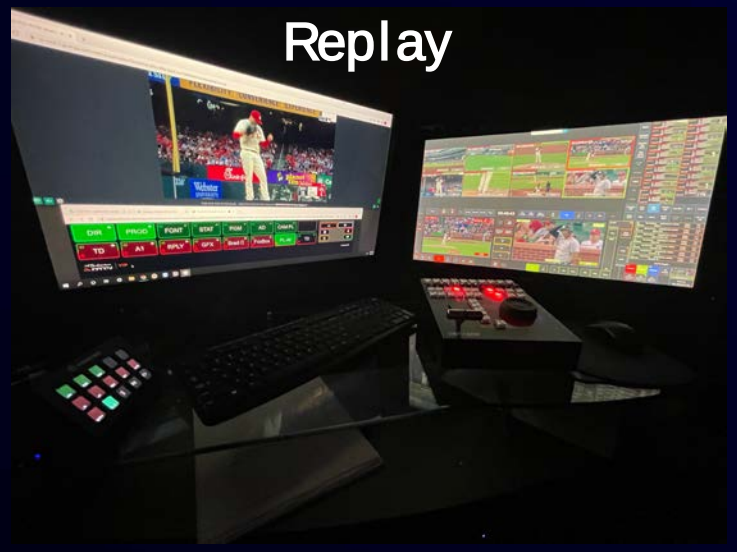
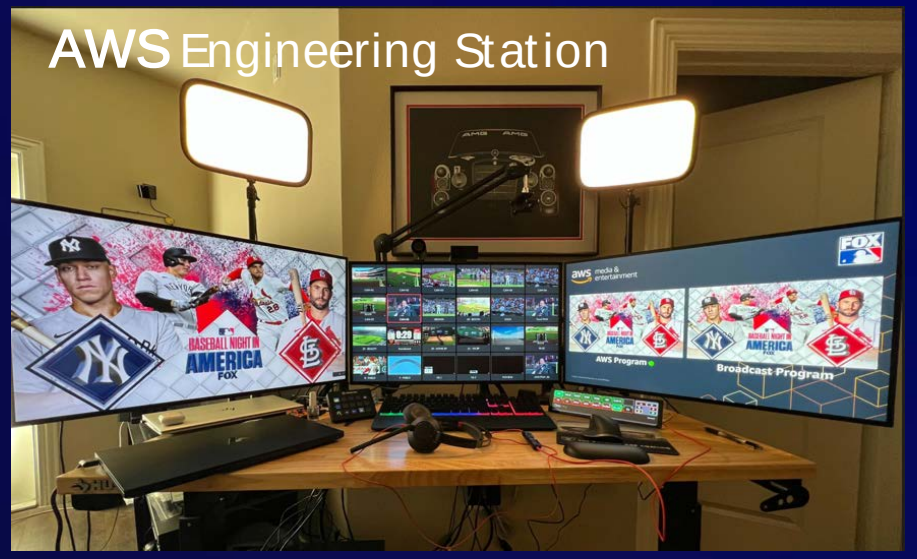
Multi-location Remote Operations





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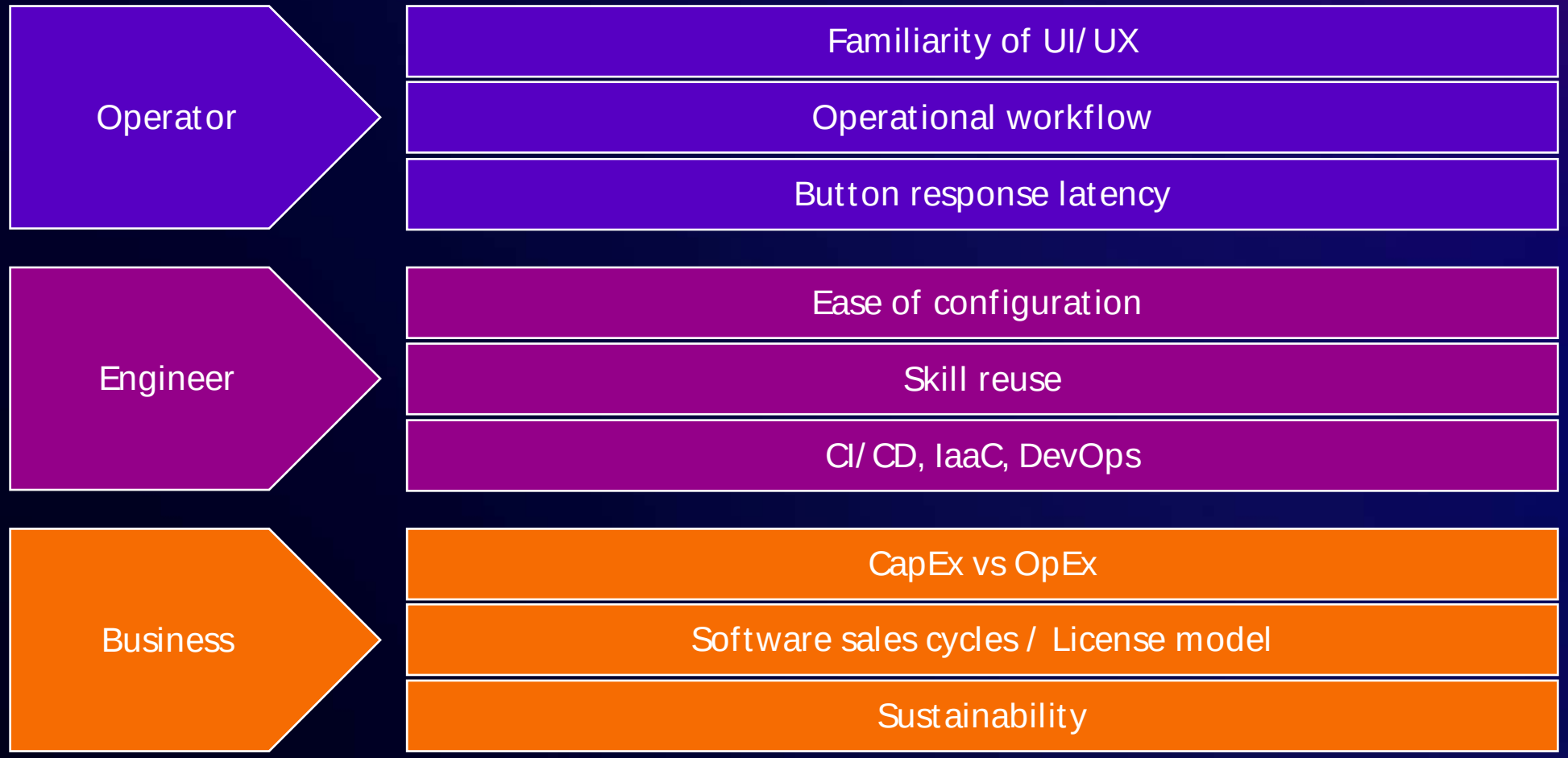
User Personas



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AWS Partner Examples

Content Creation

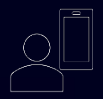
Studio

Social Media

Venue

Archives

Field Crew



Wires and Breaking News

MediaConnect Gateway

AWS Wavelength

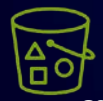
AWS Direct Connect

AWS Cloud

Content Ingest and Migration

- TVU Networks
- Sienna
- Cloudfirst.io
- LiveU
- Zixi
- Grabyo
- SDVI

Amazon S3



Production Control Room (PCR)

- Vizrt
- Chyron
- Matrox
- Sienna
- Ross
- Grass Valley
- TVU Networks

Master Control Room (MCR)

- TAG VS
- BCNEXXT
- Matrox
- Frequency
- Pebble
- Evertz
- Amagi
- Harmonic
- Imagine Communications

Newsroom Computer System

- Avid
- Dalet
- AP ENPS
- 7Mountains
- Octopus

MAM, PAM, and Archiving

- Dalet
- Mimir
- Ross
- Grass Valley
- Avid
- eMAM

Amazon S3, FSx, Glacier

Live Production

- Vizrt
- Riedel
- Sony
- Grabyo
- TVU Networks
- Telos
- Grass Valley
- SSM
- Sienna
- Ross
- Audinate

Content Delivery

- M2A
- Zixi
- Synamedia
- Harmonic

Amazon CloudFront

Observability

- Datadog
- Honeycomb
- Traffic Sim

Distribution

- Linear
- Digital/OTT
- Social Media

Note: *This is not a complete list. To view all AWS Partners for this category, visit AWS Partner Solutions Finder.*

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The Well-Architected Framework

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Why use the AWS Well-Architected Framework?

- Build and deploy faster
- Lower or mitigate risks
- Make informed decisions
- Learn AWS best practices

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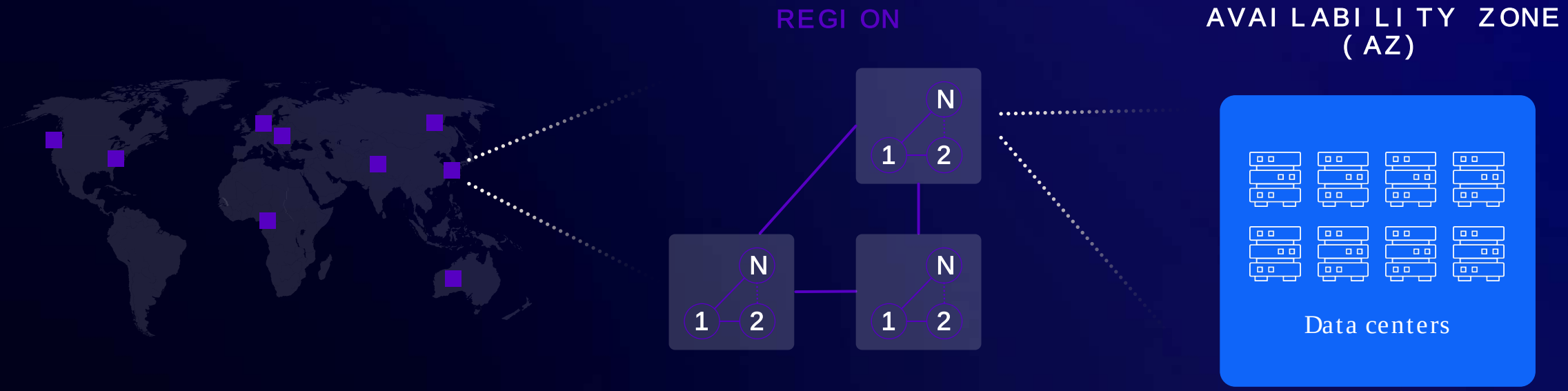
AWS Region design

AWS Regions are comprised of multiple AZs for high availability, high scalability, and high fault tolerance. Applications and data are replicated in real time and consistent in the different AZs.



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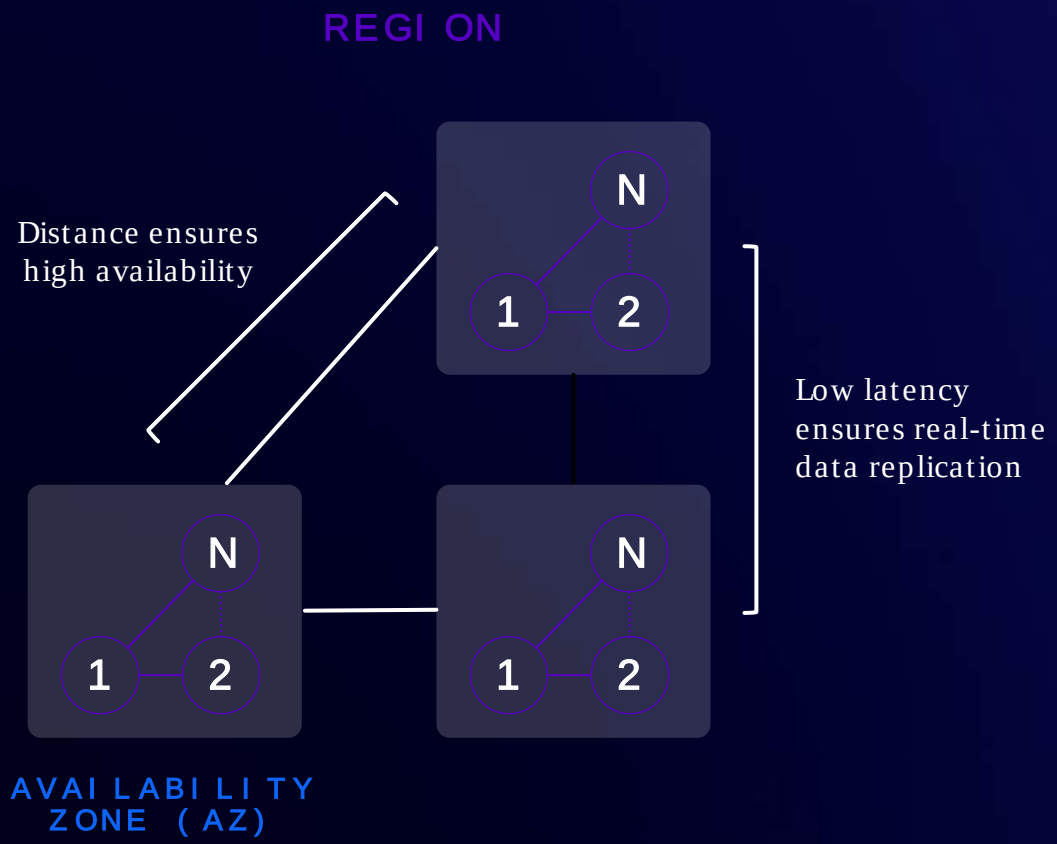
Availability zones design for resiliency



100K+ servers at scale

ISOLATED PARTITION

Fully isolated with one or more datacenters

POWER

Highly available, fault tolerant, and scalable

DISTANCE

Physically separated by a meaningful distance – all within 60 miles (100km) of each other

INTERCONNECTION

Datacenters connected via fully redundant and isolated metro fiber

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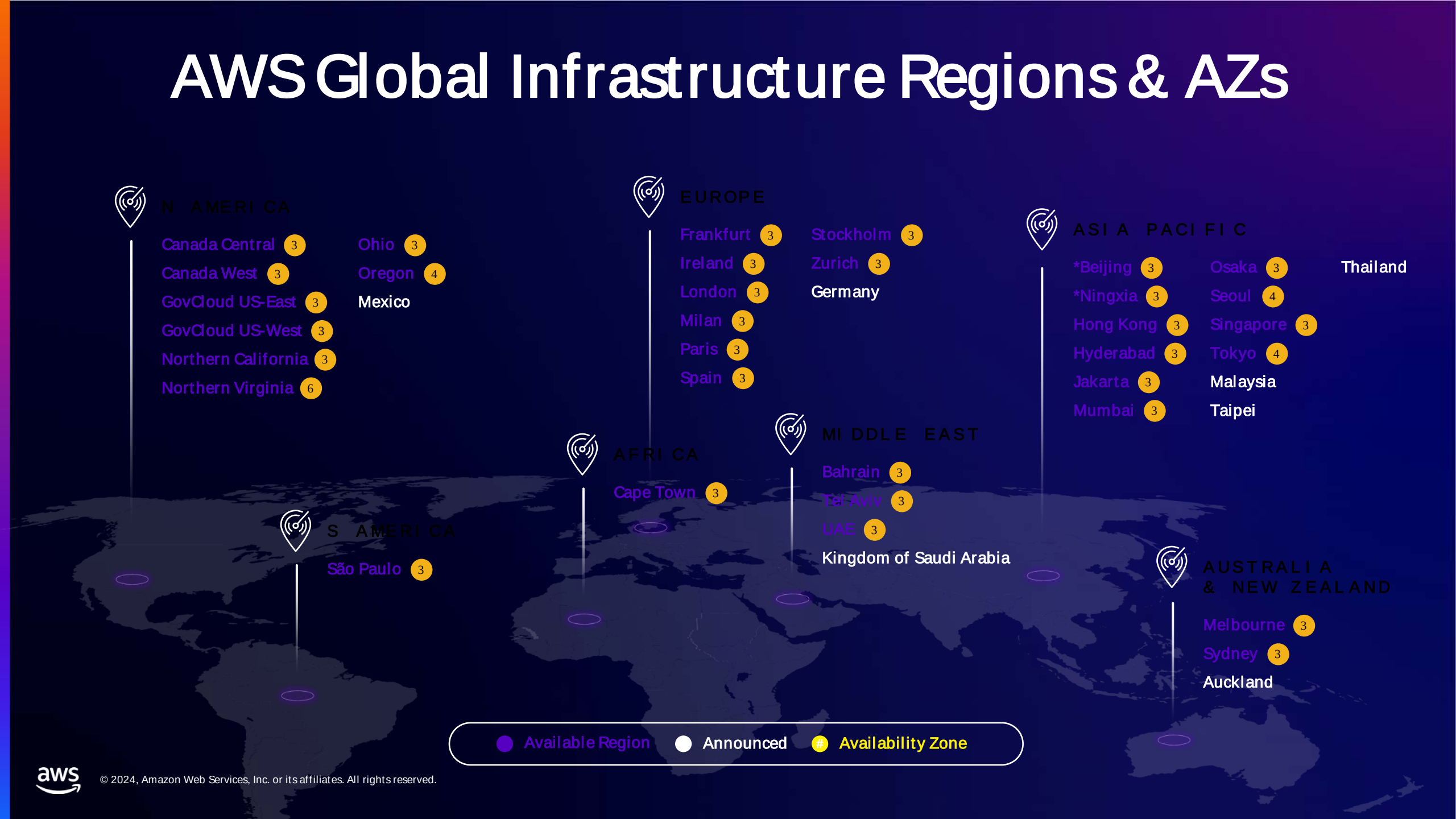
AWS Global Infrastructure Regions & AZs



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AWS Global Infrastructure Local Zones

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AWS Direct Connect

N AMERICA

- Ashburn (2)
- Atlanta (2)
- Aurora
- Boston
- Chicago (2)
- Columbus
- Dallas
- Denver
- El Segundo
- Houston
- Kansas City
- Kapolei
- Las Vegas (2)
- Los Angeles
- Miami
- Milpitas
- Minneapolis
- Montréal (2)
- New York
- Newark
- Philadelphia
- Phoenix (2)
- Portland (2)
- Reston
- San Jose (2)
- Santa Clara
- Seattle (3)
- Secaucus
- Segundo
- Toronto (2)
- Vancouver

EUROPE

- Amsterdam (2)
- Berlin
- Copenhagen
- Dubai
- Dublin (3)
- Frankfurt (2)
- Haifa
- Hamburg
- Helsinki
- London (3)
- Madrid (2)
- Manchester
- Marseille
- Milano (2)
- Munich
- Oslo
- Paris (4)
- Prague
- Slough (2)
- Stockholm (2)
- Vienna
- Warsaw
- Zurich (2)

ASIA PACIFIC

- Auckland
- Bangalore
- Bangkok
- Canberra (2)
- Chennai
- Delhi
- Hong Kong SAR (2)
- Hyderabad
- Inzai
- Jakarta (2)
- Kolkata
- Kuala Lumpur
- Makati City
- Melbourne (2)
- Mumbai (4)
- Osaka
- Perth
- Seoul (3)
- Singapore (2)
- Sydney (3)
- Taipei (2)
- Tokyo (2)

AFRICA

- Cape Town
- Johannesburg
- Lagos

MIDDLE EAST

- Fujairah
- Herzliya
- Manama (2)
- Muscat

SOUTH AMERICA

- Bogota
- Buenos Aires
- Lima
- Rio de Janeiro
- Santiago
- Sao Paulo (2)

AUSTRALIA & NEW ZEALAND

- Auckland
- Canberra
- Melbourne (2)
- Perth
- Sydney (3)

● Direct Connect location

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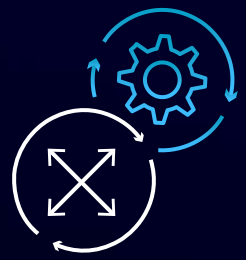
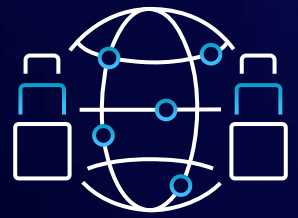
Pillars of The Well-Architected Framework



Operational Excellence

Security



Reliability

Performance Efficiency

Cost Optimization

Sustainability

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Implementing best practices

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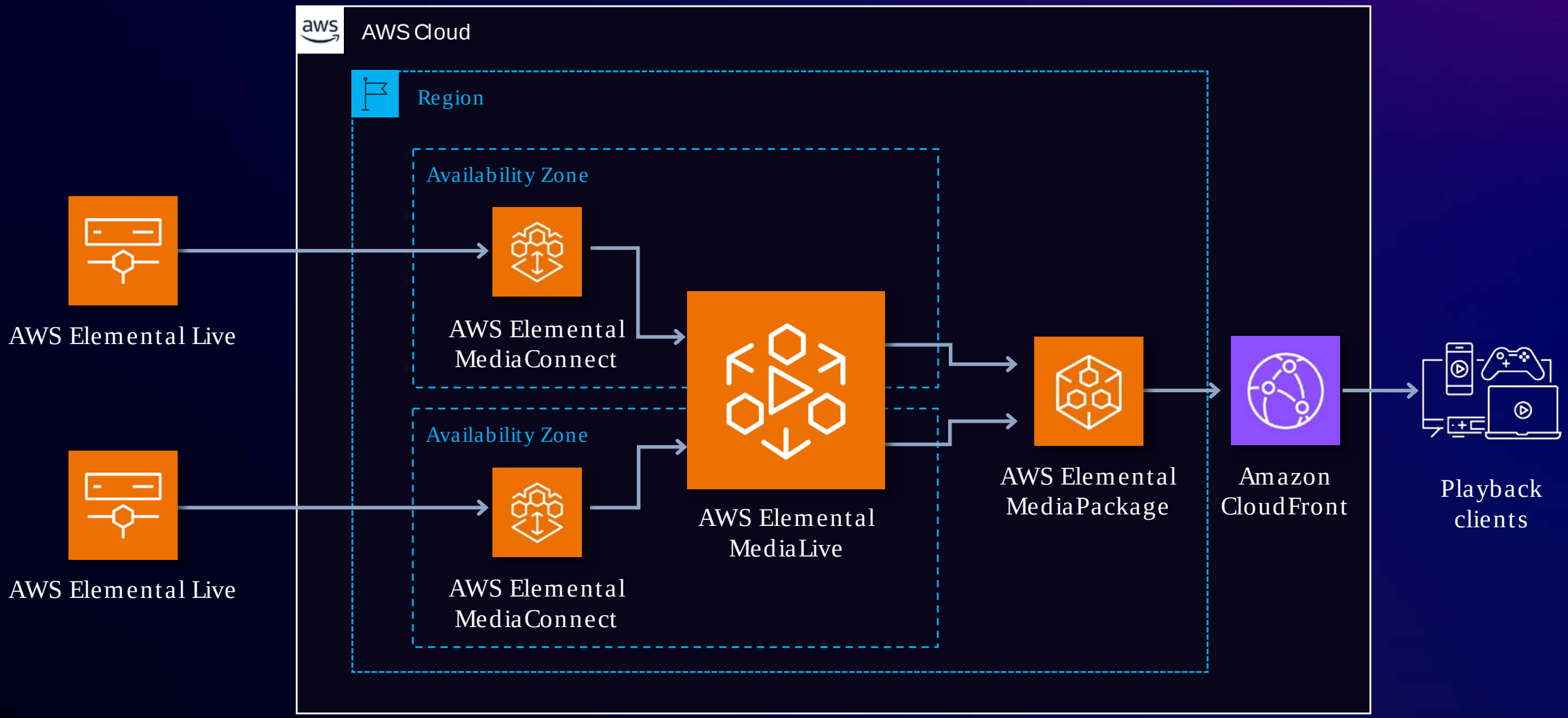
AWS Elemental MediaLive with MediaPackage



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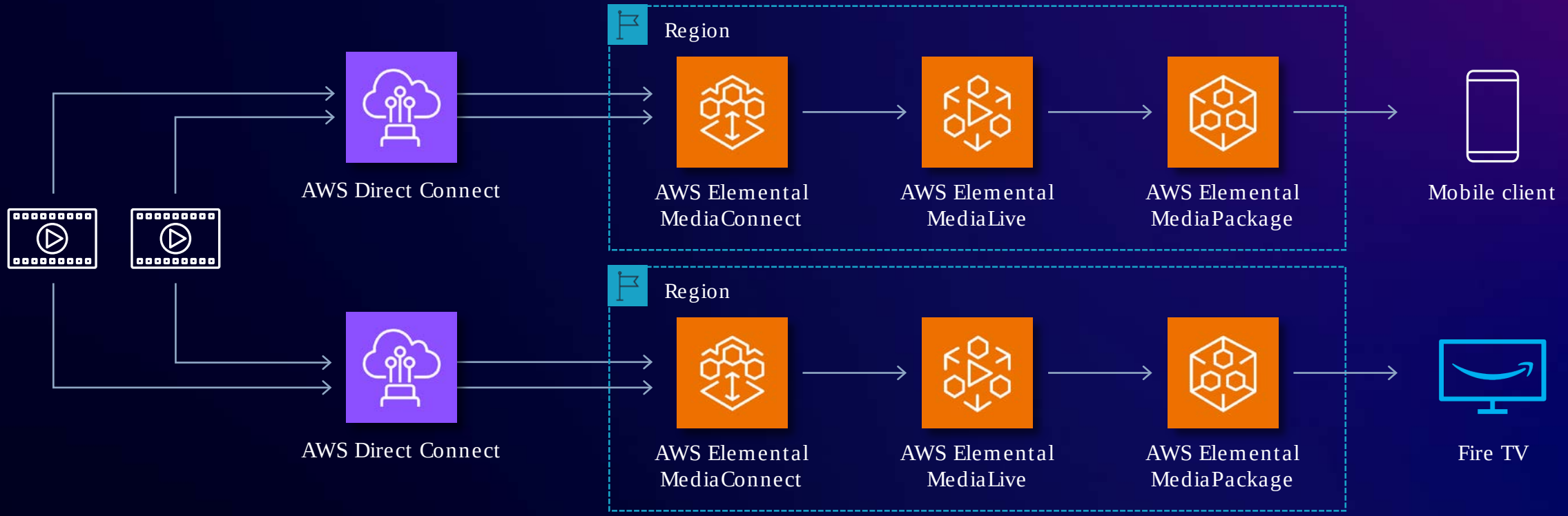

Amazon Elastic Compute Cloud (Amazon EC2)

Amazon Simple Storage Service (Amazon S3)

Amazon CloudWatch

Amazon QuickSight

AWS Cost & Usage Report

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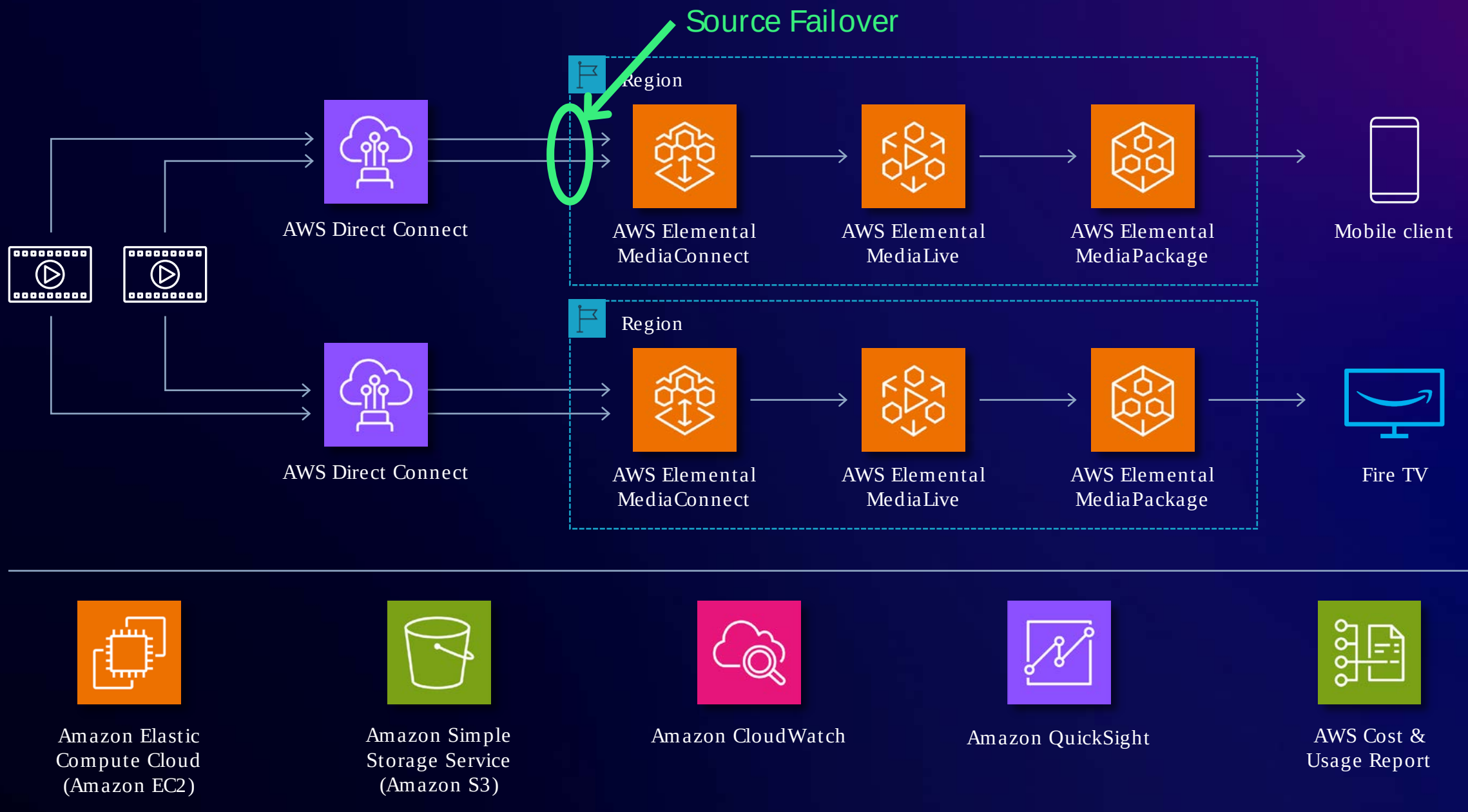

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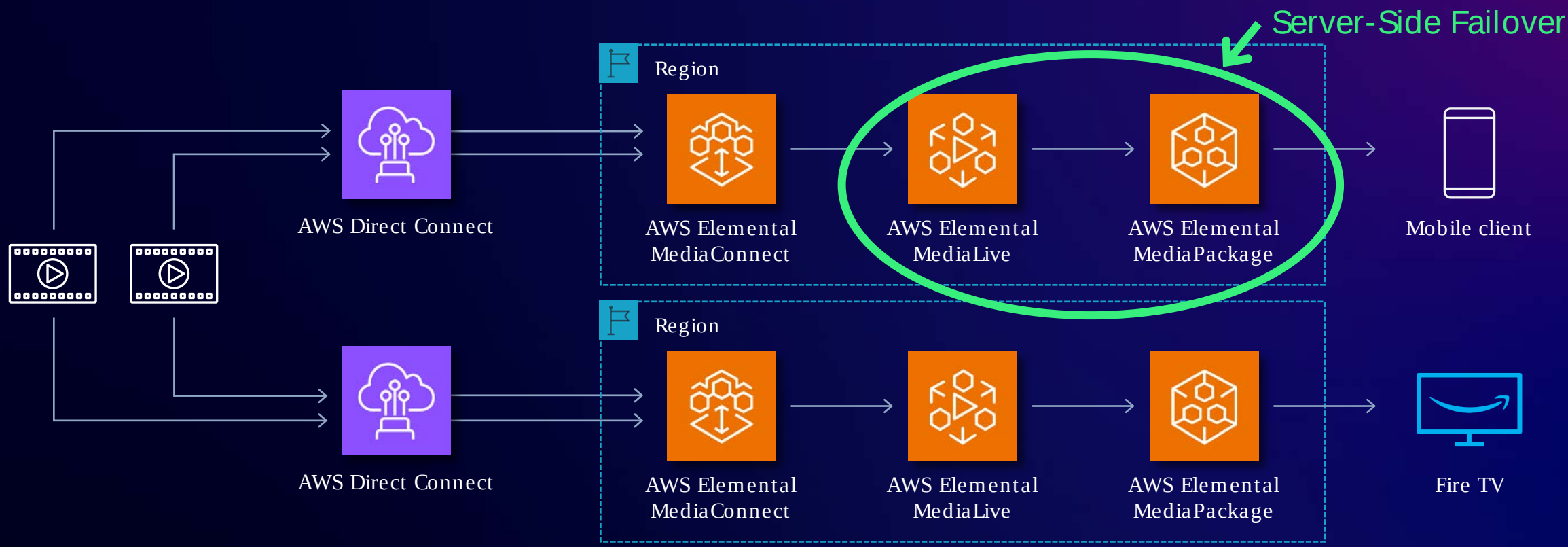

Amazon Elastic Compute Cloud (Amazon EC2)

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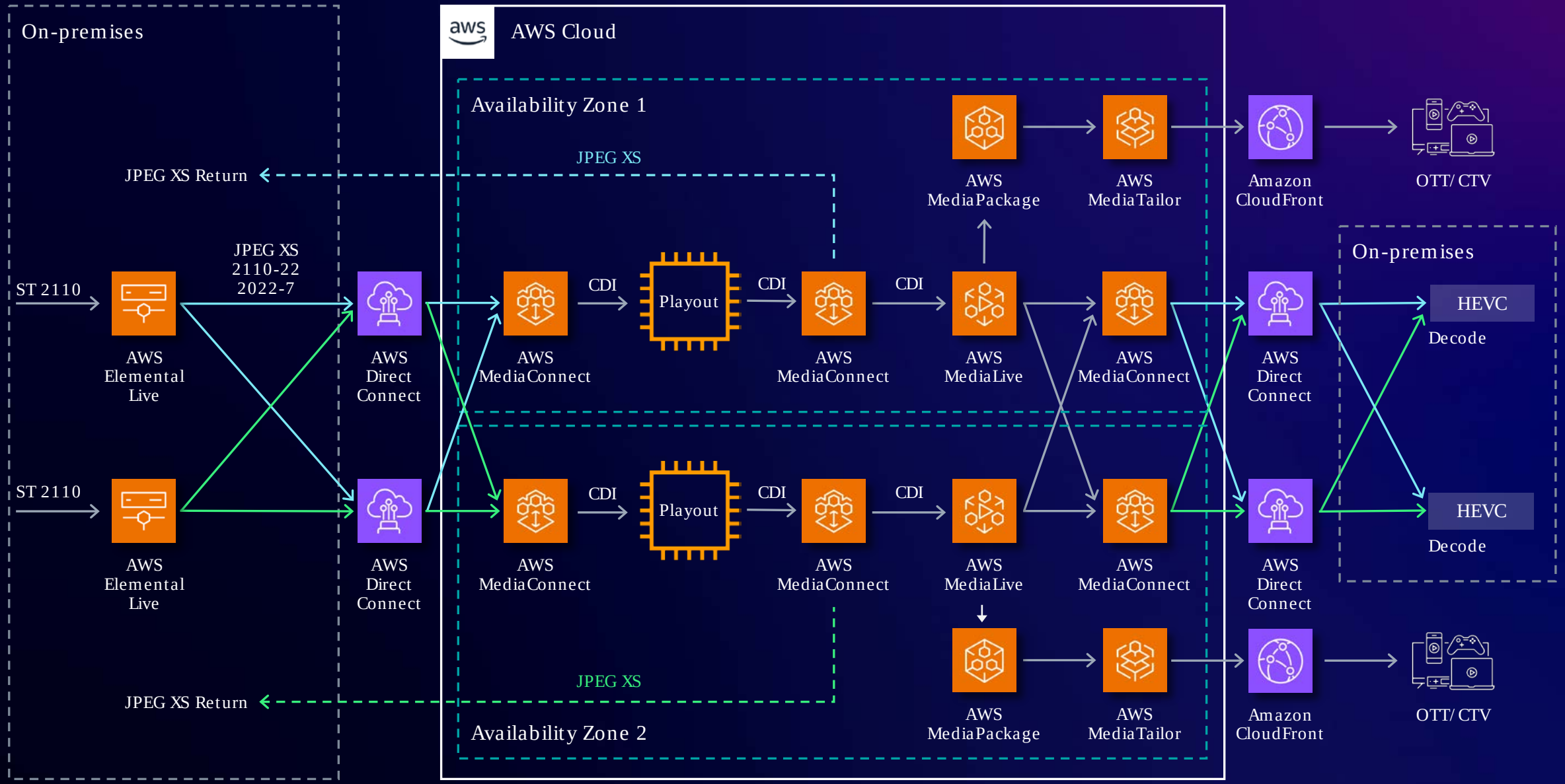

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Sustainability Pillar

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A data-driven approach to sustainability strategy, enabled by cloud computing

Sustainability **of** the cloud

Sustainability **in** the cloud

Sustainability **through** the cloud

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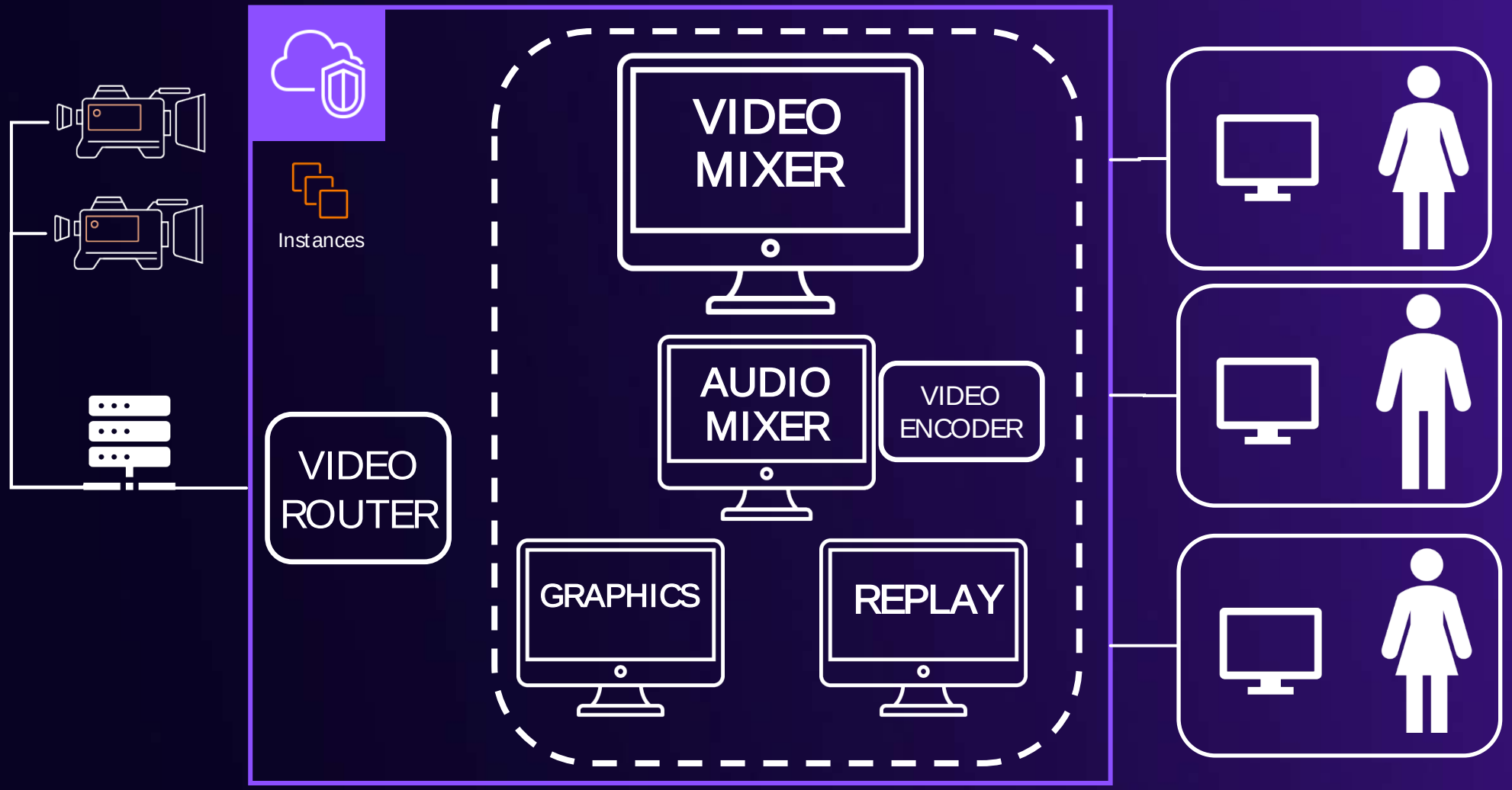
Live Cloud Production



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Travel remains the largest part of a production's footprint.

Source: albert, Annual Review 2021
https://wearealbert.org/wp-content/uploads/2023/01/albert-AR-2021_Finalv2.pdf

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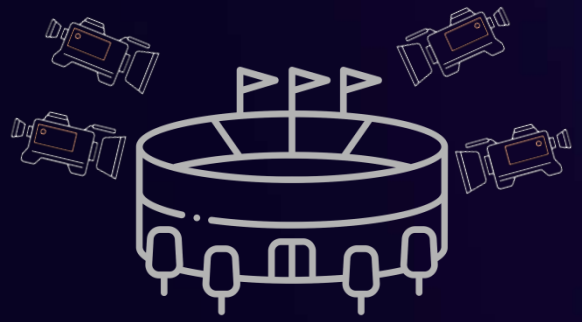
Legacy compared with Live Cloud Production



Onsite production crew

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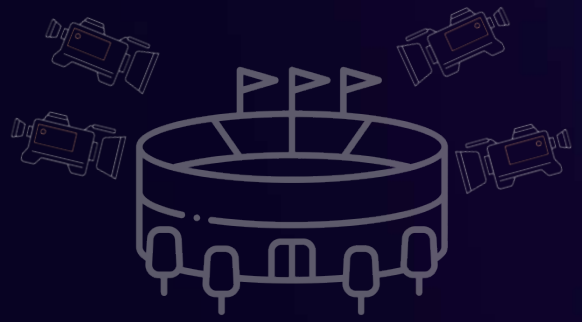
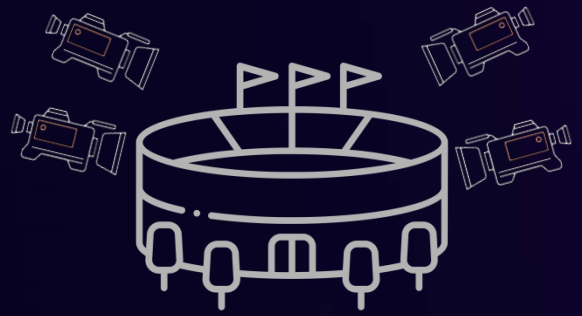
Legacy compared with Live Cloud Production



Onsite production crew



Onsite production crew

Remote production crew

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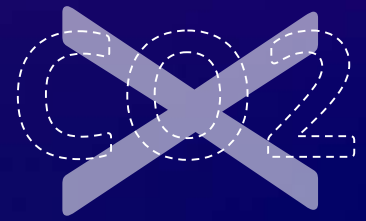
Rough estimation of avoided air travel emissions

x

x

≈

Avoided



Number of people no longer traveling		Carbon intensity of mode of travel		Number of games		Estimate of avoided emissions
5	x	.127* Example metric tons CO2e/ roundtrip flight	x	45 games with air travel	≈	28.6 metric tons CO2e

**Calculation and figures for demonstration purposes only. Actual carbon intensity from mode of travel will vary between modes and locations.*

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Conclusion

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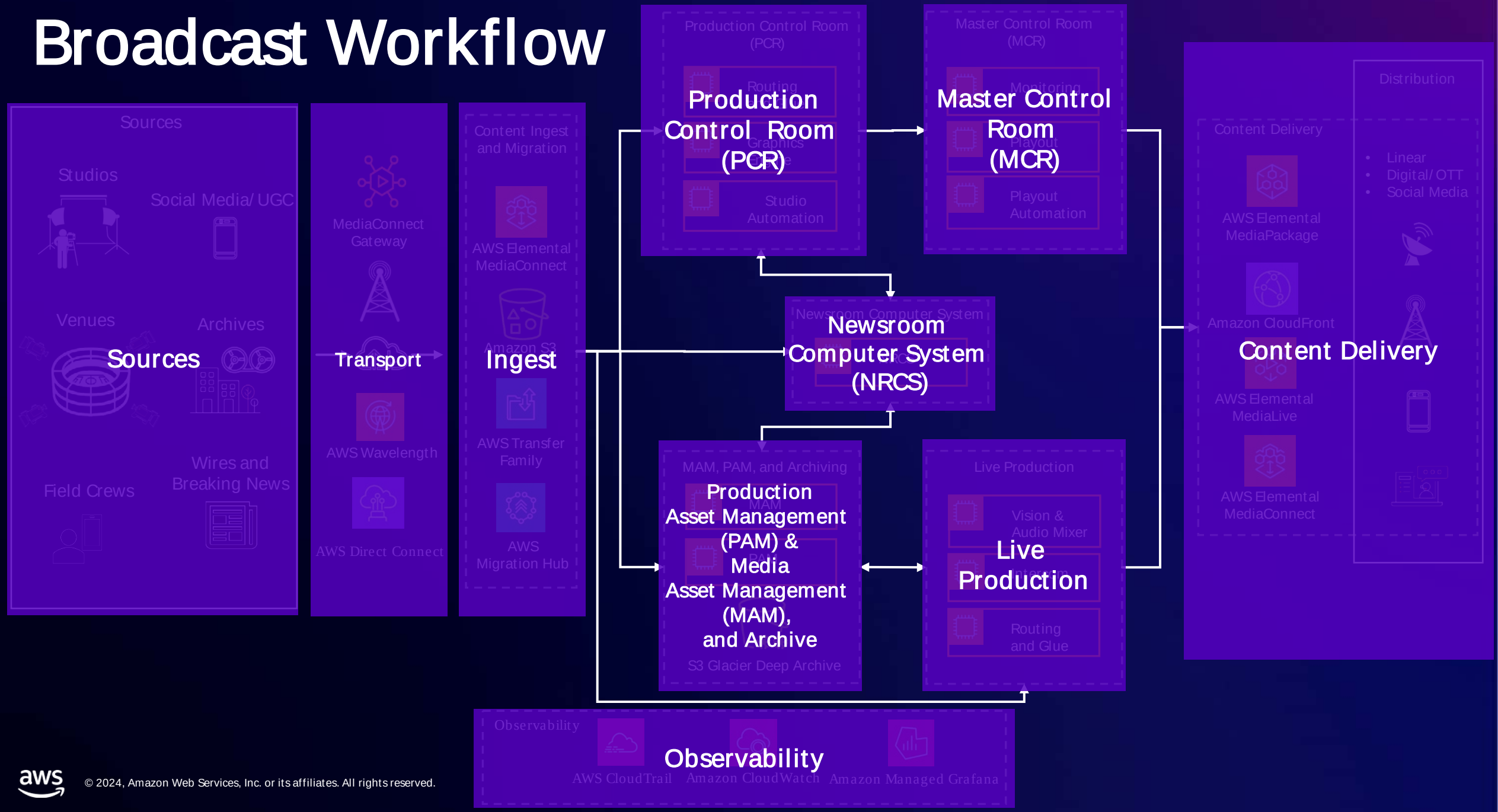
Broadcast Workflow



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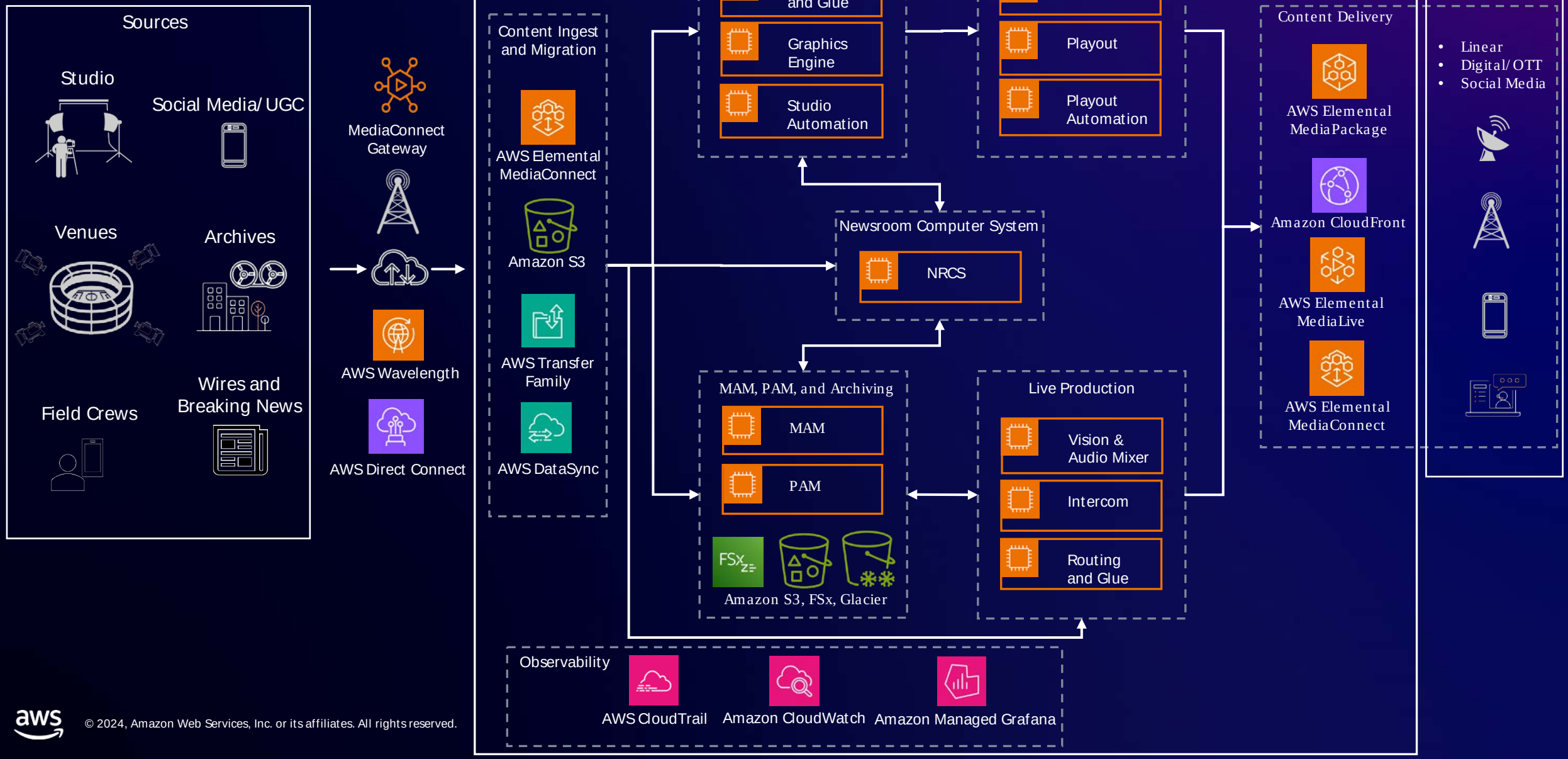
Broadcast Workflow on AWS



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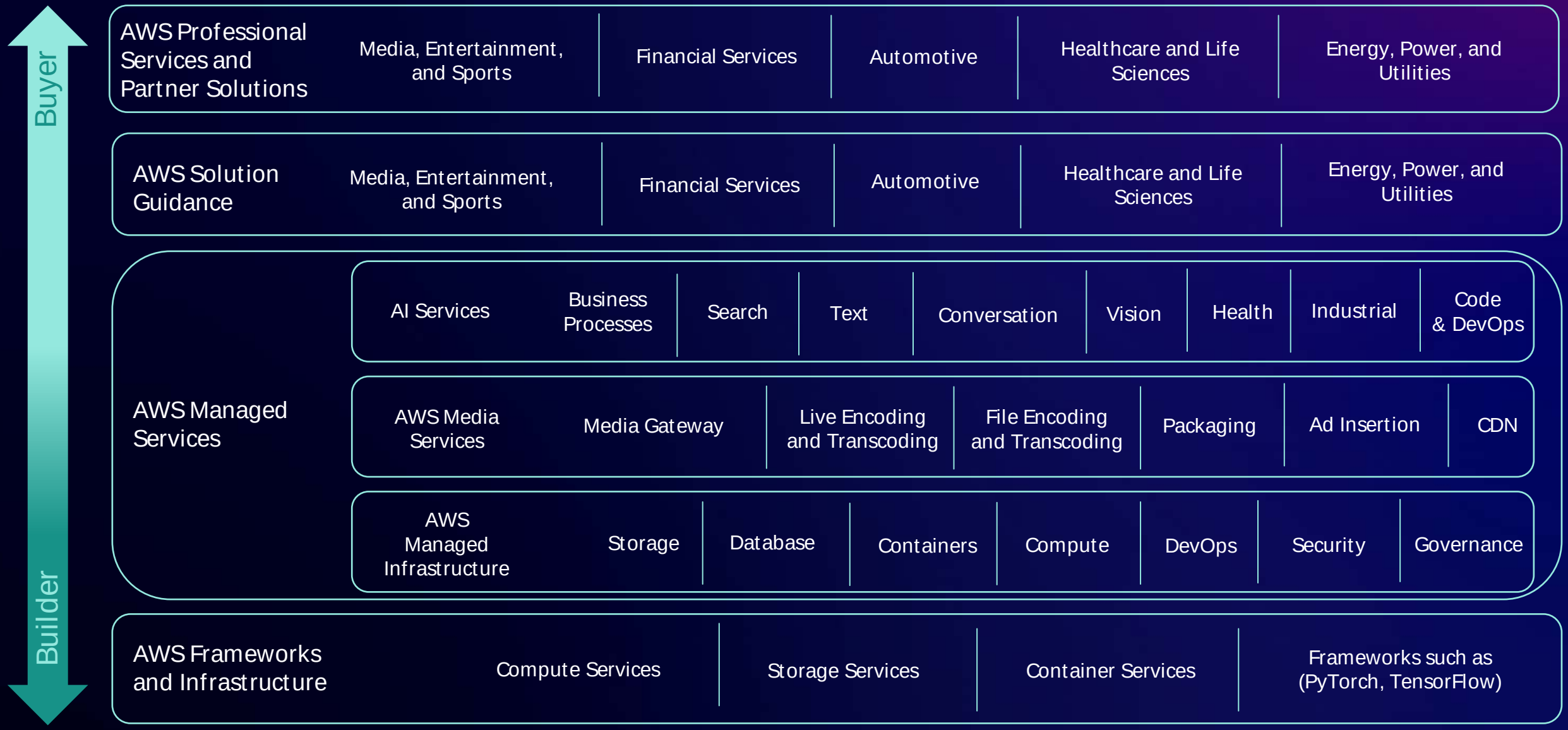
Broad set of solutions and capabilities



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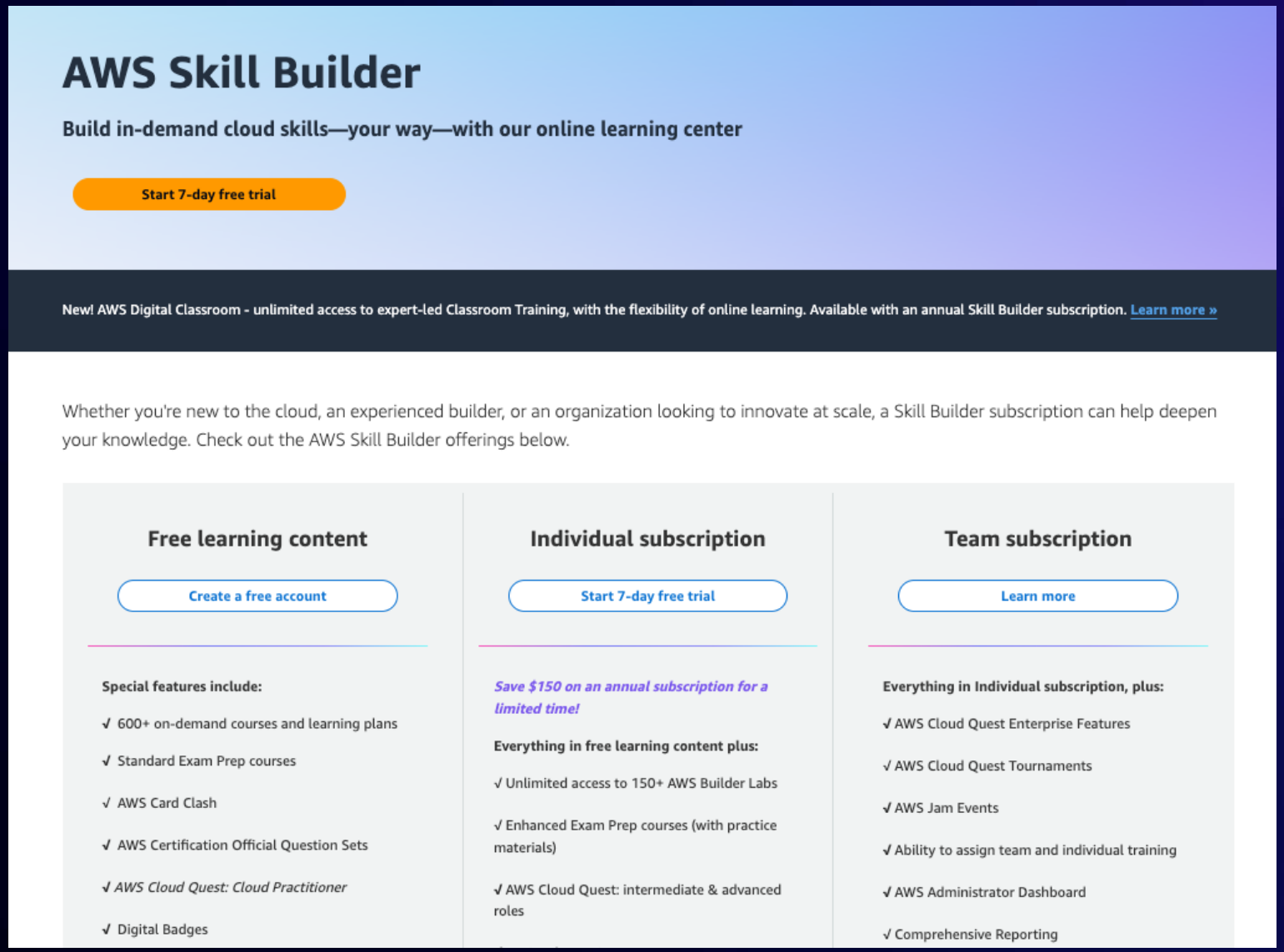
Interested in learning about cloud technology?



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AWS Blogs & Videos

AWS Broadcast Solutions

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Jason O’Malley

jasonoma@amazon.com

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