CABLE-TEC EXPO® 2017

SCTE · ISBE

THE NEXT BIG...

DEAL
CONNECTION
INNOVATION
TECHNOLOGY
LEADER
NETWORK

SCTE·ISBE CABLE-TEC EXPO 2017

DENVER, CO
OCTOBER 17-20

2017 Fall Technical Forum
SCTE·ISBE • NCTA • CABLELABS

SCTE · ISBE

Video Content Management on Cloud

Srini Akkala
Senior Solutions Architect
ARRIS

SCTE·ISBE CABLE-TEC EXPO 2017
DENVER, CO
OCTOBER 17-20

Introduction

- **Media processing is becoming a complicated problem**
  - Dramatic increase in number of viewing platforms
  - Hundreds of thousands of assets
  - Multiple file renditions for each asset with multi DRM
  - Various tools & technologies
  - Ever growing storage and compute needs

© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

On-Premises Deployments

- Starts with capacity planning
    - Storage capacity
    - Compute capacity
    - Network capacity
- This model is not designed to handle unforeseen demands
- Ever growing asset library needs higher storage and processing power
- Setting up a cost effective and “future proof” media processing solution on-premises is often an unrealistic dream

Adapting to cloud based media processing solutions can make this dream a reality

© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

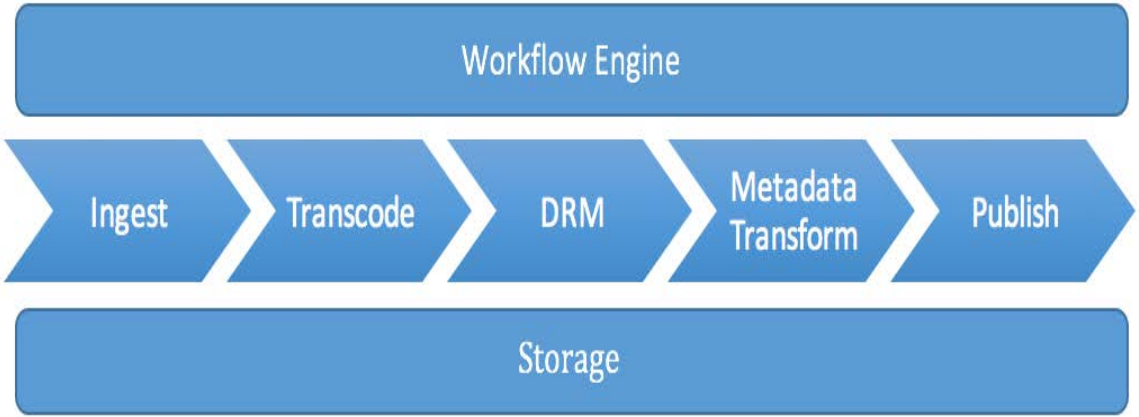
Solution

- Broadcasters, content owners, and other media providers are looking to take advantage of the capabilities of cloud based media processing solutions
- The primary intent is to expand/extend their existing platforms and create a unified infrastructure that is more flexible, scalable, and future proof in its support for video processing and delivery

- **Media Processing on Cloud**
  - **Scalable**
  - **Manageable**
  - **Cost Effective**

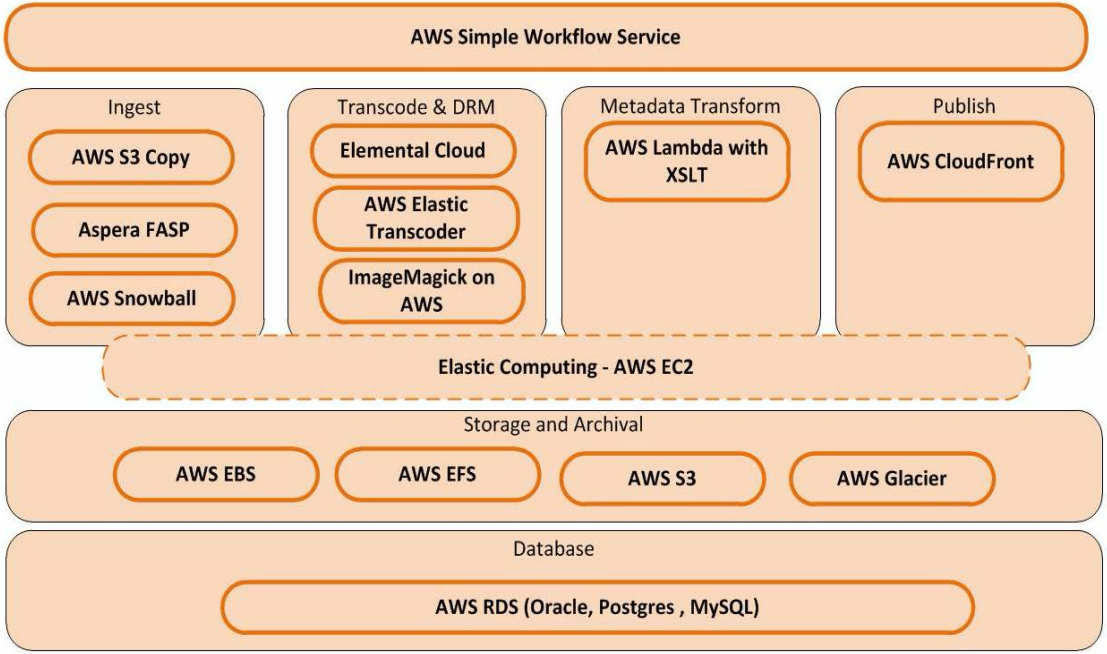
© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

Typical Media Processing Workflow Steps



© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

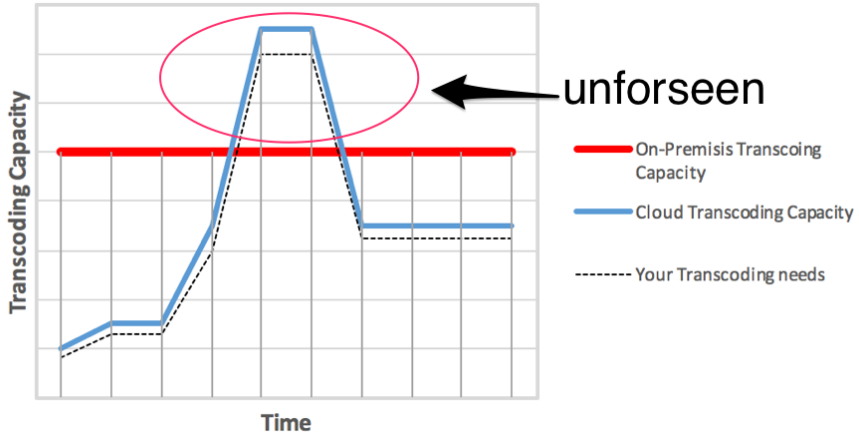
Media Processing Workflow Services on Cloud (Amazon Web Services)



© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

Elastic Computing - AWS

- Ability to instantly grow in scale to meet the resources required during periods of peak or unforeseen load demands. Scale up by adding more resources when demand increases and then scale down as demand diminishes
- **AWS EC2** service provides such an elastic computing capability



© 2017 SCTE•ISBE and NCTA. All rights reserved.

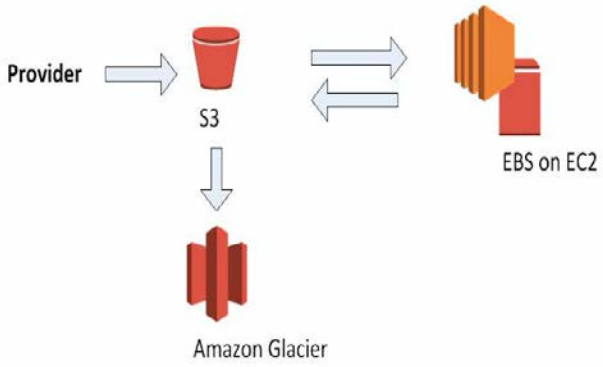
Storage and Archival

- **Storage requirements in media processing world**
  - High performance local storage for media processing (transcode, segment)
  - Shared network storage (E.g. catchers)
  - Fast web object storage (E.g. image files, metadata files, file segments for http delivery)
  - Archival storage (Mezzanine media, backups)
  - Database

© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

Storage and Archival – AWS

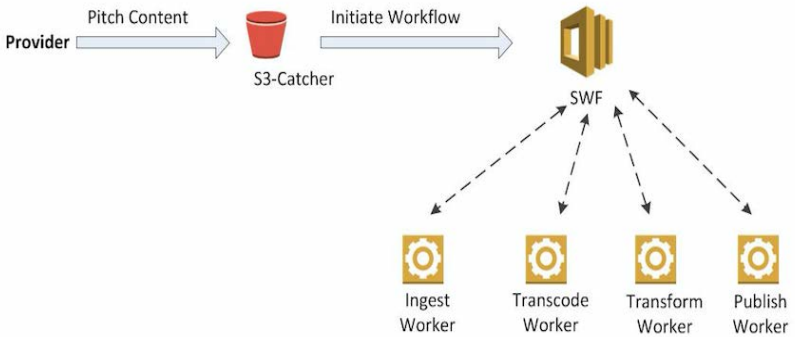
- **EBS** - High performance block-level storage that serves as a virtual hard drive for your Amazon EC2 instance
- **EFS** - Data can be accessed from multiple AWS instances (like NAS)
- **S3** - Object storage designed to store and access any type of data over the Internet
- **Glacier** - Extremely low-cost and highly durable storage service for long-term backup and archive of any type of data



© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

Workflow Engine – AWS SFW

- Easy to build workflows that coordinate operations across work steps involving distributed components
- Full control over implementing tasks and coordinating them without worrying about underlying complexities such as tracking their progress and maintaining their state



© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

Ingest

- First step in a media workflow is receiving the content package from a content provider and ingesting it into the system. Cloud services for ingesting content as follows
- **AWS S3 Copy:** Command line interface tool to transfer data to and from AWS
- **Aspera High Speed Transfer Service:**
    - High speed file transfers
    - Direct-to-Cloud integration with S3 APIs
    - Complete data protection with in-transit & at-rest encryption, data integrity verification for each transmitted block, and automatic retry and resume from point of interruption on failure are some of the key security features
- **AWS Snowball:** Physical appliance based service , applicable for one-time petabyte-scale data transfer scenarios. E.g. entire library migration to cloud

© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

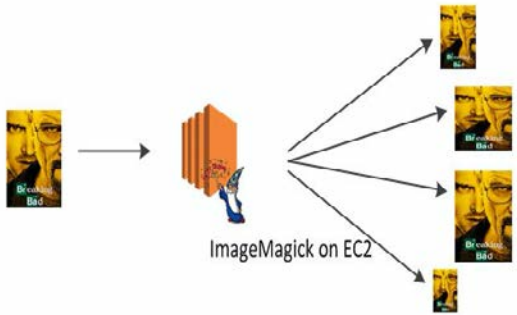
Transcode and DRM

- **Transcoding & DRM can be done on cloud in two ways:**
    1. By installing any software based transcoders on EC2 instances
    2. Subscribing to cloud based transcoding services (AWS Elemental, gencoder etc)
- **Cloud based transcoding services**
    - Platform as a Service (PaaS) built on AWS cloud Infrastructure
    - Automatically provisions and dynamically scales any combination of video processing , delivery, and storage services within a secure private network
    - Automatically scales resources to process and deliver broadcast quality video as demand fluctuates
    - Multi DRM integration

© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

CoverArt resizing

- Content providers usually provide a single high resolution image which needs to be resized to fit various clients
- Not offered as part of transcoder feature
- ImageMagick is one of most popular open source software products for image resizing
- ImageMagick can be installed on an AWS EC2 instance (OR) available as SaaS model



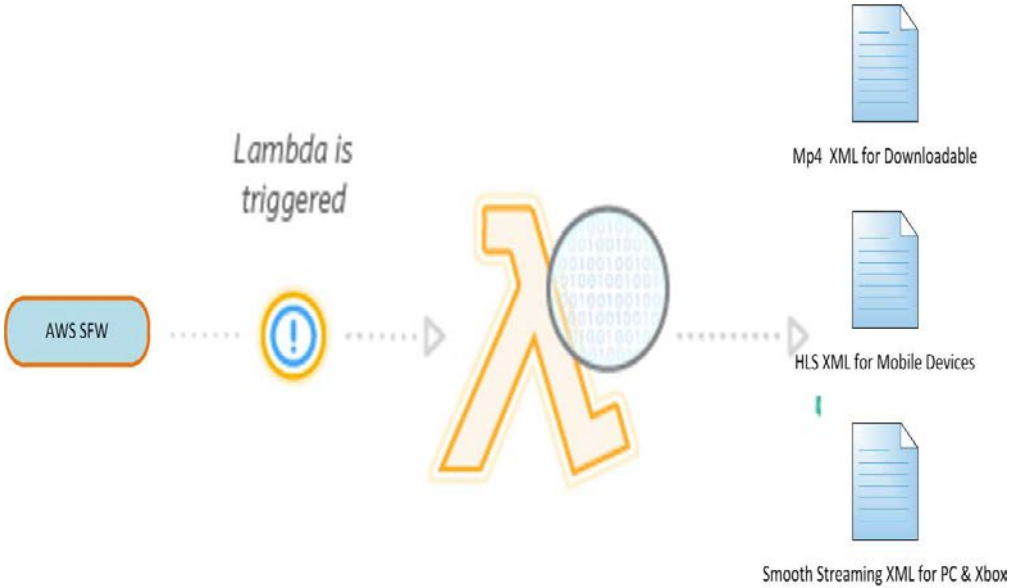
© 2017 SCTE•ISBE and NCTA. All rights reserved.

Metadata transformation

- Custom code need to be developed to transform source XML (ADI) metadata into various formats based on the target device or storefront
- Traditional code development & deployment
    - Provisioning and managing servers
    - install and upgrade software stack on the servers
- AWS lambda
    - server-less environment which lets you run code without provisioning or managing servers
    - run code for virtually any type of application or backend service, all with zero administration
    - supports code written in Java, C#, Python, and Node.js

© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

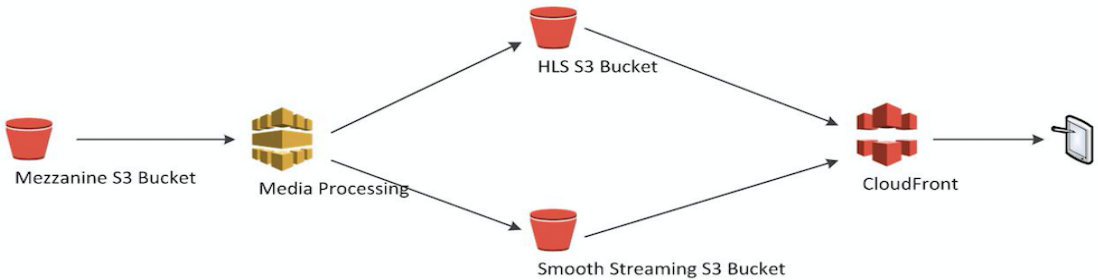
Metadata Transformation using Lambda



© 2017 SCTE•ISBE and NCTA. All rights reserved.

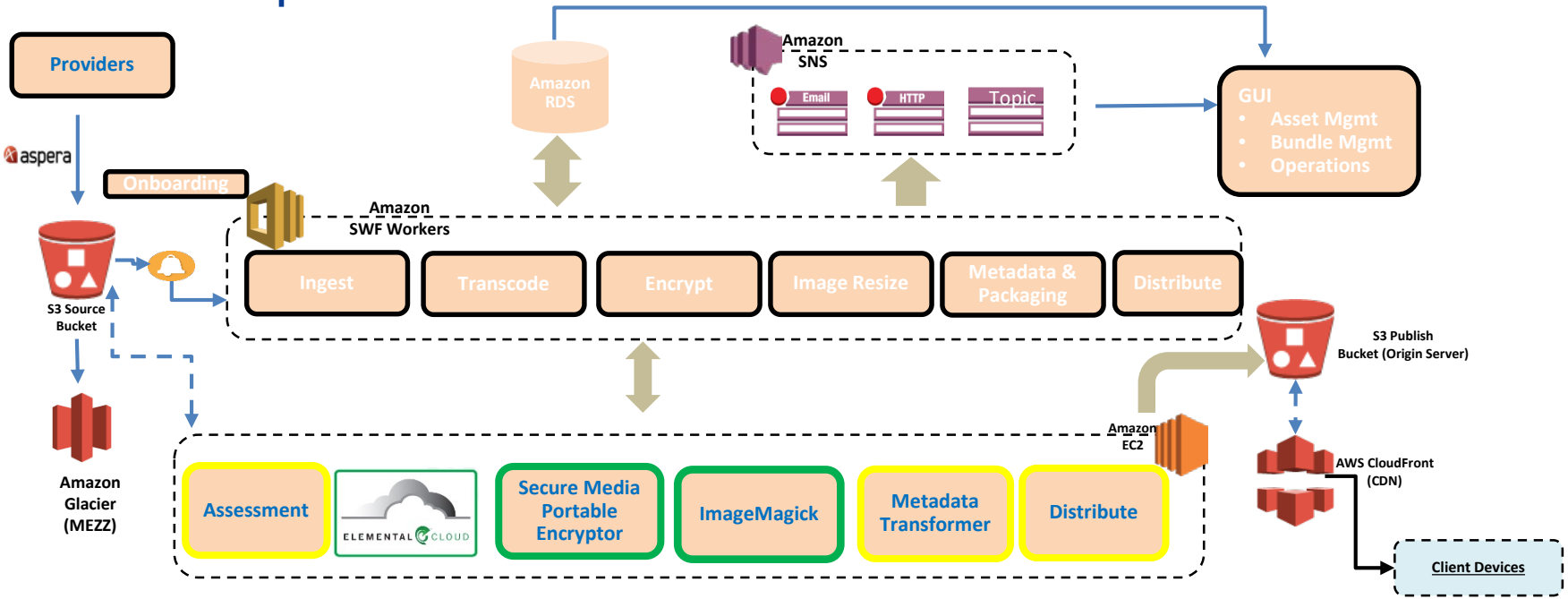
Publish and Deliver

- The final steps of the workflow are publishing and delivery
- ABR files stored on S3 (Origin Server)
- Amazon CloudFront - global content delivery network
- Supports most streaming protocols like Smooth Streaming, HLS, MPEG-DASH , RTMP etc



© 2017 SCTE•ISBE and NCTA. All rights reserved.

Real World Implementation



© 2017 SCTE•ISBE and NCTA. All rights reserved. | scte.org • isbe.org

SCTE · ISBE

THANK YOU!

Srini Akkala
srini.akkala@arris.com
301.529.5230

SCTE·ISBE CABLE-TEC EXPO 2017

DENVER, CO
OCTOBER 17-20

ARRIS