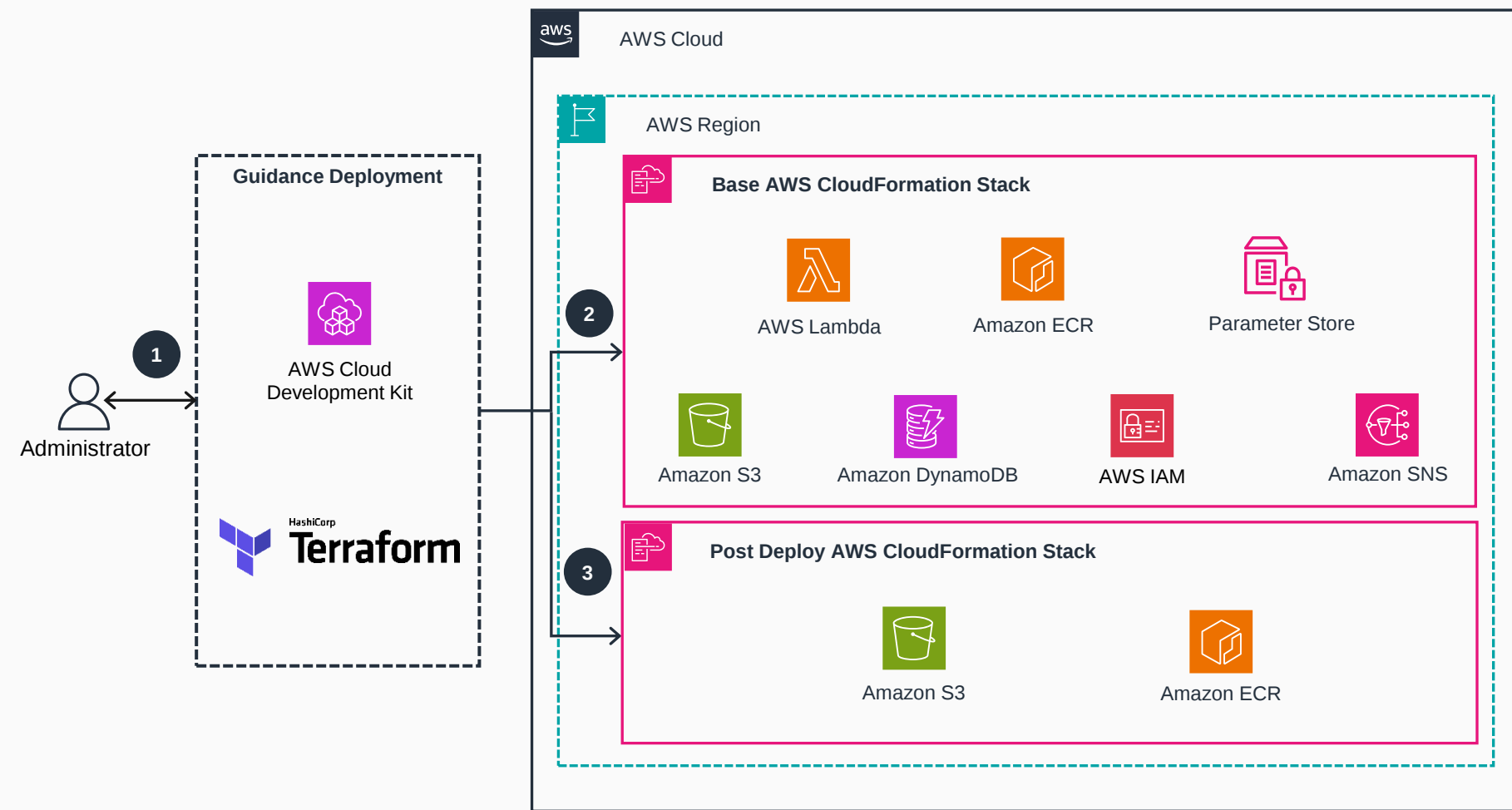


Guidance for Open Source 3D Reconstruction Toolbox for Gaussian Splats on AWS

Event-driven serverless architecture

This architecture diagram shows an automated deployment of event-driven serverless architecture for user accounts.



1

An administrator deploys the Guidance to an AWS account and Region using **AWS Cloud Development Kit (AWS CDK)** or **Terraform**.

2

The Base **AWS CloudFormation** stack to deploy will create all the AWS resources needed to host the Guidance. This includes: an **Amazon Simple Storage Service (Amazon S3)** bucket, **AWS Lambda** functions, an **Amazon DynamoDB** table, necessary **AWS Identity and Access Management (IAM)** permissions, and an **Amazon Elastic Container Registry (Amazon ECR)** image registry. Additionally, it includes an **AWS Step Functions** state machine resource ID in **Parameter Store**, a capability of **AWS Systems Manager**, and it creates an **Amazon Simple Notification Service (SNS)** topic.

3

Once the Base **CloudFormation** stack has been deployed, deploy the Post Deploy **CloudFormation** stack. That stack will build a Docker container and push it to the **Amazon ECR** registry. It will also build and push the pre-processing models used during training, such as for background removal, into the **S3** bucket.



Reviewed for technical accuracy July 1, 2025

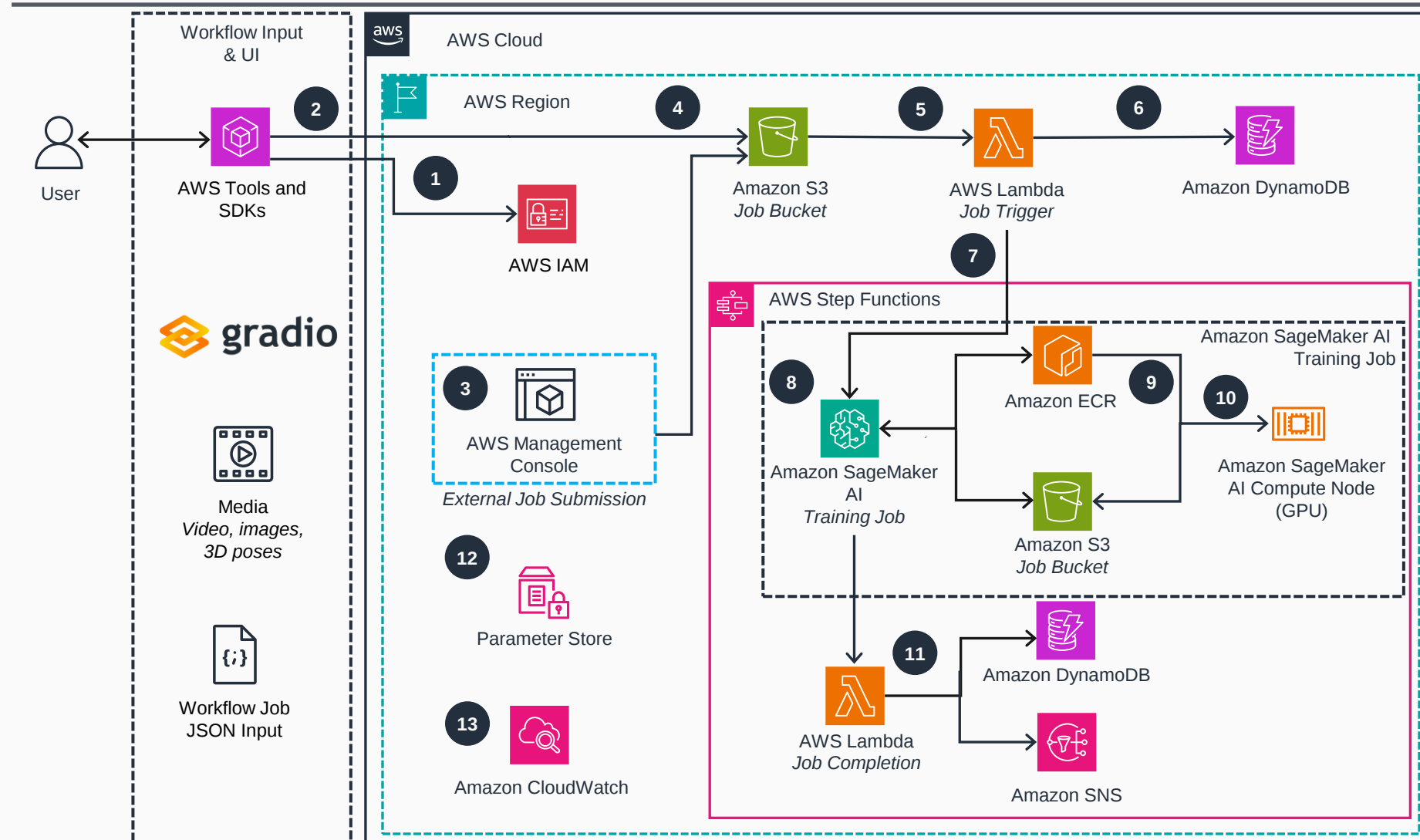
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AWS Reference Architecture

Guidance for Open Source 3D Reconstruction Toolbox for Gaussian Splats on AWS

AI-generated open source 3D content

This architecture diagram shows how to enable the generation of realistic 3D content through open source rendering techniques.



- 1 The user authenticates to IAM using AWS Tools and SDKs.
- 2 The input is uploaded to a dedicated S3 job bucket location. This can be done using a Gradio interface and AWS Software Development Kit (AWS SDK).
- 3 Optionally, the Guidance supports external job submission by uploading a '.JSON' job configuration file and media files into a designated S3 job bucket location.
- 4 The job JSON file uploaded to the S3 job bucket will trigger an Amazon SNS message that will invoke the initialization Job Trigger Lambda function.
- 5 The Job Trigger Lambda function will perform input validation and set appropriate variables for the Step Functions State Machine.
- 6 The workflow job record will be created in the DynamoDB job table.
- 7 The Job Trigger Lambda function will invoke Step Functions State Machine to handle the entire workflow job.
- 8 An Amazon SageMaker AI Training Job will be submitted synchronously using the state machine built-in wait until completion mechanism.
- 9 The Amazon ECR container image and S3 job bucket model artifacts will be used to deploy a new container on a graphics processing unit (GPU) based compute node. The compute node instance type is determined by the job JSON configuration.
- 10 The container will run the entire pipeline as an Amazon SageMaker AI training job on a GPU compute node.
- 11 The Job Completion Lambda function will complete the workflow job by updating the job metadata in DynamoDB and using Amazon SNS to notify the user through email upon completion.
- 12 The internal workflow parameters are stored in Parameter Store during deployment to decouple the Job Trigger Lambda function and the Step Function State Machine.
- 13 Amazon CloudWatch logs and monitors the training jobs, surfacing possible errors to the user.

