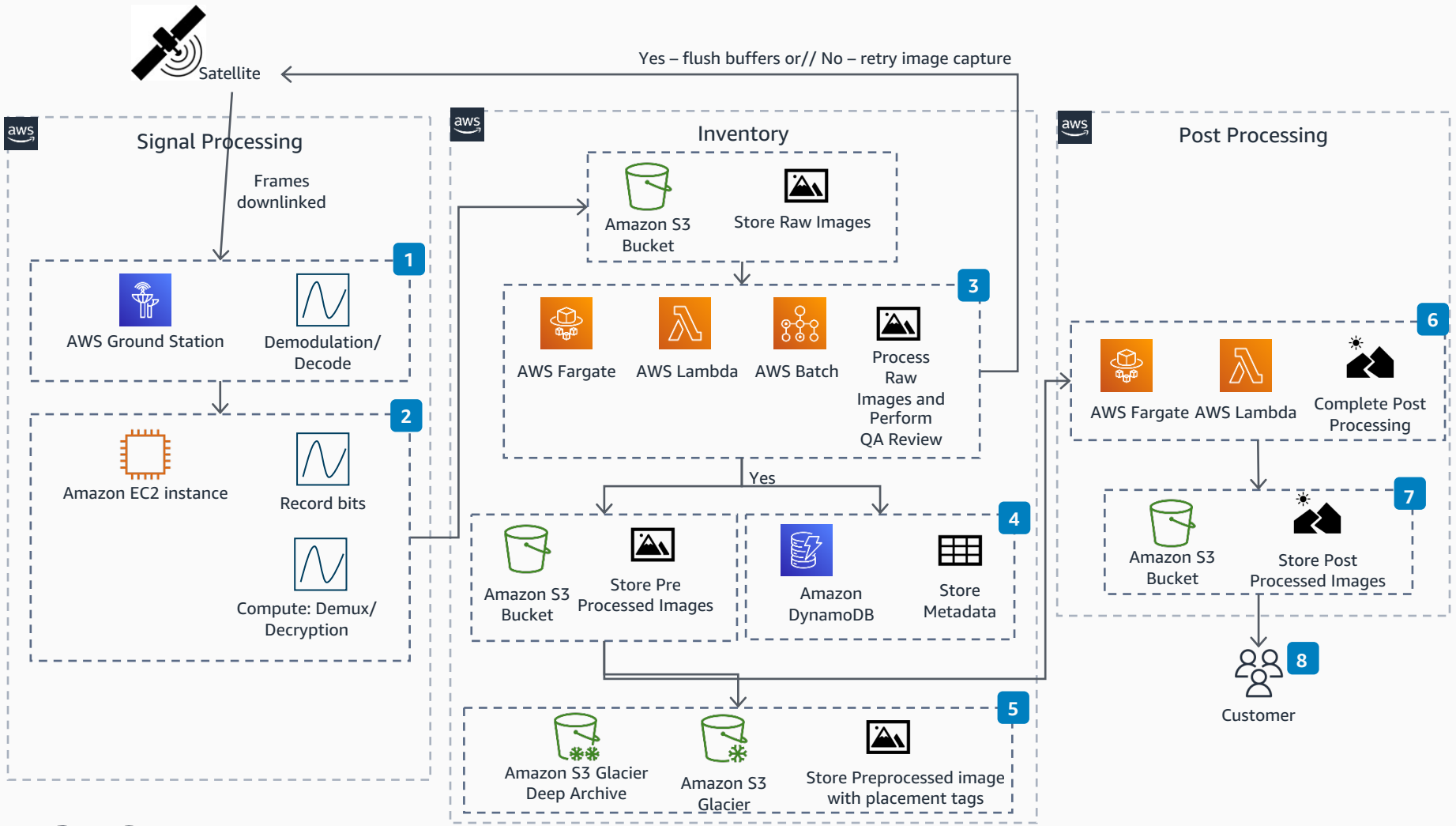


Electro-Optical Imagery Reference Architecture

Process electro-optical imagery on AWS



- 1** Demodulate and Decode: Extract baseband waveform from modulated carrier; remove forward error correction
- 2** Convert into raw sensor data: Decommutate signal frames; decrypt data
- 3** Process Raw Images: Process Raw Images and Perform QA Review
 - QA Review: Confirm Images are sufficient for processing
 - **AWS Batch**: Run multiple jobs in parallel
 - **AWS Fargate** and **AWS Lambda**:
 - Sensor Correction: Apply corrections for optical distortions
 - Orthorectify: Sensor perspective
 - Georeference: Apply image to spatial grid and assign known coordinate system
 - Generate Thumbnails: Create post-processed thumbnails for customer purchase
- 4** Store metadata: Store information on latitude/longitude collection, region collection, time and date of retrieval
- 5** Storage: Store preprocessed images in a variety of **Amazon S3** services by balancing cost savings and time of retrieval.
- 6** Post Processing and Analysis: Complete imagery processing
 - Feature Extraction: Identify features in images (e.g. ships)
 - Naming/Tagging of Features: Tag features by name/identification system
 - Time Series Creation: Tag images to sort by time
- 7** Storage and Dissemination: Final storage of images and analytics for end customer
- 8** Customer Delivery: Deliver final images to end customers



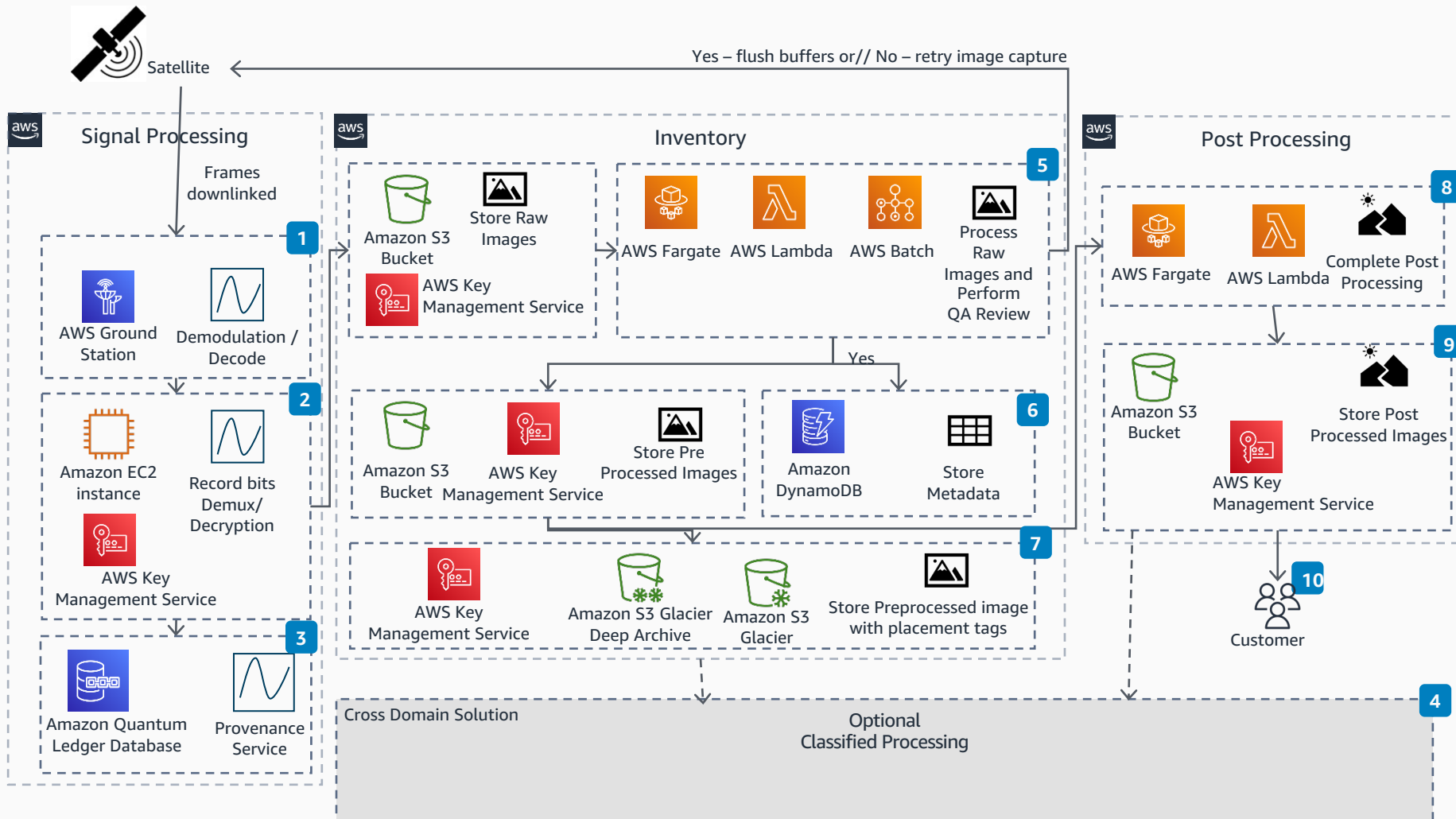
Reviewed for technical accuracy May 12, 2021
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AWS Reference Architecture

Electro-Optical Imagery Reference Architecture

Classified Processing

Process classified electro-optical imagery on AWS



- 1** Demodulate and Decode: Extract baseband waveform from modulated carrier; remove forward error correction
- 2** Convert into raw sensor data: Decommutate signal frames; decrypt data
- 3** Immutable transaction log: Cryptographically establish provenance and fidelity
- 4** *Optional* Classified Processing: Throughout the image processing, move data to the appropriate regions for classified processing.
- 5** Process Raw Images: Process Raw Images and Perform QA Review
 - QA Review: Confirm Images are sufficient for processing
 - **AWS Batch**: Run multiple jobs in parallel
 - **AWS Fargate and AWS Lambda**:
 - Sensor Correction: Apply corrections for optical distortions
 - Orthorectify: Sensor perspective
 - Georeference: Apply image to spatial grid and assign known coordinate system
 - Generate Thumbnails: Create post-processed thumbnails for customer purchase
- 6** Store metadata: Store information on latitude/longitude collection, region collection, time and date of retrieval
- 7** Storage: Store preprocessed images in a variety of **Amazon S3** services by balancing cost savings and time of retrieval.
- 8** Post Processing and Analysis: Complete imagery processing
 - Feature Extraction: Identify features in images (e.g. ships)
 - Naming/Tagging of Features: Tag features by name/identification system
 - Time Series Creation: Tag images to sort by time
- 9** Storage and Dissemination: Final storage of images and analytics for end customer
- 10** Customer Delivery: Deliver final images to end customers



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AWS Reference Architecture