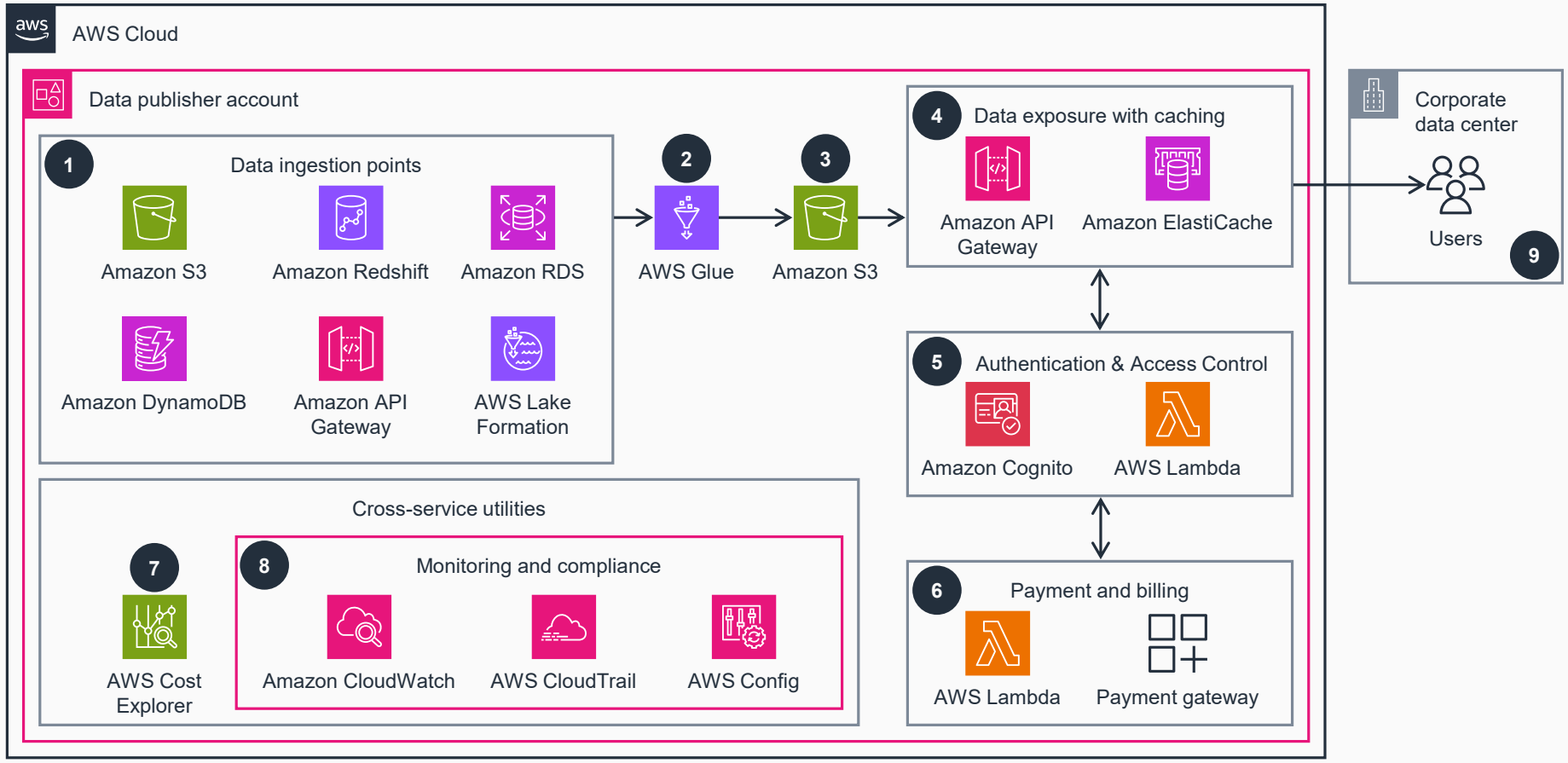
Guidance for Research Data Monetization on AWS

This architecture diagram shows how you can improve data monetization with customers that use either cloud providers other than AWS or on-premises servers.



1. This is the entry point into the AWS environment. Ingest data from relational databases **Amazon RDS**, object stores like **Amazon S3**, NoSQL stores like **Amazon DynamoDB**, data lakes through **Lake Formation**, or external APIs through **API Gateway**. **Lambda** functions can be used for custom ingestion logic.

2. **AWS Glue** serves as the extract, transform, load (ETL) engine. It will automate the cumbersome process of data preparation, transformation, and schema evolution, readying your data for analytics.

3. After ETL, data is securely stored in an **Amazon S3** bucket and is encrypted at rest and in transit. **IAM** policies will be configured for granular access control.

4. **API Gateway** exposes the clean data stored in the **Amazon S3** bucket to external customers. **Amazon ElastiCache** is used for caching frequently accessed data.

5. **Amazon Cognito** handles user authentication, and **Lambda** functions manage access control based on user subscriptions or credits.

6. A payment gateway manages transactions, and **Lambda** functions handle billing and invoicing based on usage and confirmed transactions.

7. **AWS Cost Explorer** helps monitor and optimize operational costs. It provides insights into spending patterns and can help identify cost-saving opportunities.

8. **CloudWatch** offers real-time monitoring, **CloudTrail** provides an audit log for governance, and **AWS Config** facilitates compliance with your organizational policies. Together, they form a robust framework for operational oversight.

9. The end user interacts directly with the system by making API calls. These are authenticated by **Amazon Cognito** and may have access controlled by **Lambda**, based on subscriptions or credits.

Reviewed for technical accuracy November 3, 2023

AWS Reference Architecture