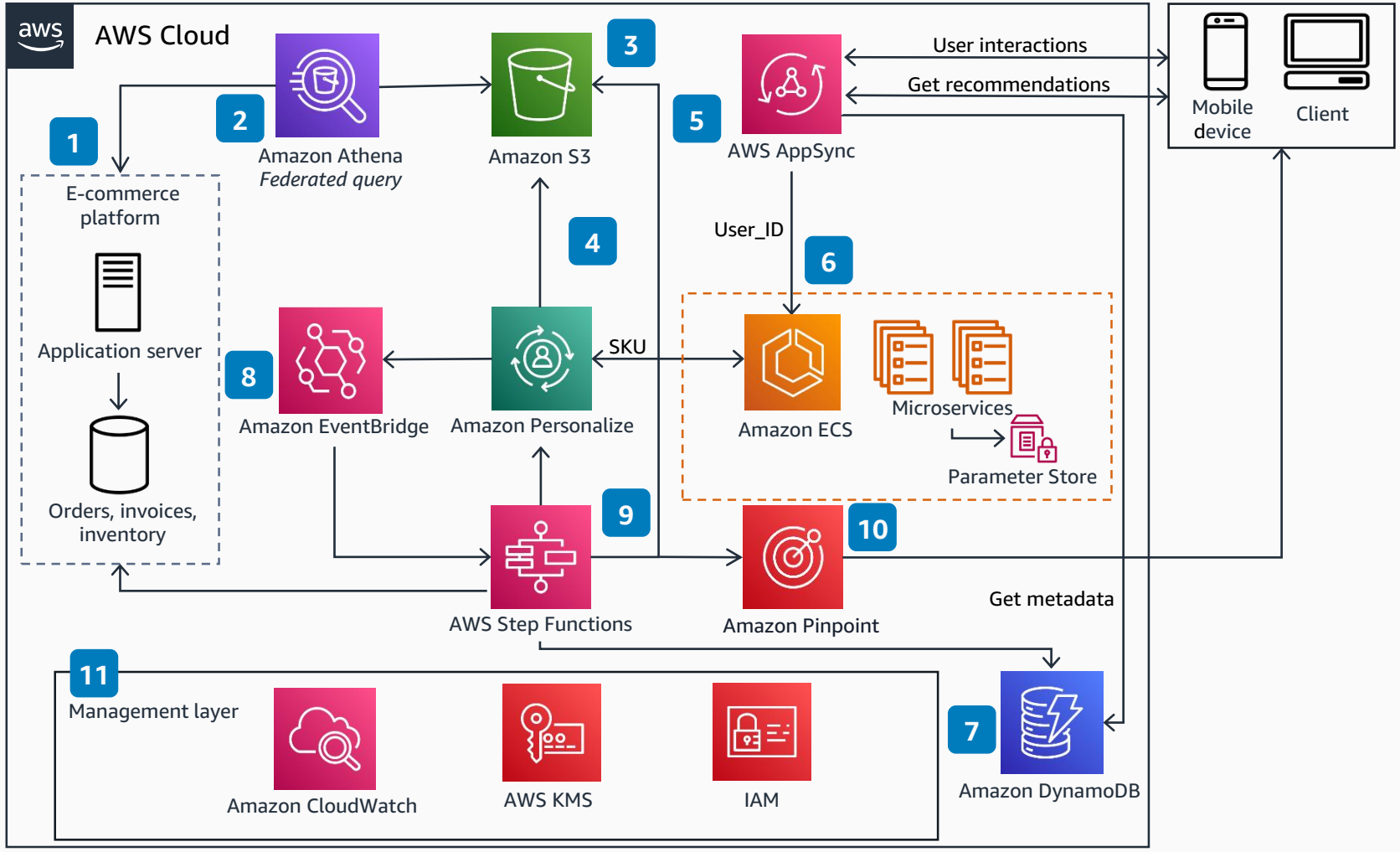
Guidance for Retail Personalization on AWS

This architecture augments different e-commerce backends by integrating Amazon Personalize as a product recommendation engine.



1. Retrieve product metadata through endpoints and pull training datasets from your data source. This architecture is designed to be compatible with any e-commerce backend.
2. **Amazon Athena Federated Query** provides a mechanism to fetch data from different sources, such as relational and non-relational databases, object stores, and custom data sources. It then stores the results in **Amazon Simple Storage Service (Amazon S3)**.
3. **Amazon S3** stores datasets used to train **Amazon Personalize** models in addition to partial datasets for updating new stock keeping units (SKUs) and user metadata.
4. **Amazon Personalize** delivers near real time and batch product recommendations based on customer interactions and behaviors.
5. **AWS AppSync** provides clients with GraphQL endpoints to store user interactions and get product recommendations combined with metadata from **Amazon DynamoDB**.
6. **Amazon Elastic Container Service (Amazon ECS)** on **AWS Fargate** runs microservices used to apply business logic for A/B testing and to create new campaigns.
7. **DynamoDB** acts as a caching layer between the e-commerce backend and the recommendation microservice, providing a scalable way to fetch product metadata.
8. **Amazon EventBridge** responds to changes in **Amazon Personalize** campaigns and filters, resolves, and triggers events that activate workflow operations and notifications.
9. **AWS Step Functions** orchestrates workflows for model retraining, job imports, and updates to the **DynamoDB** table and machine learning operations (MLOps).
10. The **Amazon Pinpoint** campaign sends scheduled messages with recommendations through email and text.
11. **Amazon CloudWatch**, **AWS Key Management Service (AWS KMS)**, and **AWS Identity and Access Management (IAM)** secure the workload and provide governance.

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AWS Reference Architecture