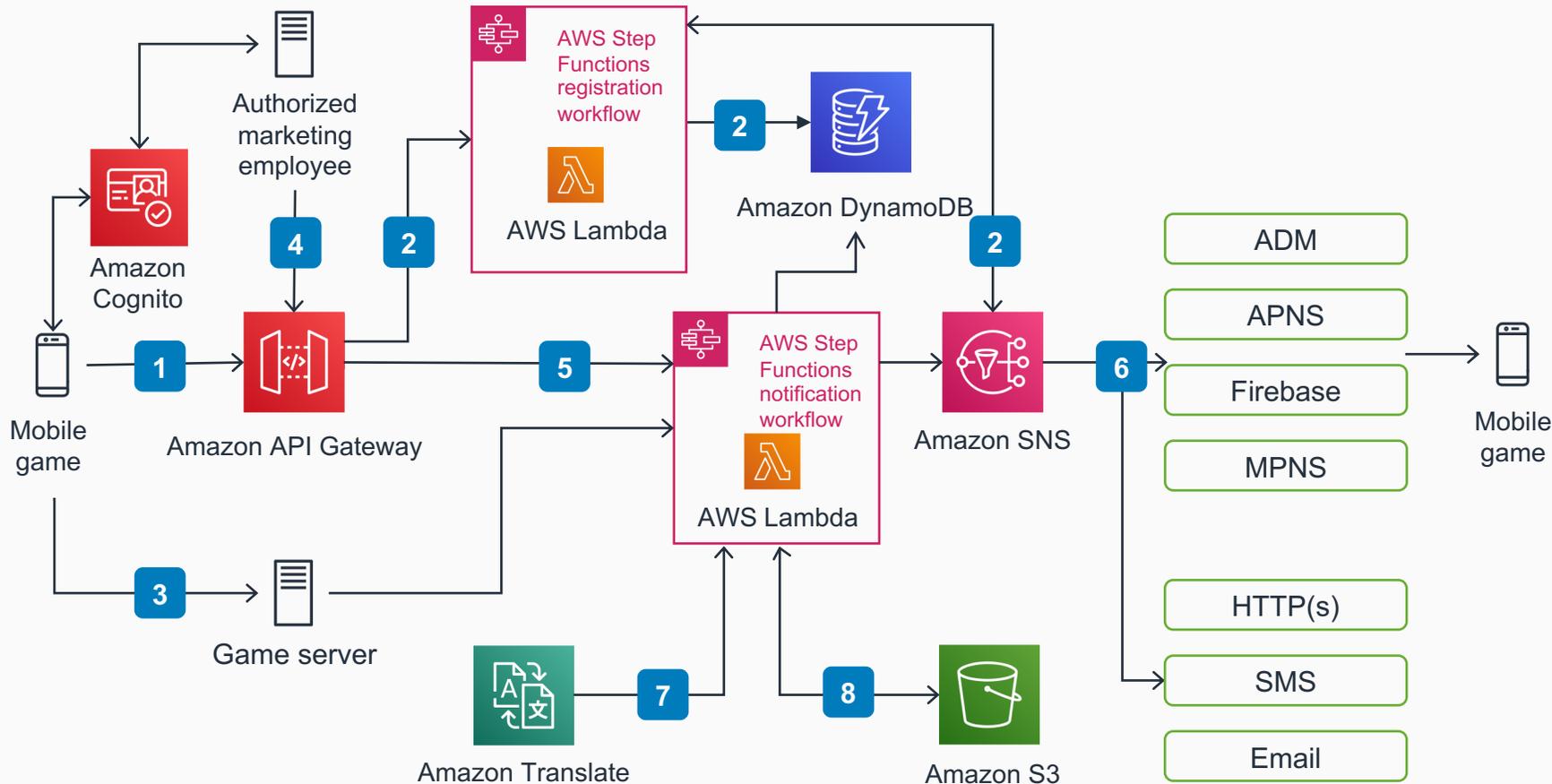


Serverless Notifications for Mobile Games

Build a Scalable Pipeline with Simultaneous Transaction Processing

Create a serverless data flow to ingest, store, process, and perform push notifications to subscribers. Use this pipeline for flash offers, in-game event/promotion notifications, campaign specific notifications targeting segmented audience with efficiency tracking and processing, and storage of notifications data for further analysis. The services shown in this architecture are scalable and support processing large volumes of transactions simultaneously.



- 1 When the game client launches, it sends registration information to an **Amazon API Gateway** REST endpoint. The game client can also send direct notification information via REST.
- 2 **Amazon API Gateway** requests step functions registration flow that performs additional logic like device registration and storing **Amazon SNS** endpoint data in **Amazon DynamoDB**.
- 3 As game client sends information to game server, the server triggers the **AWS Step Functions** workflow that processes messages.
- 4 To run campaigns or send single notifications, marketing employee can also manually request **AWS Lambda** step functions flow via **Amazon API Gateway**. Authorization is done via **AWS Cognito**.
- 5 Notification flow performs actions like translation, message payload enrichment, and storing and obtaining endpoint data from Amazon DynamoDB. This data is used to define direct users or segments to send messages to.
- 6 **Amazon SNS** uses push notifications service via provided credentials and mobile device tokens. After receiving the message, all topic subscribers or direct clients receive the push notification message via providers like Firebase or Apple push notification service.
- 7 **AWS Step Functions** flow uses **Amazon Translate** for quick translation.
- 8 Raw data is sent to **Amazon S3** for cold data analytics.



Reviewed for technical accuracy March 10, 2021

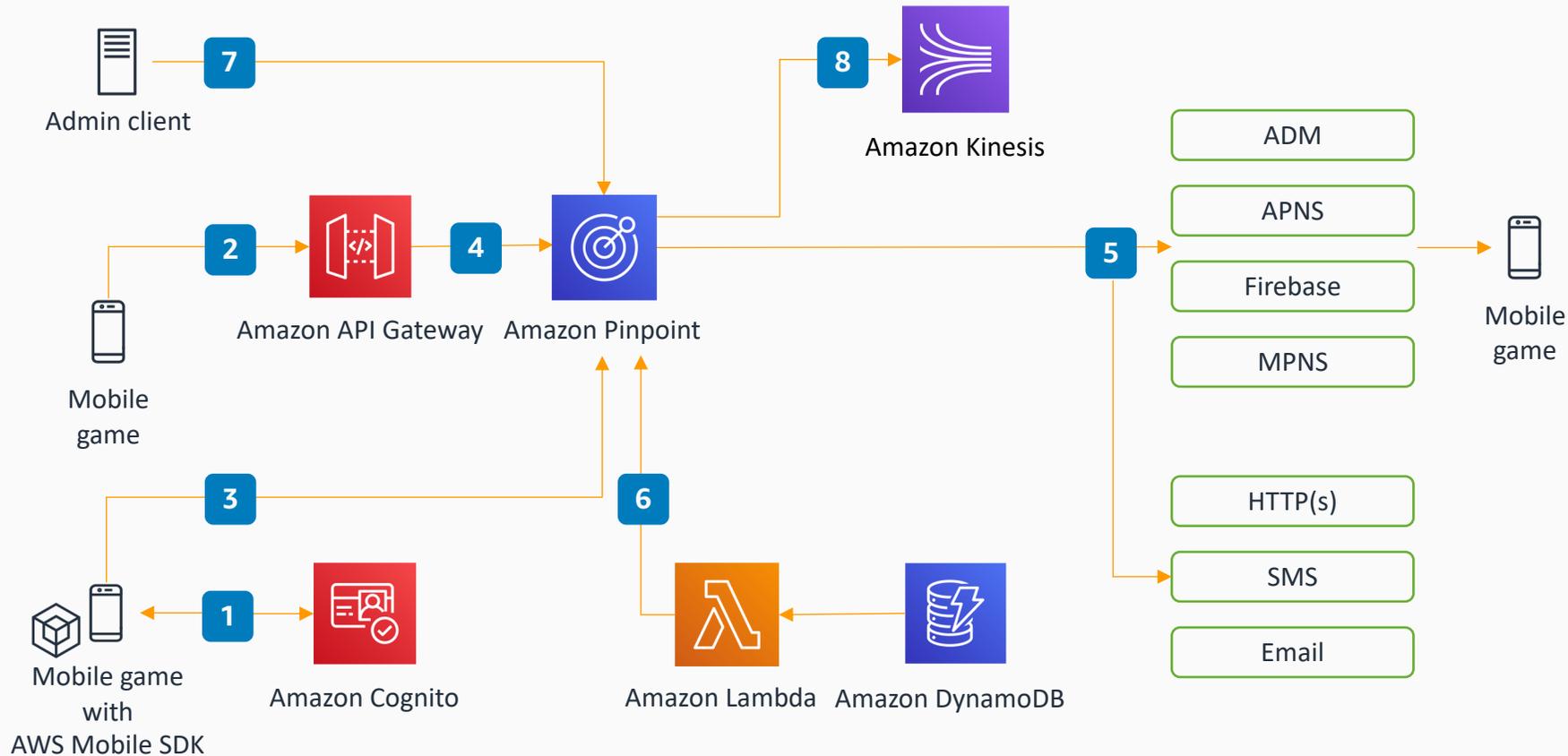
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AWS Reference Architecture

Serverless notifications for games

Build serverless notifications pipeline for mobile games

The following diagram provides an example architecture for serverless flow to ingest, process and sendout notifications for mobile games. Use cases include flash offers, push notifications for in-game events to subscribers, campaign-based sendout for segmented audience with efficiency tracking and processing and storage of notifications data for further analysis. Due to autoscaling features of each service, the flow supports large amounts of transactions simultaneously.



- 1 To access underlying AWS services via SDK, mobile game client requests temporary credentials from Cognito Identity pools.
- 2 Game client sends notification information to API gateway REST endpoint. Here API version can easily be updated and scaling handles large number of requests automatically
- 3 Mobile game client can also leverage AWS SDK to invoke Amazon Pinpoint flow directly with payload provided. Device can also register/update endpoint dynamically
- 4 API Gateway requests Amazon Pinpoint that performs additional logic like message token translation, segmented sendout and streaming analytics for further analysis.
- 5 SNS is setup to use push notifications service via provided credentials and mobile device tokens. After receiving the message to the topic, all subscribers receive the push notification message via providers like Firebase or Apple push notification service.
- 6 AWS Lambda subscribed to Amazon DynamoDB Streams to sync users to Amazon Pinpoint
- 7 Marketing employee can initiate campaign or personal sendout and A/B testing via AWS console for Amazon Pinpoint
- 8 Campaigns and message sending data is being streamed to Kinesis for streaming event analytics or to be stored for later insights in data lake



Reviewed for technical accuracy March 10, 2021

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