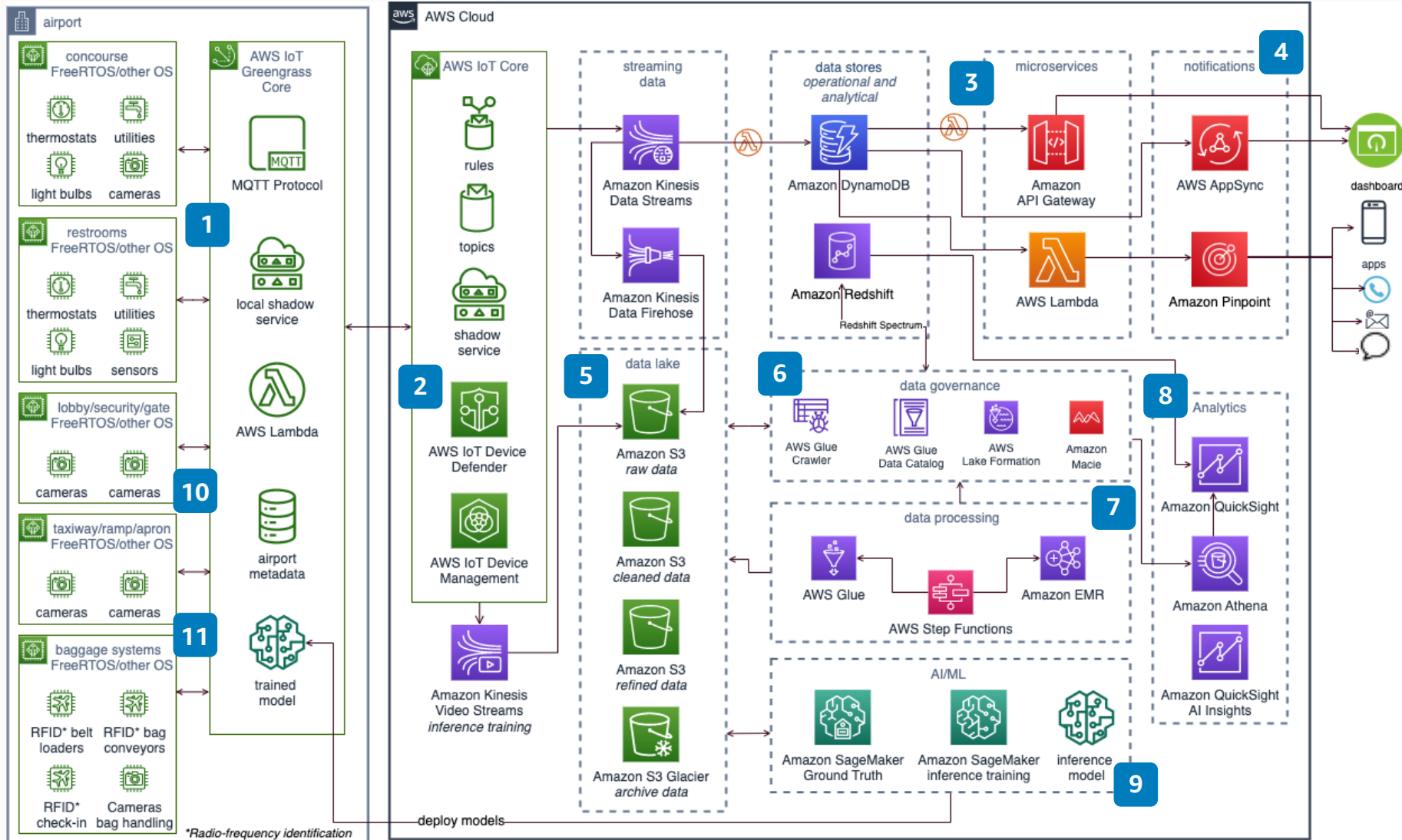


Connected Airports Using IoT and AI/ML

Build a smart, connected airport that uses IoT and artificial intelligence/machine learning (AI/ML) to generate near real-time data for aircraft movement, gate turns, baggage tracking, queue depth, and passenger traffic, and to implement compliance measures like social distancing and security.



- 1 Leverage **AWS IoT Greengrass Core** to connect, publish, and subscribe data using open standard MQTT protocol with Internet of Things (IoT) devices running on **FreeRTOS** and other operating systems (OS').
- 2 Leverage **AWS IoT Core** to maintain shadows of all IoT devices, connect to **AWS Cloud**, manage devices, update over-the-air (OTA), and secure the devices.
- 3 Use purpose-built databases like **Amazon DynamoDB** and serverless architecture to store events, deliver microservices, and generate events for the operational data store.
- 4 Build a real-time operational dashboard using microservices and **AWS AppSync**. Deliver alerts to multiple channels using **Amazon Pinpoint**.
- 5 Build the data lake to store raw data and to create curated processed data in **Amazon Simple Storage Service (Amazon S3)** using **AWS Glue** and **Amazon EMR**.
- 6 Discover and govern the data in **Amazon S3** using **AWS Glue** crawlers, **AWS Glue Data Catalog**, and **AWS Lake Formation**. Additionally deploy **Amazon Macie** to detect any sensitive data.
- 7 Use **AWS Glue** jobs and **Amazon EMR** to perform any transformation or enrichment of the data.
- 8 Use **Amazon Redshift**, **Amazon Athena**, and **Amazon QuickSight** for analytics. Optionally, build data marts in **Amazon Redshift** for heavily used analytics. For one-time requirements, publish the data catalog and use **Amazon Athena** or **Amazon Redshift Spectrum** for direct analysis using the data lake.
- 9 Use **Amazon SageMaker** to build, train, and deploy inference models. Optionally, deploy edge models on **AWS IoT Greengrass Core**.
- 10 Use the [Aircraft Turn Tracking](#) solution to passively collect and use aircraft gate turn events.
- 11 Use the [Facilitate Social Distancing](#) and [Queue Depth Management](#) solutions for compliance and enhanced customer experience.



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AWS Reference Architecture