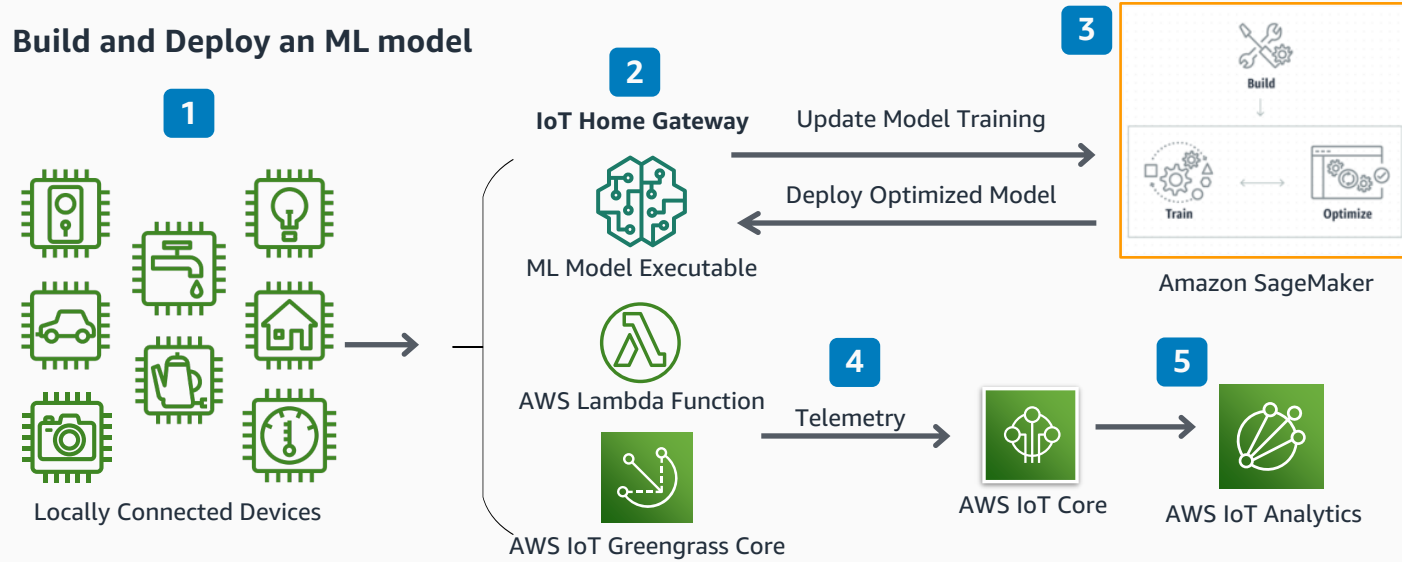
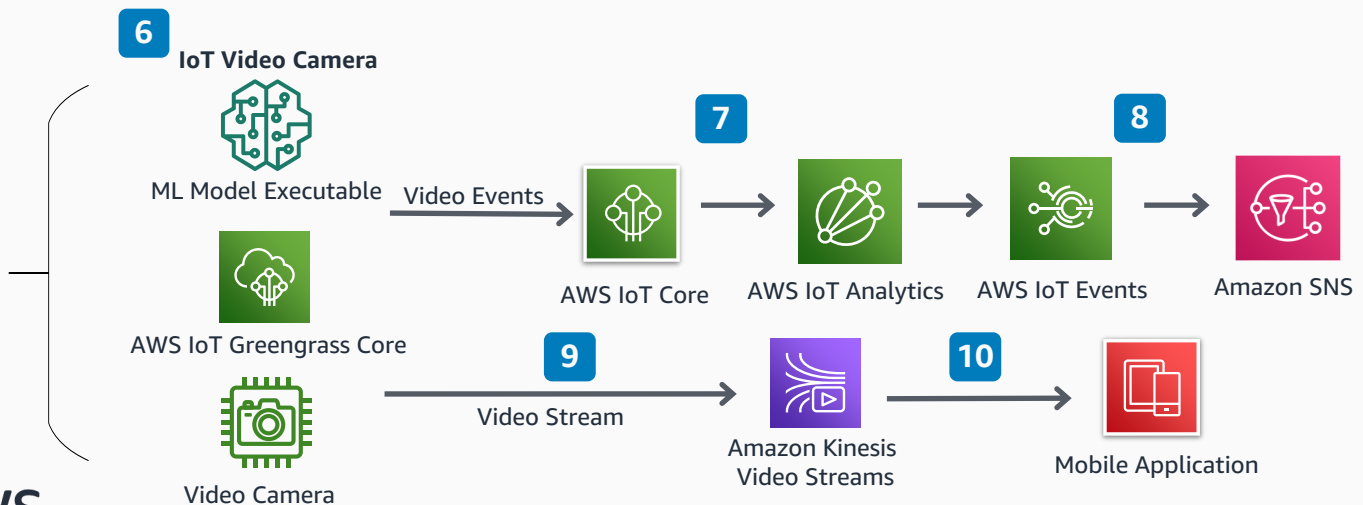


Connected Home – Machine Learning at the Edge

IoT Machine Learning on Home Devices



ML Edge Processing: Video Inference



- Locally connected devices send their data to the **IoT Home Gateway**.
- AWS IoT Greengrass Core** is installed on the IoT Home Gateway and uses **ML Inference**, an optimized ML model running at the edge.
- Create, train, optimize, and deploy ML models in the cloud. **Amazon SageMaker** optimizes models to less than a tenth of the memory footprint for resource-constrained devices, such as home security cameras and actuators.
- AWS IoT Greengrass Core** publishes local events from its Greengrass Aware Devices to **AWS IoT Core**. This enables your locally connected devices to send and receive updates from AWS IoT Core through AWS IoT Greengrass Core.
- AWS IoT Core** sends telemetry to **AWS IoT Analytics**. AWS IoT Analytics performs statistical or custom ML analysis in the cloud.
- A security video camera runs **AWS IoT Greengrass Core** as well as the **Amazon Kinesis Video Producer SDK**.
- The camera sends telemetry data to **AWS IoT Core** via MQTT. **AWS IoT Core** sends the telemetry data to **AWS IoT Analytics**.
- AWS IoT Events** tracks and performs state transitions for important events that are captured from the camera. **AWS IoT Events** can receive multiple inputs from sensors within the home. In this case, any alarm triggers an **Amazon Simple Notification Service (Amazon SNS)** notification.
- Video data is sent to **Amazon Kinesis Video Streams**. In addition to sending video to Kinesis Video Streams, the camera uses **ML Inference** to detect images within video frames locally.
- Consume video from **Kinesis Video Streams** using a variety of options. In this case, video is consumed directly from a mobile application for the homeowner to see the person in the camera.

