

# The IoT Developer Opportunity with Azure IoT Hub

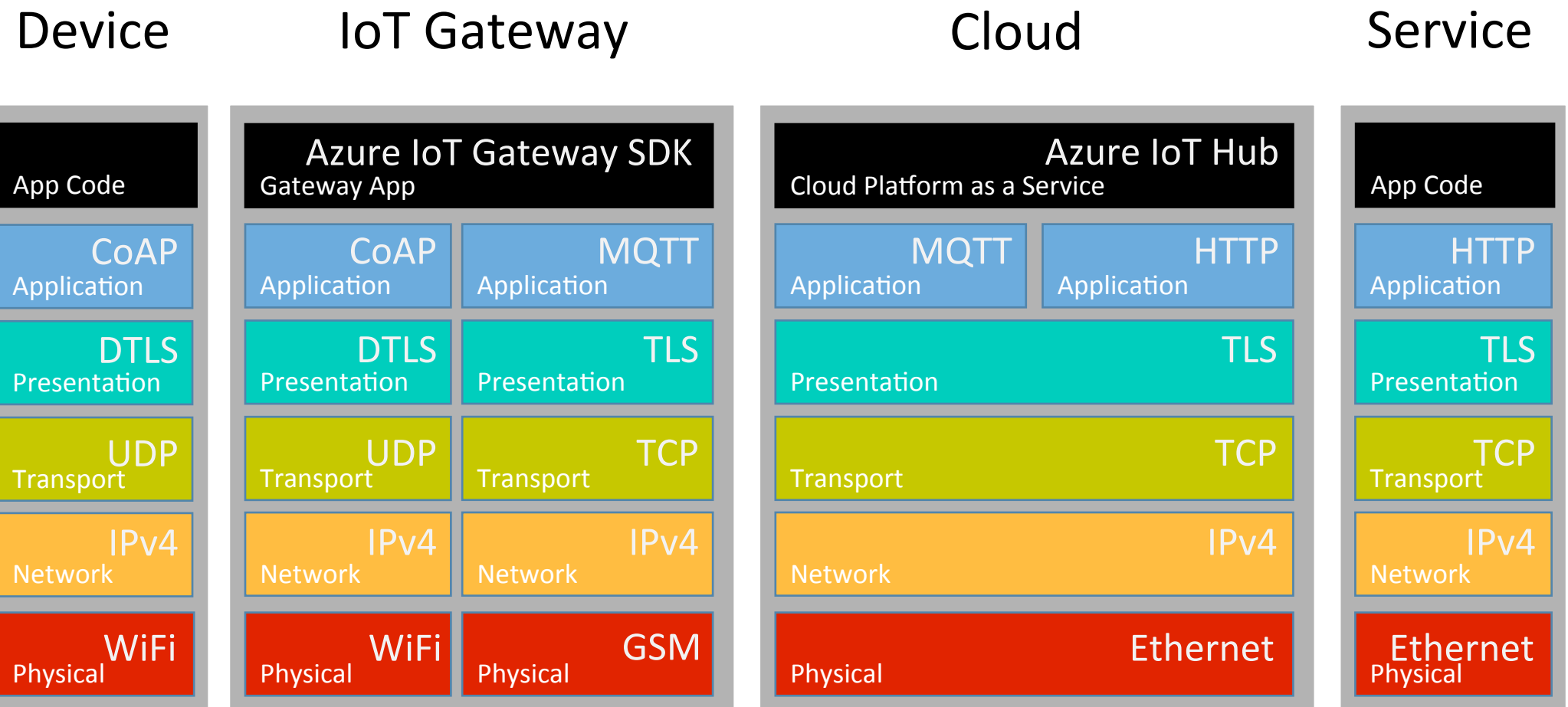
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Azure IoT

Microsoft Azure

IoT solutions are very diverse and multi-dimensional  
Vertical (stack) and Horizontal (flow and translation)



# Different profiles of IoT developers

## Edge Developer

Embedded/sensors  
Hardware aware  
OS aware  
Radio and protocol

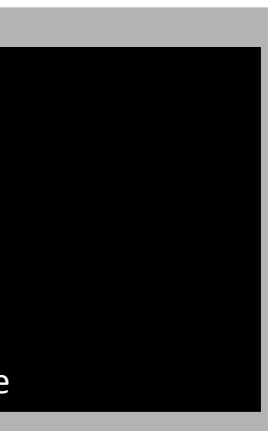
## Gateway/Device Developer

- Messaging aware
- Radio and protocol translation aware
- OS aware
- Embedded/Sensors
- Hardware aware

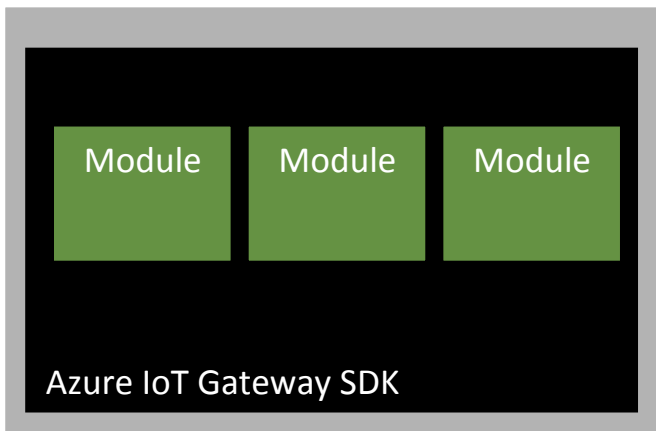
## Cloud Service Application Developer

- Cloud/web/mobile aware
- Messaging aware
- Stream processing and machine learning aware
- Line of business aware

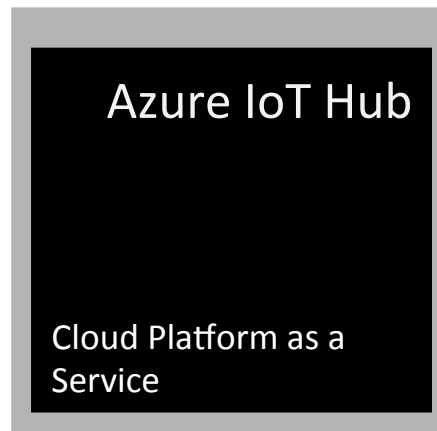
## Device



## IoT Gateway



## Cloud



## Service



# How does Azure IoT Hub help?

Given **1 million devices deployed world-wide**, how do you **find the 10 that you're looking for?**

- Device twin properties
- Query based on device resources in device twin
- `SELECT * from devices where '/3/0/1' == 'Acme Manufacturing Inc.'`

How do you **read or execute on 10, 20k, or 1 million devices?**

- Schedule the request for the right time
- Do the request
- Wait for response
- Track results
- Deal with failures

# Azure IoT Hub Device Management

## **Device Twin**

enables synchronization of (desired and reported) properties between cloud and device

## **Methods**

enables interactive device actions

## **Jobs**

enables the broadcast and scheduling of twin changes and methods at scale

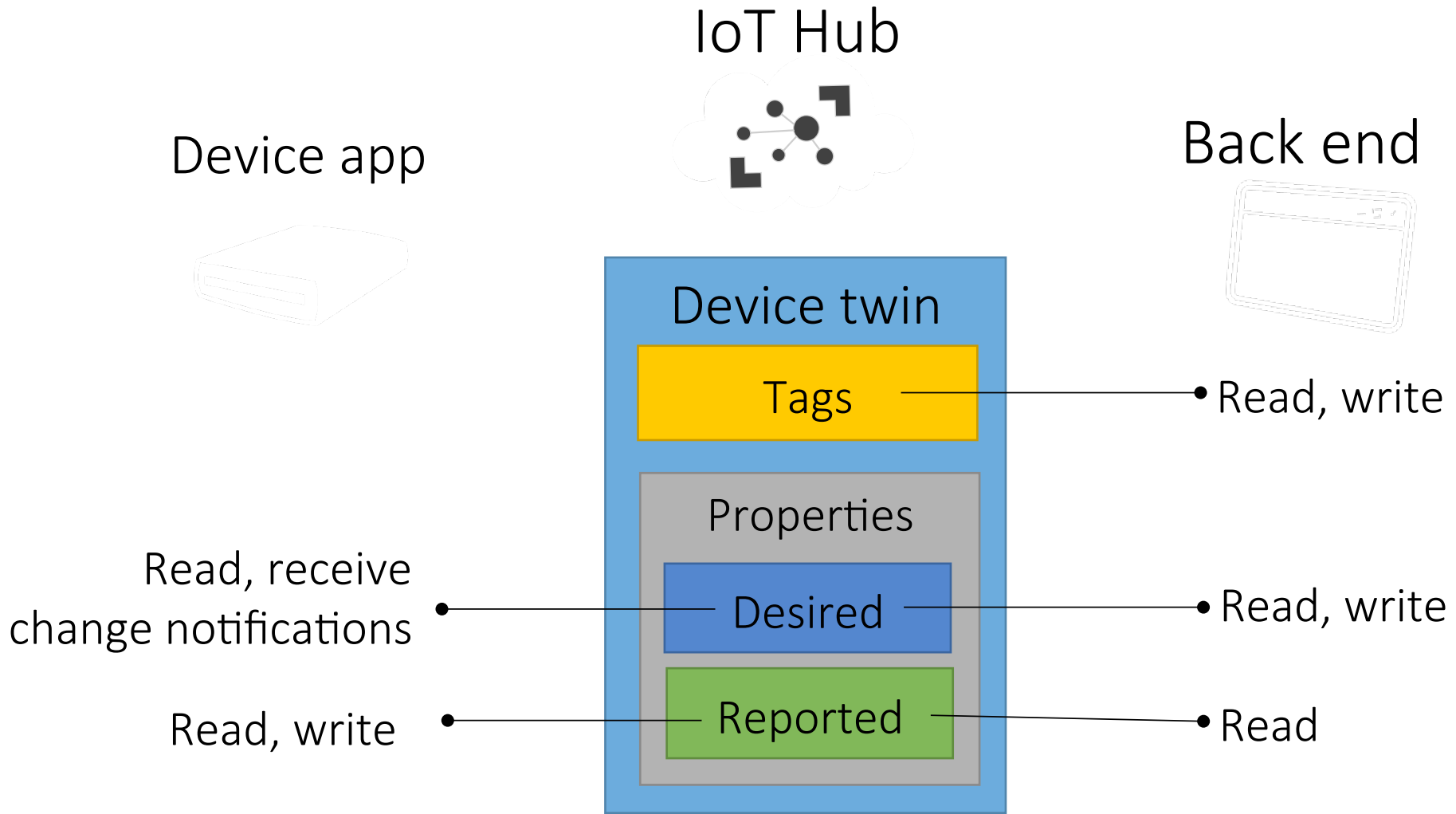
## **Queries**

enables dynamic reporting to attest device status and health

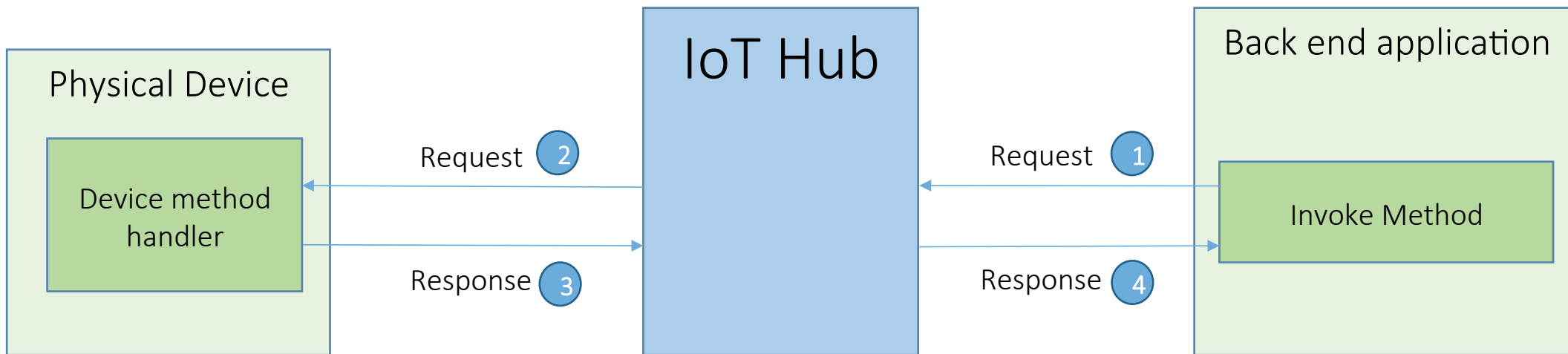
## **Patterns & Libraries**

enables management on a diverse set of device platforms and connectivity models

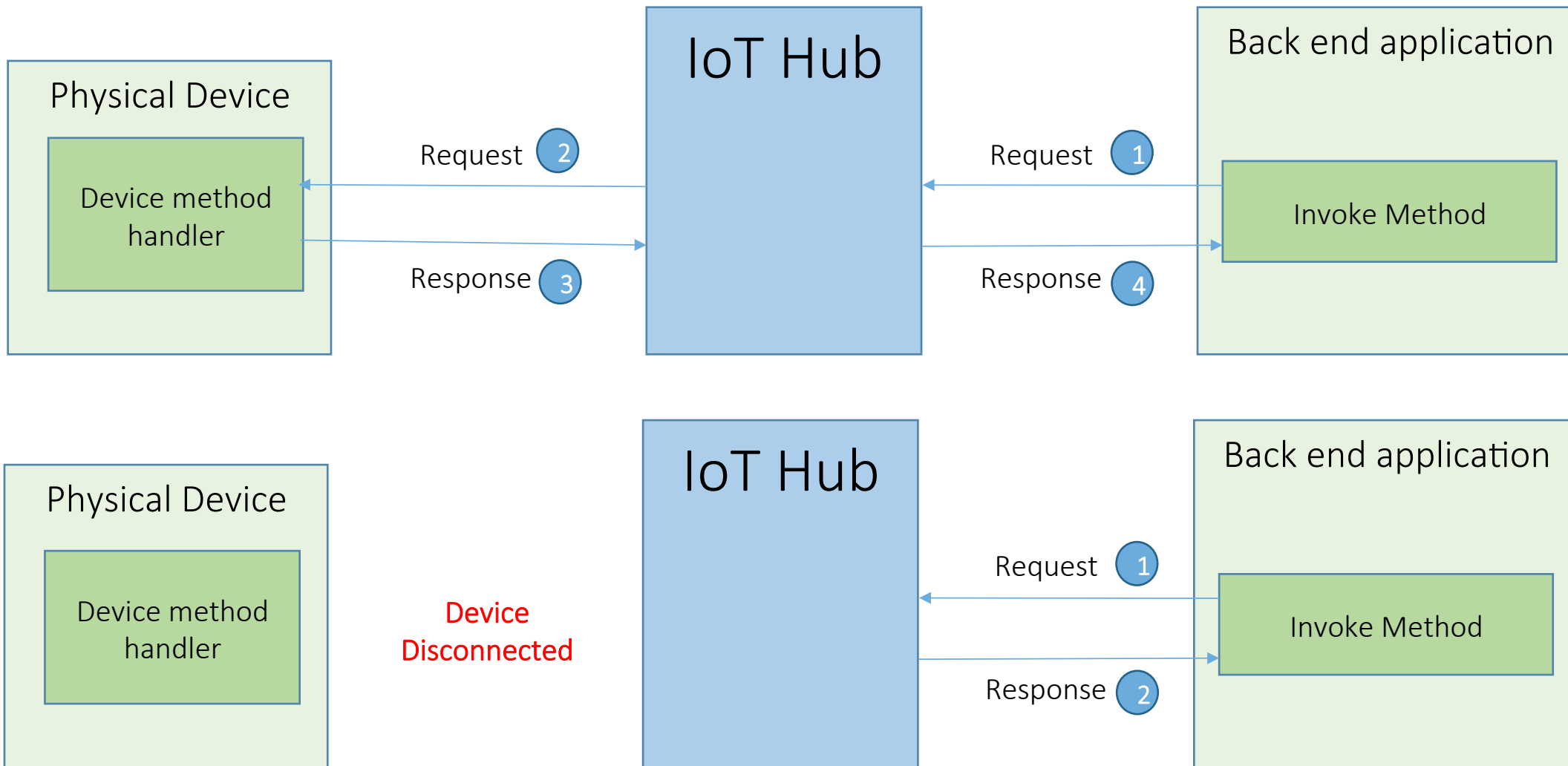
# Secure IoT Device Twin



# IoT Hub Device Method

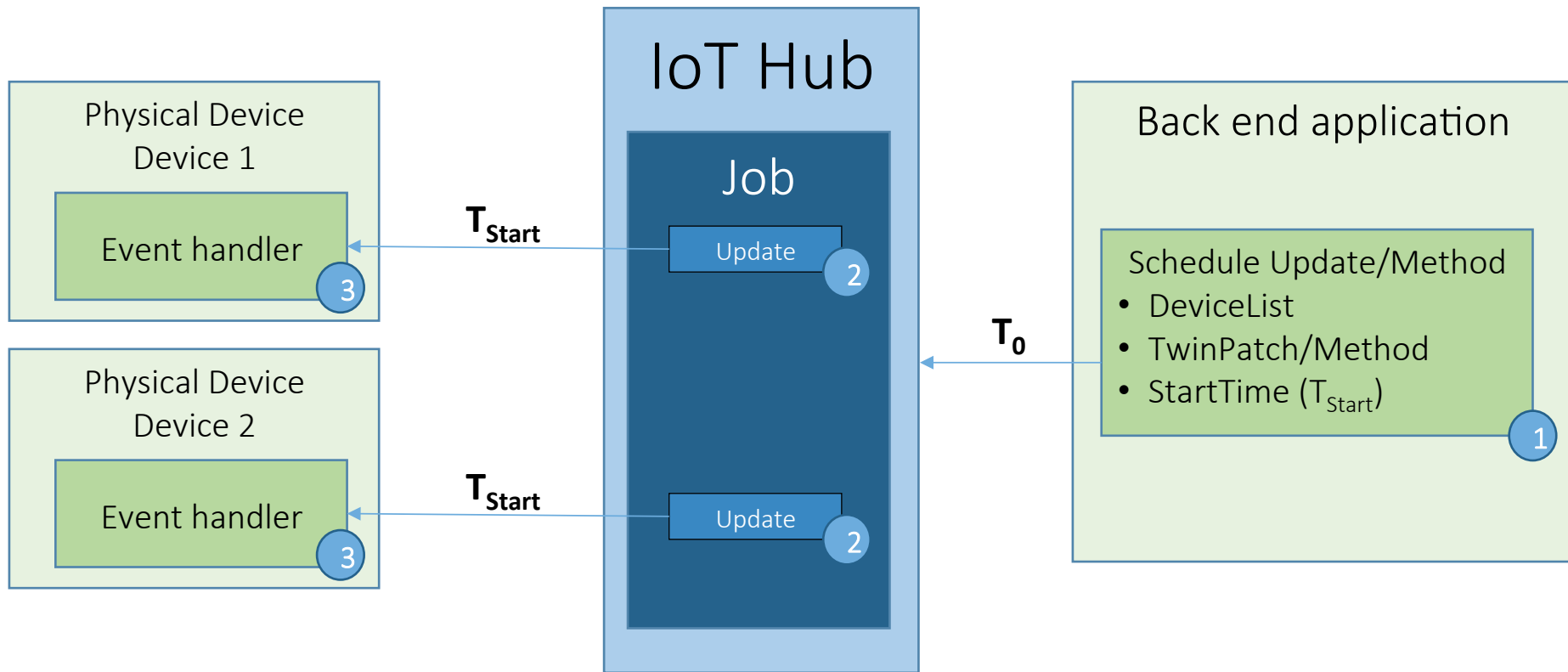


# IoT Hub Device Method (disconnected device)



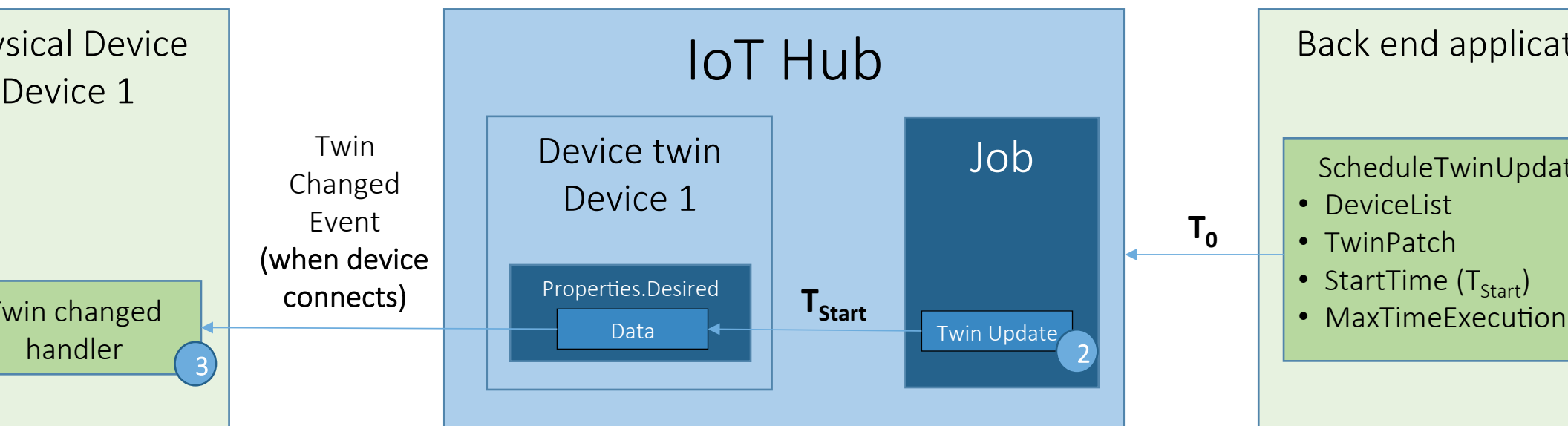


# obs for scheduling device updates

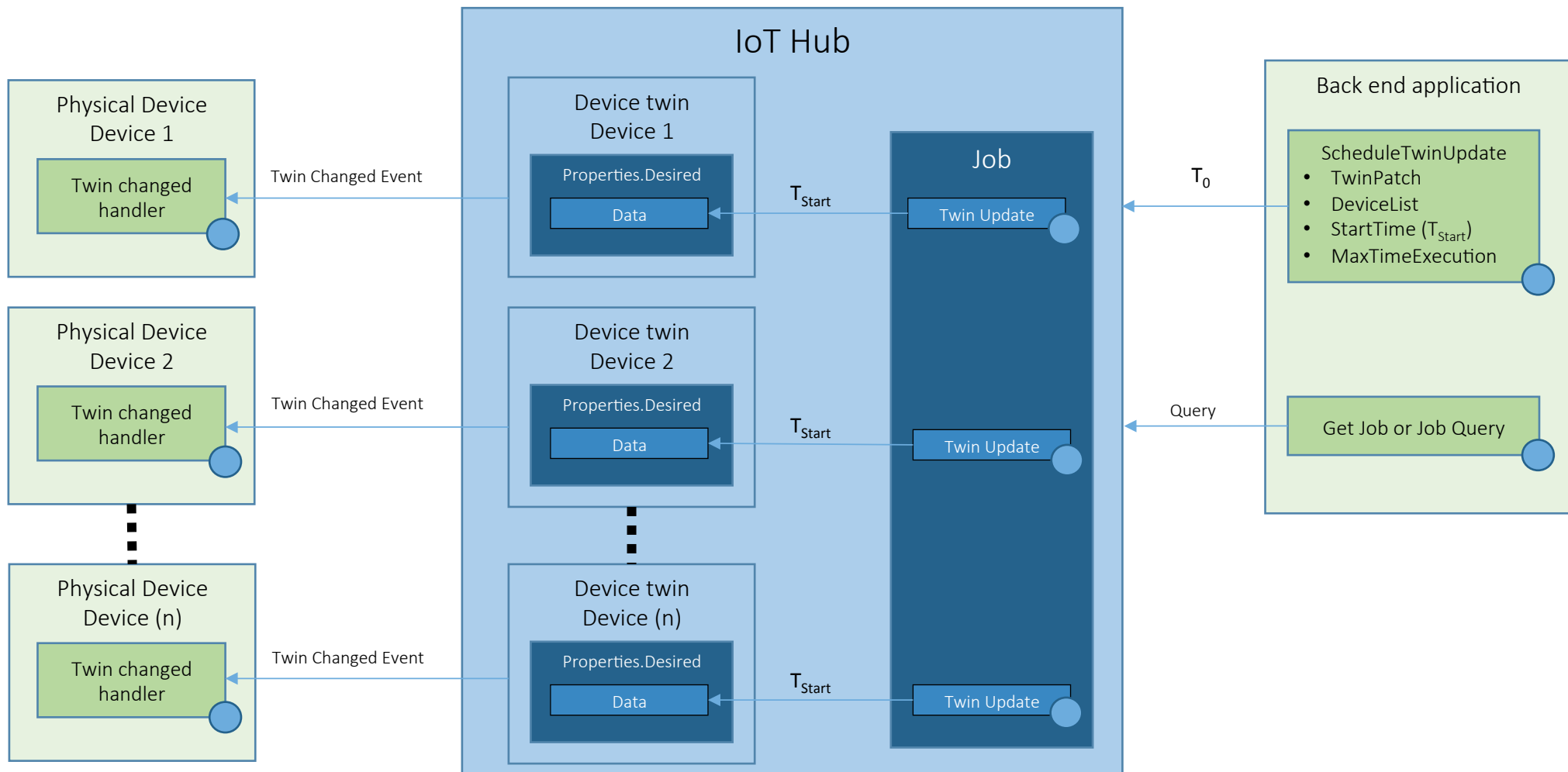


Scheduling and tracking updates against a large set of device is a non-trivial problem.

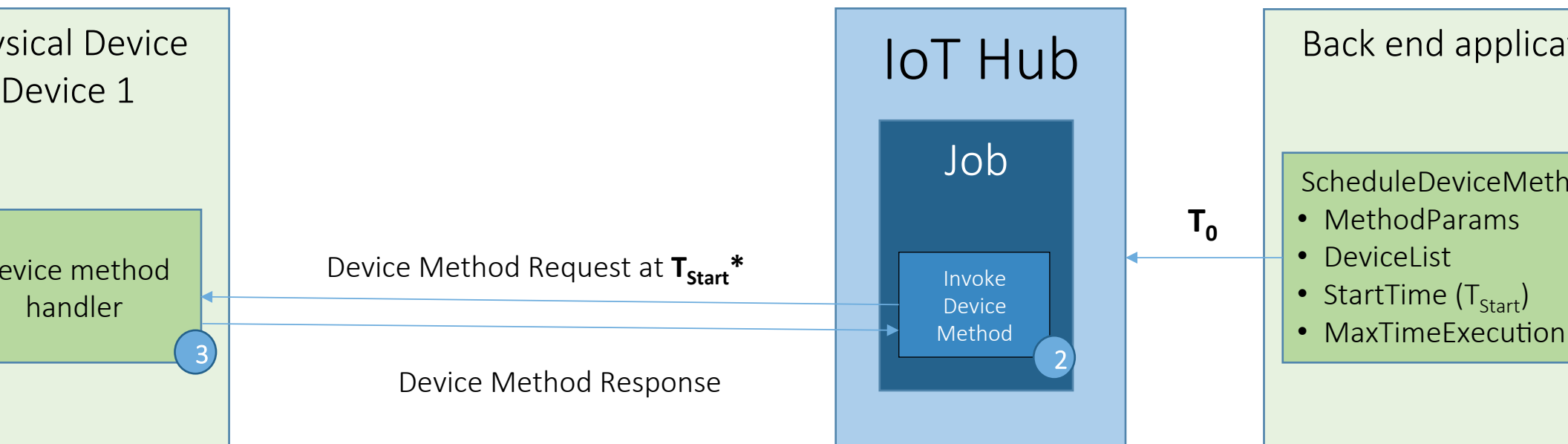
# Jobs for scheduling device twin updates



# Twin update jobs for many devices

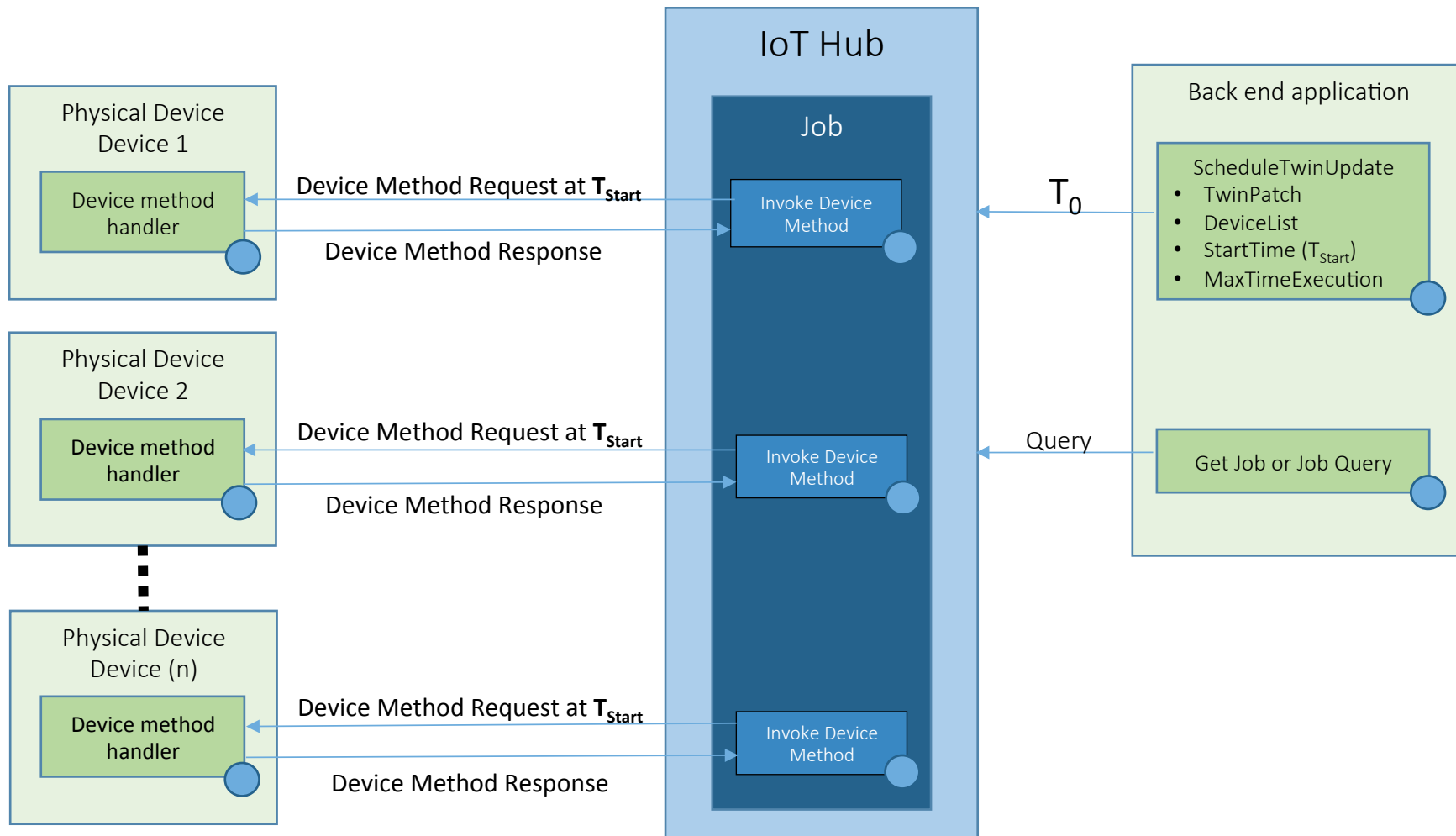


# Jobs for invoking device methods



\* Requires device to be connected. IoT Hub responds immediately with error for disconnected device.

# Device method jobs for many devices



# LWM2M and Azure IoT

