Learnd Tech Task - Nathan Dennis

1.A Solution Design

Data Ingestion / Storage Solution

Components:

- Meter device: Transmit meter readings (device serial no., timestamp, kWh etc) to an Azure IoT Hub - https://azure.microsoft.com/en-gb/products/iot-hub/
- Azure IoT Hub to act as a message broker routing incoming data to other services
- Azure Stream Analytics for real time data processing. Could be used for calculating monthly power usage to store in Cosmos
- Azure Cosmos DB - flexible NoSQL DB for time-series data https://azure.microsoft.com/en-gb/products/cosmos-db/
- Azure Data Factory to aggregate daily and historical data to pass into Data Lake storage - https://azure.microsoft.com/en-gb/products/data-factory/ & https://azure.microsoft.com/en-gb/products/storage/data-lake-storage/
- Azure Data Explorer - fast analytics for customer queries, queried against Data Lake - https://azure.microsoft.com/en-gb/products/data-explorer/

Considerations:

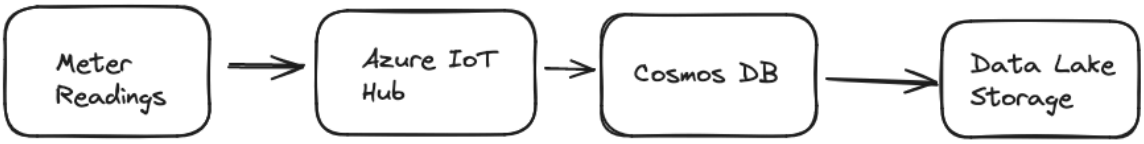
Scalability - Cosmos & Data Lake are highly scaleable to accommodate growth

Flexibility - CosmosDB allows for future data additions onto its flexible NoSQL schema

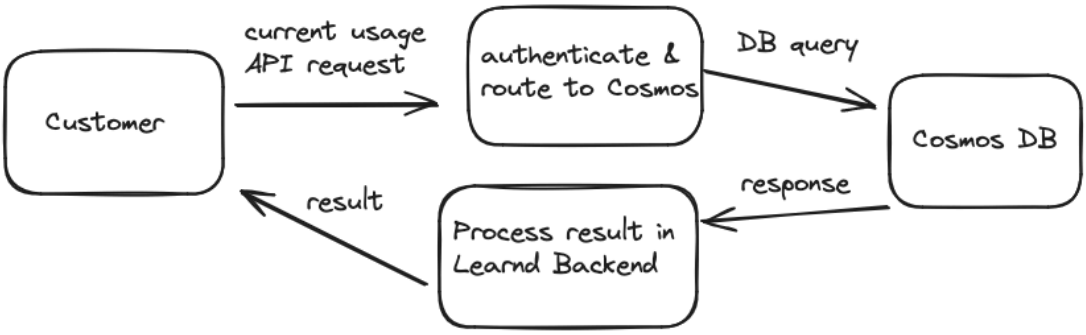
Real Time vs Historical Analysis - Stream Analytics for real time, Data explorer for Historical data

Cost - Would need to be able to monitor the chosen services against our usage patterns to see what setup is the most cost effective over time

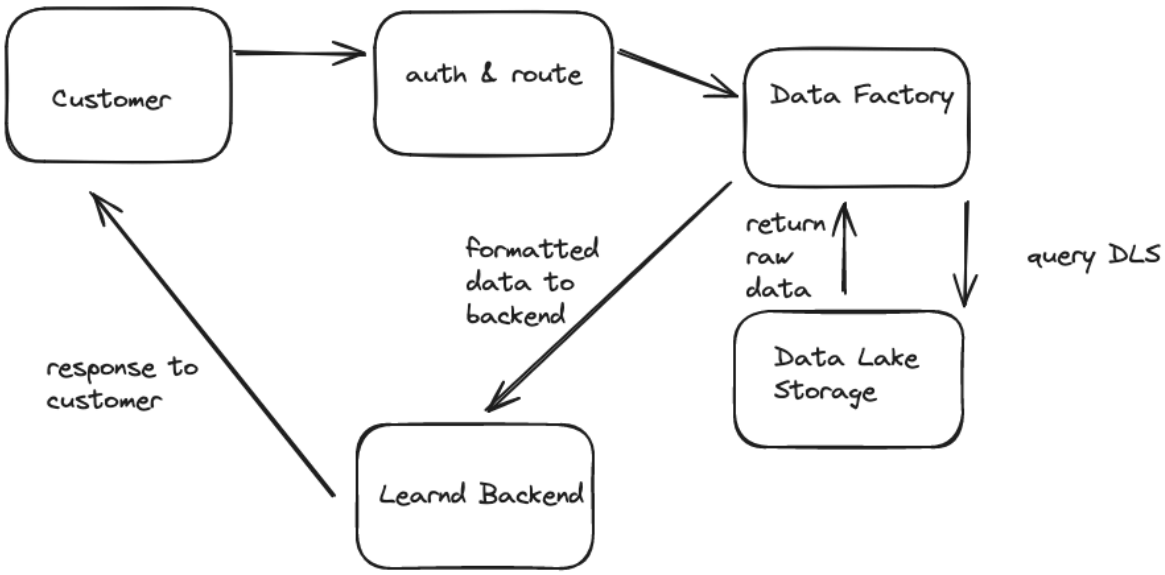
Data flow:



Current Usage:



Monthly Usage:



Notes:

I've never used Azure before and only have a very, very small amount of exposure to AWS so this was just my best guess of some sort of system structure based on the Azure products page. I don't have any working knowledge of any of these services