# Bond Challenge

## Design Question

A Pizza Restaurant chain “Pizza House” has more than 2000 stores across the country. Each store manages its own inventory of raw materials. Each store prepares pizzas, side dishes, etc. and sells them along with ready to eat products such as cookies, drinks, etc. The sale can happen by Point of Sale (POS) or online. The online transactions would be flowing in real time whereas the transactions made by POS can be synced every 15 minutes in batches. They offer pick-up and deliveries by 3rd party providers.

At the head office of the restaurant chain, management is concerned with the logistics of ordering, stocking and selling products while maximizing profits as well as understanding their marketing & communications. Several promotional schemes such as temporary price reductions, ads in newspapers, displays etc., also keep rising. Considering the huge data volumes (hundreds of GB per month) and the variety of the data they have; management wants the architecture to be robust enough to handle the varying data loads.

Design a cloud data platform to process and deliver insights based on the above. Please provide a high-level solution design for the architecture. Feel free to choose any cloud provider you want.

### Requirements

1. Handle large write volume: Billions of write events per day.
2. Handle large read/query volume: Millions of merchants wish to gain insight into their business. Read/Query patterns are time-series related metrics.
3. Provide metrics to customers with at most one-hour delay.
4. Run with minimum downtime.
5. Have the ability to reprocess historical data in case of bugs in the processing logic.

## Design Solution

- As a BI Developer, I do not have high-level programming language skills to develop and manage the interface. But I can design a transactional database for Pizza house – which I have pushed in the git repository.
- As mentioned in the Pizza House - ERD, we can handle all the data related to stores, customers, products, inventory, employee, etc. We may require to add more tables based on the project requirements.
- Once we finalise the Transactional database and finish with all the testing, we can create a Data Warehouse – for Business Analysis purpose.
- As mentioned in the requirement, the online transactions would be flowing in real time whereas the transactions made by POS can be synced every 15 minutes in batches. I can create a SSIS project that will be executed by SQL a job – to sync data from Transactional to Datawarehouse.
- Business analysis concerns/questions to maximize the profit will be answered from the Report using Power BI, and/or SSRS.
- We can handle the historical data using Temporal table (system versioned) if we are using SQL server or we can also implement it manually if it's not supported.