## Enhancements

Is this system scalable? How can it cope with high traffic? Can you identify bottlenecks and suggest an improved design and architecture? Feel free to suggest a complete different approach, but be sure you can obtain the same goal.

## Potential issues with the current system

**Scalability**
There can be different demands for *Transaction* API and *Get-Stock-Price* APIs. Because at the peak trading hours, Transaction API will have higher demand as compared to GET. This may lead to system overload and degraded performance.

*Its better to split these two modules into separate modules.*

**High Coupling**
There is a high level of coupling between the module responsible to receiving and processing real time transaction and the module to supply the Stock Price.

*Ideally, the module related to real time processing should be a separate component using a message broker like Azure Event Hub.*

**Frequent Data Computation**
For every *GetPrice* request, *w*e are calculating the average of all stock prices by scanning all transactions in the database to get the latest stock price. Over a period, as the number of transactions grow, this approach will result in degraded performance.

*The ideal way is to have a different service which will compute the average stock price in real time and persists the average price in a highly available database like cosmos or a globally distributed cache.*

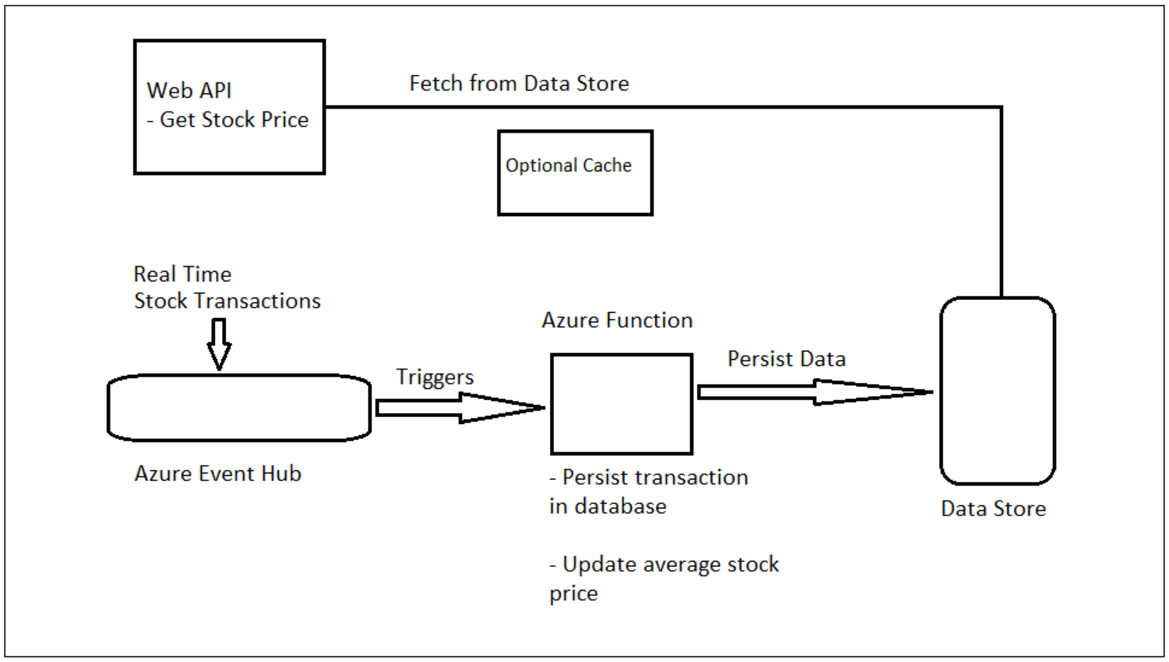
## Proposed new architecture

- Introduce a message broker or event hub which will have high throughput and is easily scalable depending on the incoming transaction volume

- Each incoming transaction triggers an Azure Function which will persist the transaction details in the database and recomputes the average price of the stock

- Expose a Web API to supply the average stock price

- Based on the performance NFR, a globally distributed cache like Redis can be used to hold the average price of all stocks


Web API
- Get Stock Price
Fetch from Data Store
Optional Cache
Real Time
Stock Transactions
Azure Function
Triggers
Persist Data
Azure Event Hub
- Persist transaction in database
- Update average stock price
Data Store