Product Interview Prompt: Transaction Processor

Problem Statement

In this interview, we'd like to roleplay a scenario where you are tasked to architect a solution for the following requirements:

Product Requirements and Feature Set

- Accounts should maintain a balance
- Accounts belong to an Account Holder
- Information on the Account and Account Holder should be stored
- Transactions on an Account should be stored
- Reports may need to be generated on all Transactions related to an Account
- There should be an API to create an Account
- External transactions come in via files, how would you design a system to process these files
- Requests for internal transactions between accounts can be initiated by an API
- An Account Holder should be notified when a transaction is completed successfully or rejected

Discuss how you would architect a scalable solution that serves your Transaction Processor that you implemented for the first coding interview.

There are no right or wrong answers, this interview is an open ended discussion. Please document and share your thoughts as you work through this problem with your interviewer who serves as your Project Manager / Lead.

Pillars of System Design to Explore

- **Product Design**
    - Make sure you understand the product requirements and feel free to ask clarification questions

- Understand who your “customers” are and how they would use your product
- **Architectural Design**
  - Your interviewers will ask questions regarding the decisions you are making surrounding architecture
  - How secure and scalable is your solution
    - What considerations are there for failures and redundancy
    - What considerations are there for throughput volume
- **Database Design**
  - What Database technology would you choose
  - Explain your design and explain the trade off between different choices
  - How do you structure your data?
  - How does your system handle concurrency
- **API Design**
  - What API protocols would you use and why?
  - How would you structure your API
  - How would your customer interact with the API