

Problem Statement 4: Ship with Amazon

Ship with Amazon (SwA) is a service where sellers selling on Amazon and other marketplaces can use Amazon Logistics to take care of the end to end delivery. Sellers keep the items packed; an Amazon pickup associate would then pickup the packages and carry it in his/her van. Amazon would give periodic tracking updates to Shippers and their buyers where they can track the packages. Shippers love this offering since they get the Amazon's high quality shipping at attractive prices.

For amazon to be profitable, Amazon has to optimize the pickup costs. One way to go about this would be to optimize the number of vehicles and drivers used to perform pickups. While optimizing costs, amazon has to ensure that the Promised Delivery Date (PDD) is not missed for any package since it violates customer's (both Shippers and buyers) trust with Amazon. Generally PDD can be anywhere between 0 to 7 days from the time the order is placed.

How can amazon optimize pickup costs?

What is known to amazon?

- a) Package dimensions
- b) Truck's dimensions (there can be different sized trucks available)
- c) Inventory of trucks available at each Amazon facility which will do the pickup
- d) PDD
- e) Timestamp when package is ready to be picked up
- f) Geocoded locations for each pickup
- g) Approximate transit times for vehicles across different locations

Additional Information:

"One sub optimal way to solve this problem would be to pickup all the packages, the same day when they are made ready by the seller. This doesn't necessarily result in optimal truck utilization over a period of days. Students are expected to make reasonable assumptions about customer expectations (related to PDD), geographic distribution of sellers and the operational feasibility of the distance covered by a single truck, and any others that they think are appropriate. The end result should be a pickup strategy/algorithm that does better in terms of associated costs ".

The solution should be graded on which aspects are being modeled by the student teams and what their algorithms are for the final optimization.