Continuous Replenishment Program:

Requirements:

1. Inventory management
2. Economic order quantity management
3. Safety tock level management
4. ROP (Reorder Point) identification
5. Lead Time Demand (Forecast)
6. Monthly sells data requirement
7. Supplier data includes Delivery time for a consignment and reorder time

Calculation of Lead Time demand

LD = Lead Time * Avg daily usage of product (in units)

Constraints for Lead Time demand

Average monthly sales of product are needed

Based on Average monthly sale of product the Average daily sales can be predicted

Safety Stock level:

Safety Stock Level calculations:

As safety stock level is the access inventory beyond the excess demand.

The calculation for this can be done by forecasting the lead time deviation, expected service level and the demand of the product.

$$SSL = Z * \text{sqrt}\,[LT *(\sigma D)^2 + (D_{avg} * \sigma LT)^2]$$

Z = Service Level

LT = Lead Time

σ LT = Standard deviation of Lead Time

D_{avg} = Average Demand

σ D = Standard Deviation of Demand

Constraints:

For calculation of Max Lead time and average lead need to predict the supply pattern. Takes into consideration the supply delay and reordering delay.

For Max daily sales and Avg daily sales need to forecast the sales of the product and the sales pattern.

Min/max Planning

Constraints:

When no reorder needs to be made then the reorder quantity is set to zero.

When a reorder of X quantity is needed to be made and assume stock level is S then both min and max values are set to X-S.

Reorder point(ROP):

ROP = Lead time Demand(LD) + Safety stock level(SSL)

For Store 1: 810

For Store 2: 1110

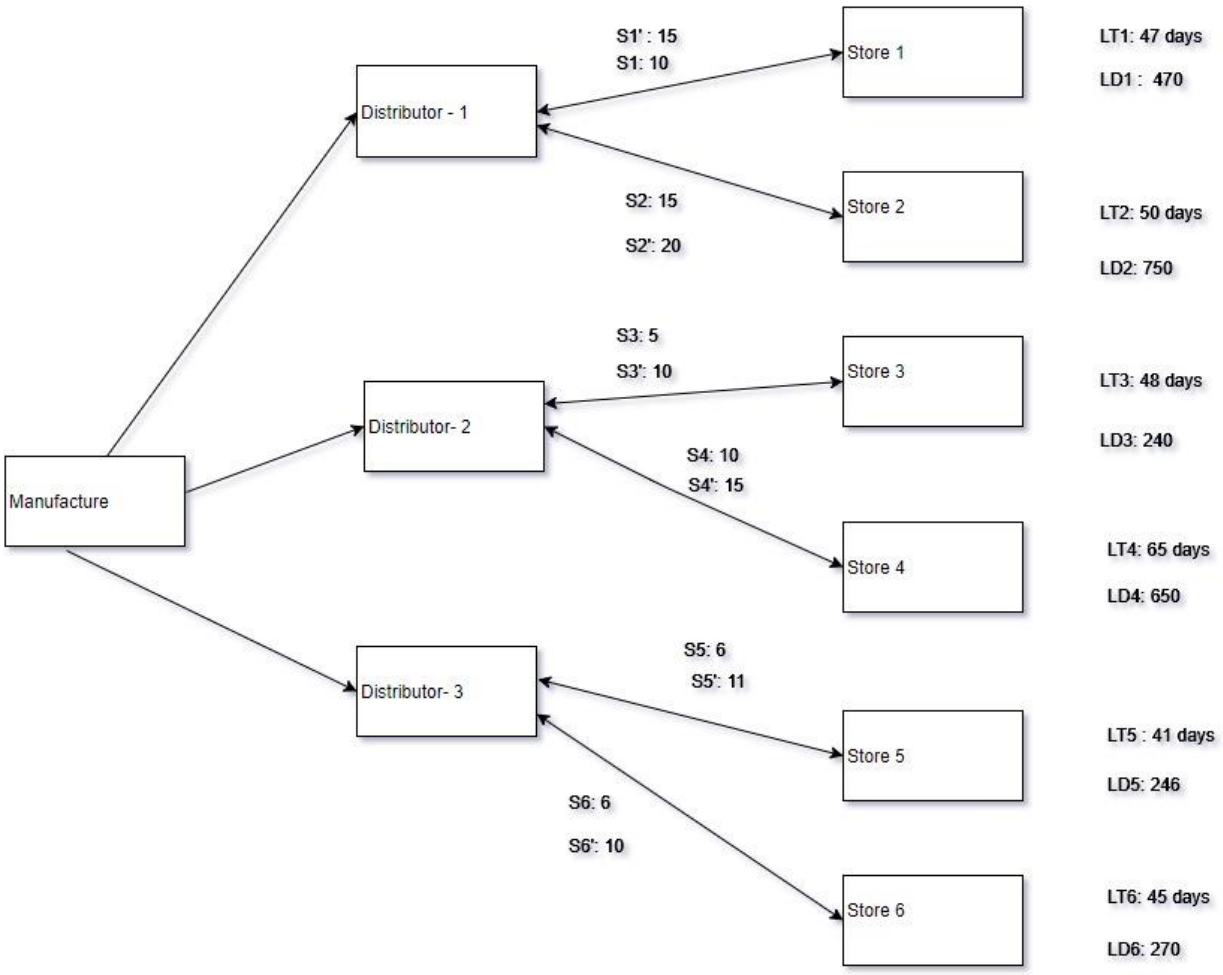
For Store 3: 500

For Store 4: 1050

For Store 5: 550

For Store 6: 500

As soon as the stock level reaches the reorder point (810 for Store 1) the store needs to place a reorder for that product (470 as Lead time).



S': Max Daily Usage of product (in units)

S : Average Daily usage of product (in units)

LD : Lead Time Demand

LT: Lead Time

Safety Stock level(SSL) for each store

Store 1: 340

Store 2: 350

Store 3: 260

Store 4: 400

Store 5: 304

Store 6: 30