Below is a formulation of the internal depot transportation problem. This is a non-robust formulation.

Sets

I	set of Items

Parameters

w_i	$i \in I$	expected weight of item i
v_i	$i \in I$	expected volume of item i
σ^2_{wi}	$i \in I$	variance in weight of item i
σ^2_{vi}	$i \in I$	variance in volume of item i
p_i	$i \in I$	profit gained from item i
ρ		Some tolerated variance threshold
V		volume capacity of vehicle
W		weight capacity of vehicle
L		item capacity of vehicle

Variables

$x_i \geq 0$	$i \in I$	quantity of good i allotted to the vehicle

Objective

$$\max \quad \sum_{i \in I} p_i x_i \tag{1}$$

Constraints

$$\sum_{i \in I} w_i x_i \leq W \tag{2}$$

$$\sum_{i \in I} v_i x_i \leq V \tag{3}$$

$$\sum_{i \in I} x_i \leq L \tag{4}$$

$$\sum_{i \in I} x_i \left(\sigma^2_{wi} + \sigma^2_{vi}\right) \leq \rho \tag{5}$$