Condition de résolution

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Objective Function

$$Allocation\ Cost\ = \sum_{i \in N} \sum_{j \in M} h_{ij} X_{ij}$$

$$Location\ Cost\ = \sum_{k \in N} f_k\, L_k$$

$$Connection\ Cost\ = \sum_{k \in N} \sum_{m \in N} g_{km}\, Z_{km}$$

$$Objective\ function\ = min \left(\sum_{i \in N} \sum_{j \in M} h_{ij} X_{ij}\ + \sum_{k \in N} f_k\, L_k\ + \sum_{k \in N} \sum_{m \in N} g_{km}\, Z_{km} \right)$$

Constraint 1.

$$\sum_{i \in C} X_{ij}\ \leqslant\ 1$$

Constraint 2.

$$\sum_{j \in M} Y_{jl}\ =\ 1$$

Constraint 3.

$$Y_{jk}\ \leqslant\ L_k$$

Constraint 4.

$$\sum_{k \in N} Z_{km} = 2 \times L_k$$

Constraint 5.

$$\sum_{k \in N} \sum_{m \in N} Z_{km} \leqslant 2\,(\,|H| - 1\,)\,,\, \forall \subset N\,,\, 3 \leqslant |H|$$

Constraint 6.

$$\sum_{i \in C} X_{ij} \leqslant U_j^{max}$$

Constraint 7.

$$\sum_{j \in M} \sum_{i \in C} X_{ij} Y_{ik} \leqslant V_k^{max}$$

Constraint 8.

$$\sum_{k \in N} L_k \geqslant 3$$

Condition 9.

$$\sum_{i \in C} \sum_{j \in M} X_{ij} \geqslant \alpha \times |C|$$

Constraint 10.

$Reals : h_{ij}$, c_{jk}, g_{km}, f_k, α

$Integers : .U_j^{max}$, V_k^{max}

$Booleans : X_{ij}$, Y_{jk}, Z_{km}, L_k