

SETS

I candidate service sites
 J nodes requiring service

DATA

$D_{ij} (I \times J)$ \rightarrow distance btw service deus and demand nodes
 $F_i (I)$ \rightarrow setup of service device in i
 $Q_i (I)$ \rightarrow capacity of i
 $w_j (J)$ \rightarrow demand of j
 K \rightarrow # service deus to place

VARS

$0 \leq x_{ij} \leq 1$ \rightarrow $\begin{cases} 1 & \text{if demand of } j \text{ is fully served by } i \\ 0 & \text{if No demand of } j \text{ is served by } i \end{cases}$
 $y_i \in \{0, 1\}$ \rightarrow $\begin{cases} 1 & \text{if } i \text{ is selected} \\ 0 & \text{otherwise} \end{cases}$

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$$\min \sum_{i \in I} \sum_{j \in J} D_{ij} x_{ij} + \sum_{i \in I} f_i y_i$$

$$\sum_{j \in J} x_{ij} = 1$$

$$f_{j \in J}$$

ASSIGN OF PER POINT 2

CONSTRAINT

$$x_{ij} \leq y_i$$

$$f_{i \in I}$$

SINGLE SOURCE

$$0 \leq x_{ij} \leq 1$$

$$f_{i \in I} \quad f_{j \in J}$$

$x_{ij} \in \{0,1\}$

$$y_i \in \{0,1\}$$

UNCAP. FACILITY

LOCATION

$$\sum_{j \in J} w_j x_{ij} \leq C_i \quad f_{i \in I}$$

$$K_{\min} \leq \sum_{i \in I} y_i \leq K_{\max}$$

$$\left\{ \begin{array}{l} \min \quad 7x + 9y \\ \text{s.t.} \quad 3x + 11y \geq 7 \\ \quad \quad 77x + 8y \geq 2 \\ \quad \quad 0 \leq x \leq 100 \\ \quad \quad 0 \leq y \leq 200 \end{array} \right.$$