$$
\begin{aligned}
\text{minimize} \quad & \sum_{(o,t,i)\in\Theta} \sum_{v\in V\setminus\{o\}} f_{(o,v)}^{(o,t,i)} \cdot d_{(o,t,i)} \cdot r && && \text{(1a)} \\
\text{subject to} \quad & \sum_{v\in V\setminus\{z\}} f_{(v,z)}^{(o,t,i)} - \sum_{w\in V\setminus\{z\}} f_{(z,w)}^{(o,t,i)} = 0, && \forall\ z \in V \setminus \{o,t\},\ \forall (o,t,i)\in\Theta, && \text{(1b)} \\
& \sum_{v\in V\setminus\{o\}} f_{(o,v)}^{(o,t,i)} \le 1, && \forall\ (o,t,i)\in\Theta, && \text{(1c)} \\
& \sum_{v\in V\setminus\{t\}} f_{(t,v)}^{(o,t,i)} = 0, && \forall\ (o,t,i)\in\Theta, && \text{(1d)} \\
& \sum_{(o,t,i)\in\Theta} f_{e}^{(o,t,i)} \cdot d_{(o,t,i)} \le \sum_{i\in N} q_e^i, && \forall\ e\in E, && \text{(1e)} \\
& f_e^{(o,t,i)} \in \{0,1\}, && \forall\ e\in E,\ \forall (o,t,i)\in\Theta && \text{(1f)}
\end{aligned}
$$

Constraint (1e) ensures that the commodities sent through an edge doesn't exceed the total capacity available in that edge (the sum of the capacities each agent has for that edge).