Model Formulation

Let PLANES be the set of aircraft (the number of which also corresponds the number of flight origins and flight destination)

$PASS_{ij}$ → the number of passengers transferring at the hub from origin i to the flight i with destination j

$$cont_{ij} = \begin{cases} 1, & \text{if and only if the plane coming from } i \text{ continues to destination } j \\ 0, & \text{o/w} \end{cases}$$

obj :- Minimize the no. of passengers that changes planes but this objective is equivalent to the objective that maximize the number of passengers staying on board their plane at the hub

Constraint 1: Every destination is served by exactly one flight

Constraint 2: One and only one flight leaves every origin

Note: Since this problem is an instance of well known assignment problem the optimal LP solution calculated by the simplex algorithm always takes integer values.
It is therefore sufficient simply to define non-negativity constraints for these variables.
The upper bound of 1 on the variables results from the constraint 1 and 2

$$\text{Maximize } Z = \sum_{i \in PLANES} \sum_{j \in PLANES} PASS_{ij} \cdot cont_{ij}$$

stc

$$\sum_{i \in PLANES} cont_{ij} = 1 \quad \forall j \in PLANES$$

$$\sum_{j \in PLANES} cont_{ij} = 1 \quad \forall i \in PLANES$$

$$cont_{ij} \in \{0,1\} \quad \forall i,j \in PLANES$$

Solution Interpretation from Gurobi

In the optimal solution, 112 passengers stay on board their original plane.
The table below lists the corresponding flight connections

Optimal flight connections

Plane arriving from	continues to destination	No of passengers
Bordeaux	London	38
Clermont-Ferrand	Bern	8
Marseille	Brussels	11
Nantes	Berlin	38
Toulouse	Rome	10
	Vienna	7