

Transportation Network Structure Homework

Compare a Point-to-Point (Direct) network with a Hub-n-Spoke (Connecting) network with for a THREE airport network (1, 2, 3).

Assumptions:

- 1) distance between airports: 1-2 = 1 distance unit, 1-3 = 2 distance units, 2-3 = 1 distance unit.
- 2) time between airports 1 time unit = 1 distance unit
- 3) Connecting time for Hub-n-Spoke network
- 4) Assume Airport #2 is the hub)
- 5) Assume all passengers should arrive by a Desired Arrival Time at their destination airports.
- 6) Total Passengers = 60. Distributed evenly between Origin-Destination pairs.

- 1) Diagram each network type in a Space-Time Diagram
- 2) List the Itineraries and their associated flights. (e.g. for a Point-to-Point network I1-2/F11-2, for Hub-n-Spoke network I1-2-3/F11-2 * F12-3)
- 3) Generate Network Structure statistics for Point-to-Point (Direct) and Hub-n-Spoke (Connecting) networks defined in the table below
- 7) Explain how each of the four main stakeholders benefit or are victimized each type of network.

	Beneficiaries\Victims					
	Direct	Hub-n-Spoke	Airlines	Passengers	ATC	Airports
Total Passengers =						
Total Itineraries =						
Total Flights =						
Total Aircraft Required =						
Aircraft Size Required (Seats)=						
Total Flight Miles =						
Total Seats =						
Total Available Seat Miles =						
Total (Arrival) Displacement Time =						
Average Flight Distance =						
Average Trip Time =						

Max Simultaneous Arrivals/Departures =								
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