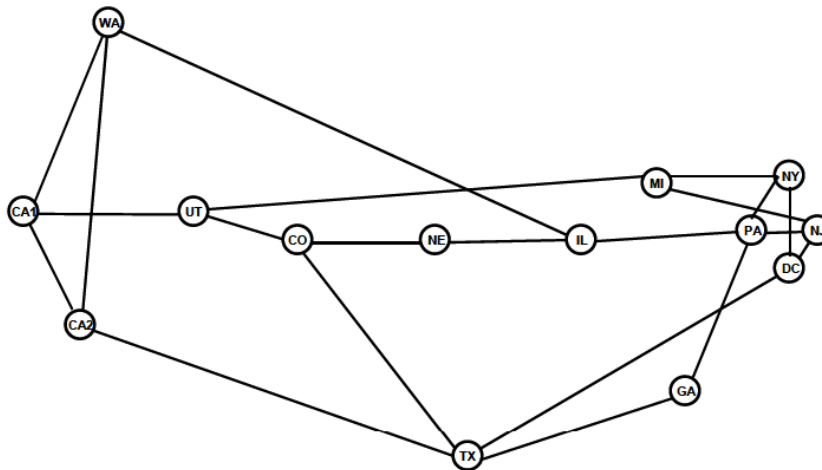# EEE 536 – INTERNET ARCHITECTURE AND PROTOCOLS HOMEWORK 3 (%15)

due Dec. 16 in class
submissions afterwards by Dec. 18 5pm will be accepted with a 20% penalty

Consider the following network with link capacities set to 40 Gbps

and with the following link distances.

Physical Distances													
	CA1	CA2	CO	DC	GA	IL	MI	NE	NJ	NY	PA	TX	UT	WA
CA1														
CA2	834													
CO														
DC														
GA														
IL														
MI														
NE			870			864								
NJ				312			942							
NY				468			720							
PA					1008	846			540	438				
TX		2520	1746	2364	1350									
UT	1152		684				2820							
WA	1338	2056				3408								
Fibre Length [km]														

We will compare shortest delay routing with minimum hop routing in this study.

a) Use Dijktra's algorithm for finding the minimum hop path from each node to all destinations. Write the routing tables maintained at each node, call method M1. (In case of a tie, always choose the node which is closer to the West coast, between NY and DC, choose NY)

b) Use Dijktra's algorithm for finding the shortest delay path from each node to all destinations. Write the routing tables maintained at each node, call method M2.

c) Generate 100 random traffic matrices by assigning a different traffic demand between each node pair which is uniformly distributed in (0, 4 Gbps) (same for both directions). For each of the 100 instances, first carry the traffic with M1 and then M2. Note the most loaded link in the network and its load with both methods. Report all your results in all 100 cases. Write down the average values as well. Comment on your results.