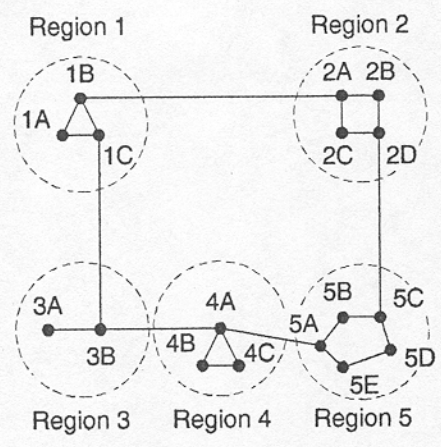


HIERARCHICAL ROUTING.

How many levels? Assume N routers

Ans: ~~N^2~~ N levels, requiring $e \ln N$ entries per router.



(a)

Full table for 1A

Dest.	Line	Hops
1A	-	-
1B	1B	1
1C	1C	1
2A	1B	2
2B	1B	3
2C	1B	3
2D	1B	4
3A	1C	3
3B	1C	2
4A	1C	3
4B	1C	4
4C	1C	4
5A	1C	4
5B	1C	5
5C	1B	5
5D	1C	6
5E	1C	5

(b)

Hierarchical table for 1A

Dest.	Line	Hops
1A	-	-
1B	1B	1
1C	1C	1
2	1B	2
3	1C	2
4	1C	3
5	1C	4

(c)

Two level hierarchy.

Fig. 5-17. Hierarchical routing.

Consider a subnet with 720 routers

↓
Each router needs 720 routing table entries.

If subnet is partitioned in 24 regions of 30 routers each

↓
30 local entries, 23 remote entries (total of 53 entries)

If subnet is partitioned in eigh clusters → each contains 9 regions with 10 routers each

Each router will have 10 entries for local routers
 8 entries for distant ~~clusters~~ regions } ⇒ 25 entries
 7 entries for distant cluster