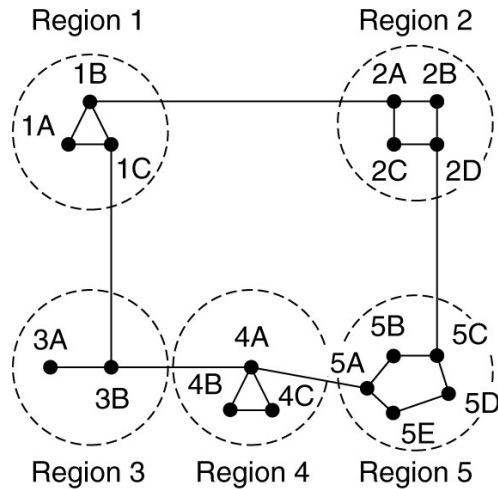


UNIT-3

The Network Layer

Hierarchical Routing



(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)

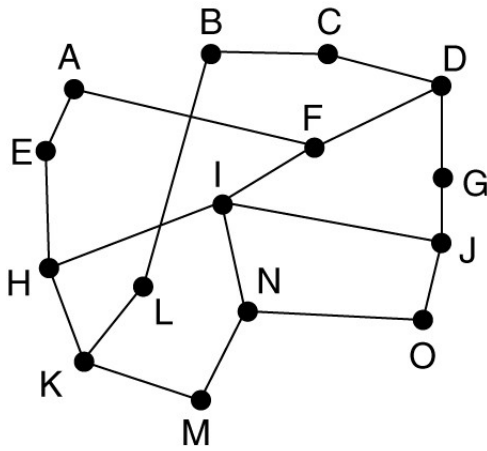
Hierarchical table for 1A

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

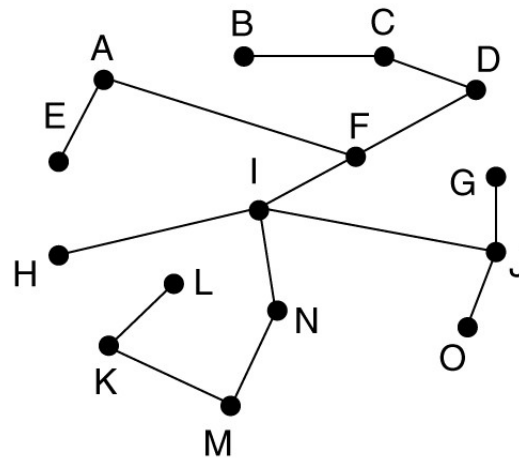
(c)

Hierarchical routing.

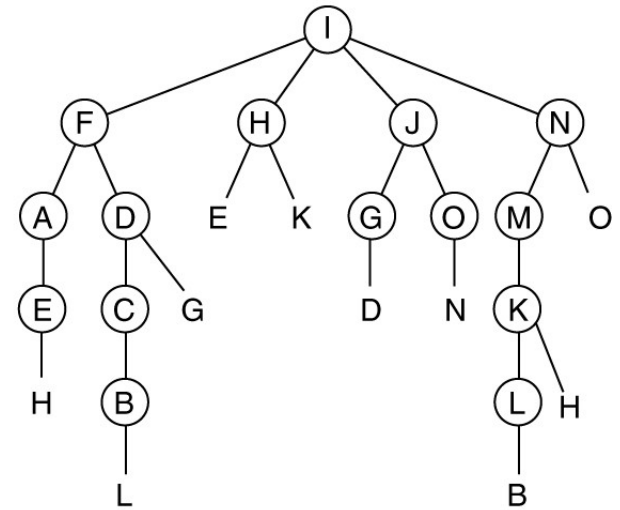
Broadcast Routing



(a)



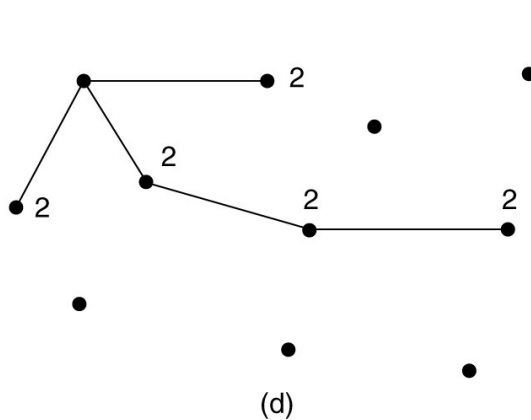
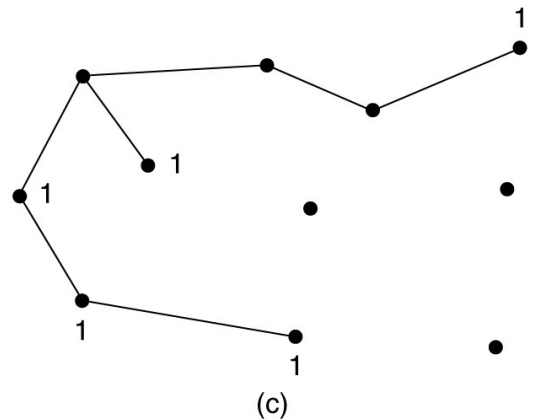
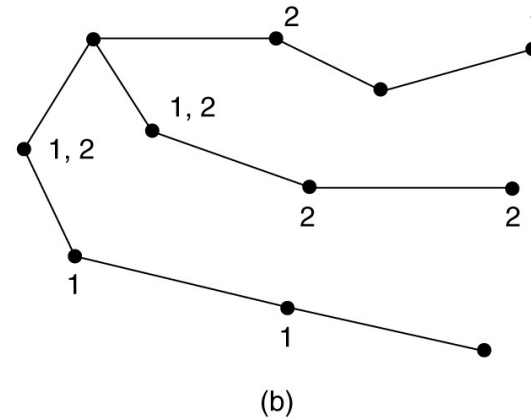
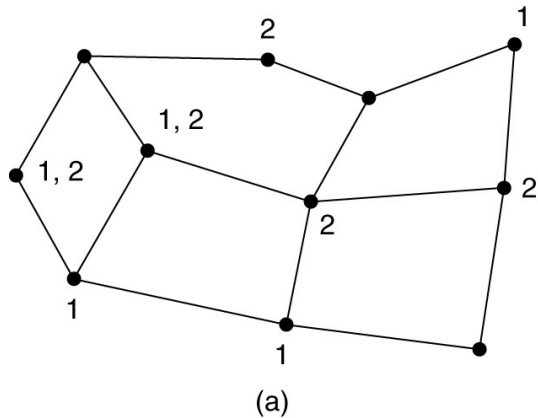
(b)



(c)

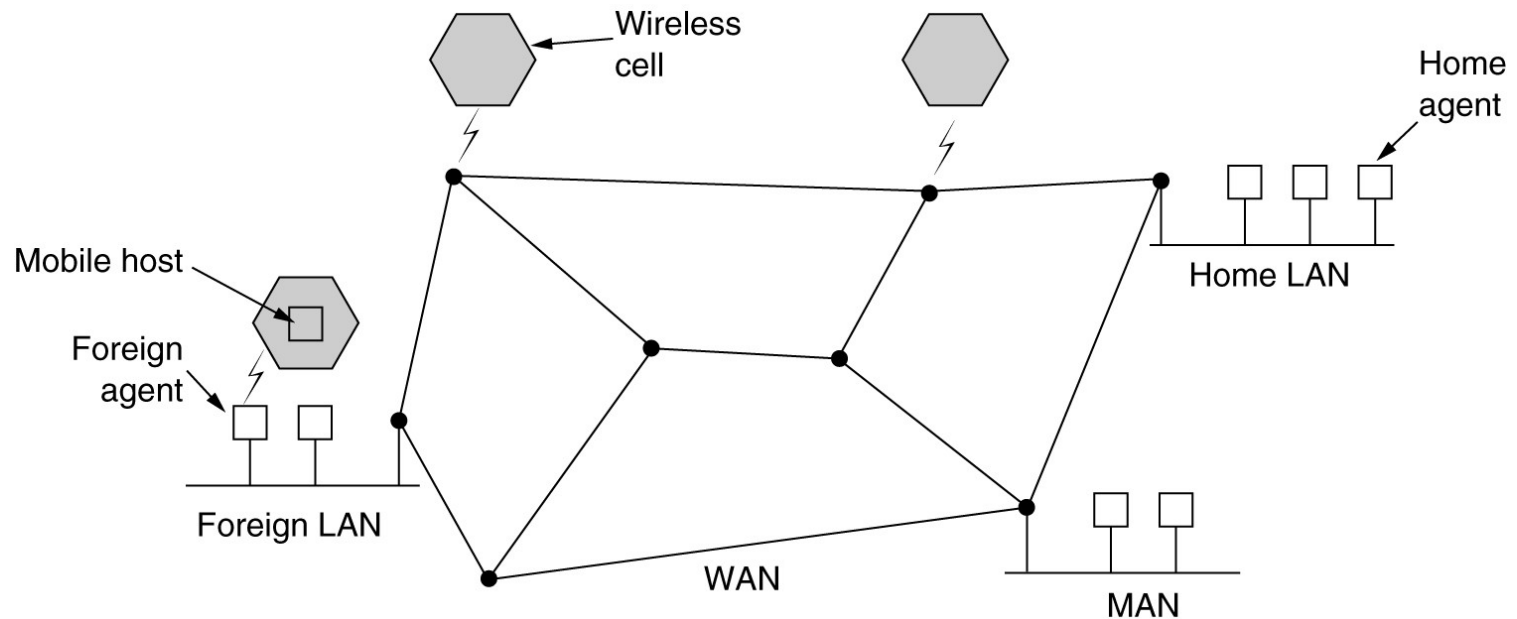
Reverse path forwarding. (a) A subnet. (b) a Sink tree. (c) The tree built by reverse path forwarding.

Multicast Routing



- (a) A network. (b) A spanning tree for the leftmost router.
(c) A multicast tree for group 1. (d) A multicast tree for group 2.

Routing for Mobile Hosts



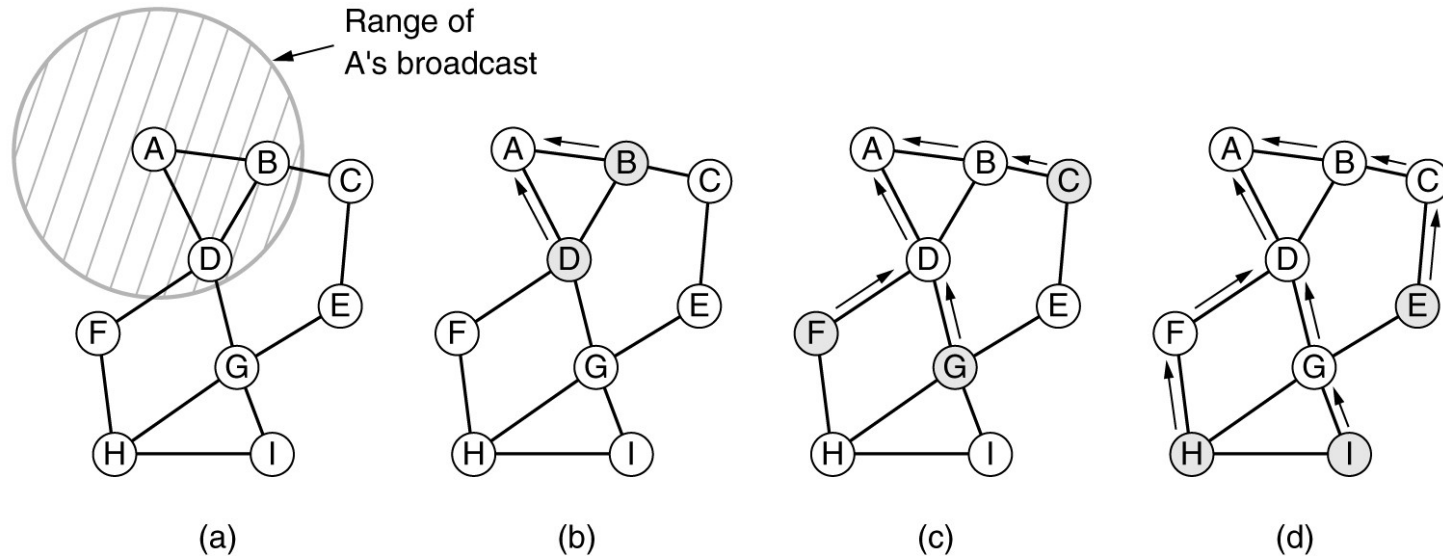
A WAN to which LANs, MANs, and wireless cells are attached.

Routing in Ad Hoc Networks

Possibilities when the routers are mobile:

1. Military vehicles on battlefield.
 - No infrastructure.
2. A fleet of ships at sea.
 - All moving all the time
3. Emergency works at earthquake .
 - The infrastructure destroyed.
4. A gathering of people with notebook computers.
 - In an area lacking 802.11.

Route Discovery



a) (a) Range of A's broadcast.

b) (b) After B and D have received A's broadcast.

c) (c) After C, F, and G have received A's broadcast.

d) (d) After E, H, and I have received A's broadcast.

Shaded nodes are new recipients. Arrows show possible reverse routes.

Route Discovery (2)

Source address	Request ID	Destination address	Source sequence #	Dest. sequence #	Hop count
----------------	------------	---------------------	-------------------	------------------	-----------

Format of a ROUTE REQUEST packet.