

- Connection-oriented (old telephone)

- Connection-less (Internet)

- physical

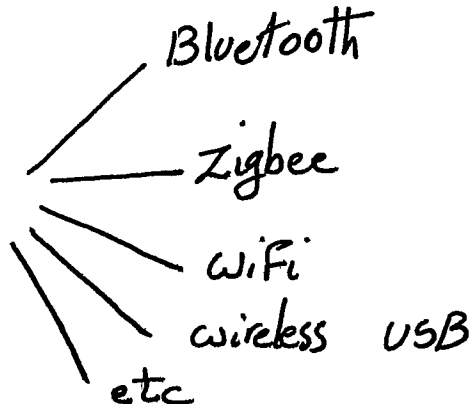
1. Copper

2. Fiber

3. wireless (air/RF)

4. touch

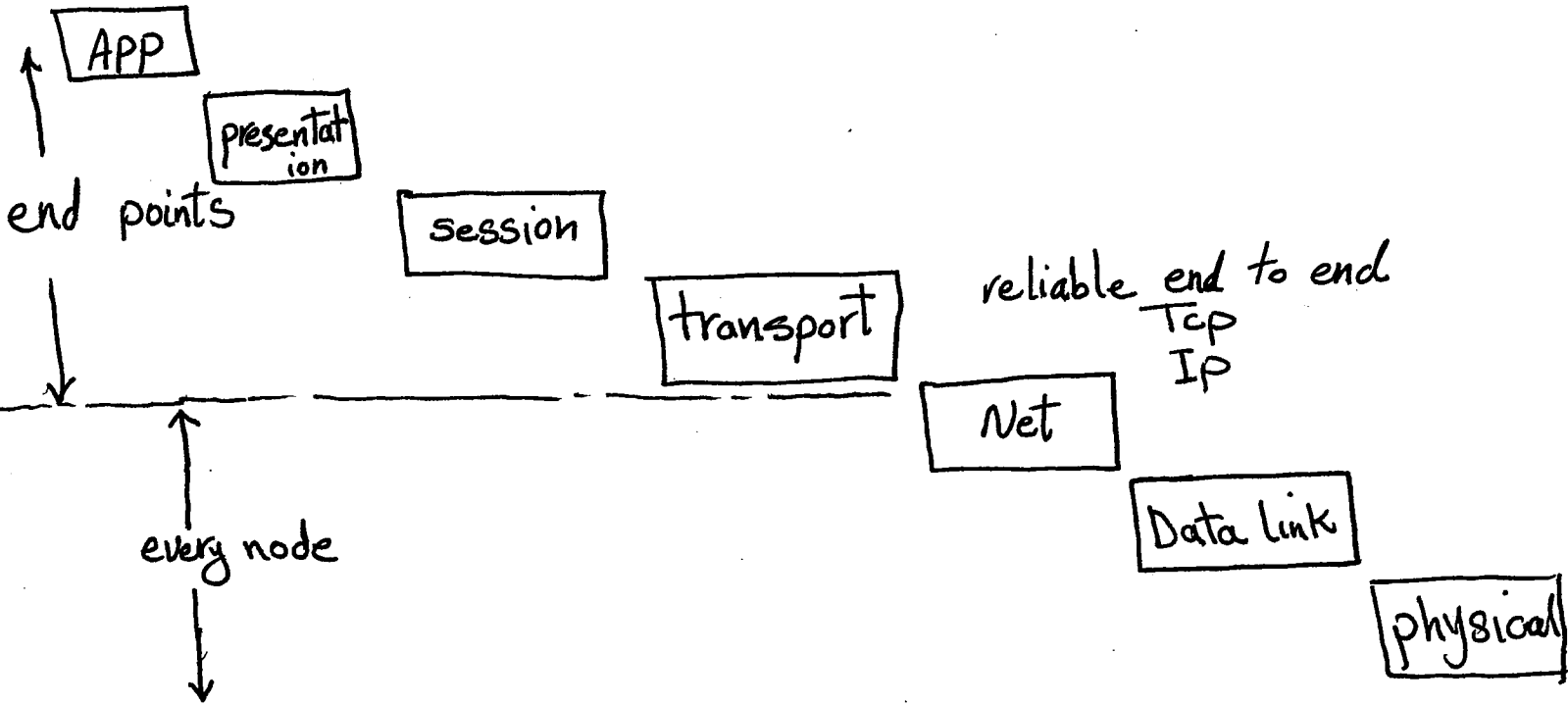
5. smell



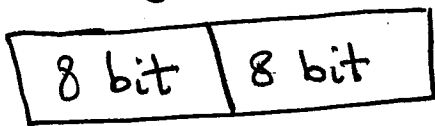
Net

Tcp/IP (Trans. Control Protocol / Internet Protocol)

layers

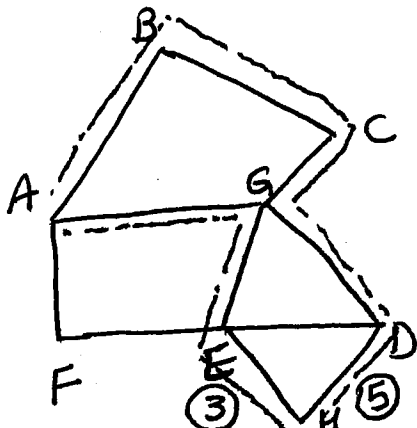


16-bit



big-endian
little-endian

We want to focus on Net layer.



- letters are unique address

Dest	(A) cost	Next
A	0	A
B	1	B
C	8	C
D	8	D
E	8	E
F	8	F

(2)

continued from last page

Dest	cost	Next
G	1	G
H	∞	?

(G)

Dest	cost	Next
A	1	A
B	∞	-
C	1	C
D	1	D
E	1	E
F	∞	-
G	0	G
H	∞	-

Exchange Tables

(A)

Dest	Cost	Next
A	0	A
B	1	B
C	2	G
D	2	G
E	2	G
F	1	F
G	1	G
H	∞	-

G		
Dest	Cost	Next
A	1	A
B	2	A
C	1	C
D	1	D
E	1	E
F	2	A
G	0	G
H	∞	-

....

G at end		
Dest	Cost	Next
A	1	A
B	2	A
C	1	C
D	1	D
E	1	E
F	2	A
G	0	G
H	2	D

A at end		
Dest	Cost	Next
A	1	A
B	2	A
C	1	C
D	1	D
E	1	E
F	2	A
G	0	G
H	2	D

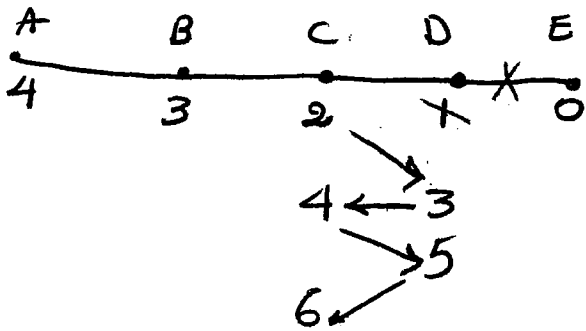
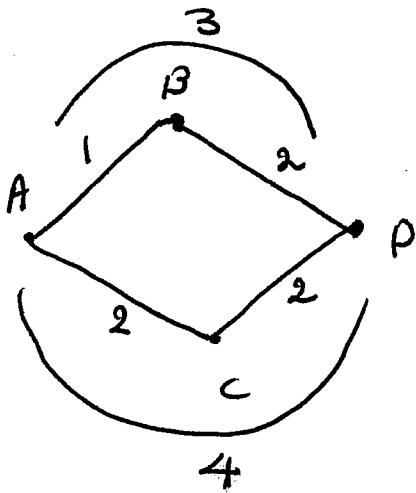
Distance/Vector routing

- ① Init. a table
- cost to neighbor is "1"
- Other costs ∞

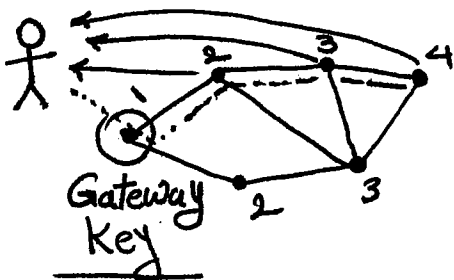
② Exchange table with neighbors

if lower cost path
update own entry

- set cost
- set vector (next)



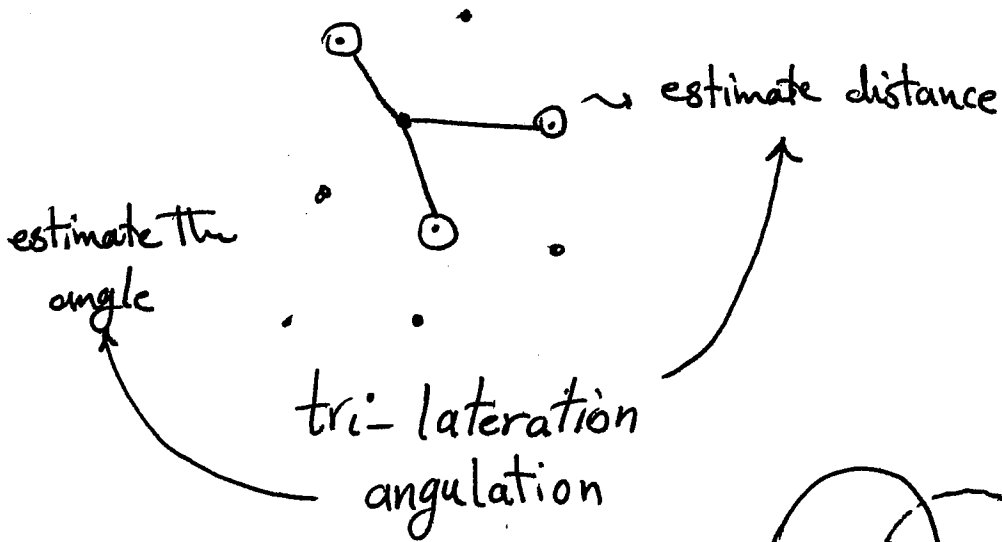
Sensor Nets



- Processing
- Communication
- Sensing
- Memory
- power source

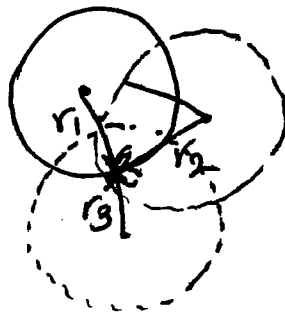
GPS (Problems)

- Indoor
- Consumes power
- Jamming
- Obstacles (building, trees, leaves, clouds, rain)
- Expensive



2D → 3 circle

3D → 4 "



Ranging

- RF signal strength → Model eg. $\frac{1}{r^2}$ with distance
- Time of arrival
 - RF
 - Sound
- Time-difference
 - RF / ultrasound