

Proj 1 office hours) Th 3-4 BA3185 Khaled  
CSC104 fall 2012 F 3-5 BA3175  
Why and how of computing Khaled/Danay  
week 9

TT#2 Next week.  
Cover since last test algorithms, local hardware,  
problem-solving, recursion,  
networks/internet.

Danny Heap

heap@cs.toronto.edu

BA4270 (behind elevators)

<http://www.cdf.toronto.edu/~heap/104/F12/>

416-978-5899

Text: **Picturing Programs**

# Outline

networks

recursion

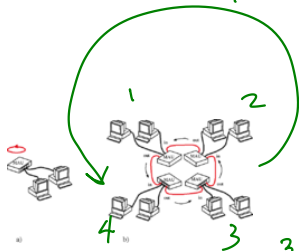
Notes

# roundly connected

ring topology

trust  
entire  
ring

multiple points  
of failure — any  
machine/node



Delay.

3 adds 1's address  
& data to  
token

wait for the token — string of bits

# centrally connected

star configuration

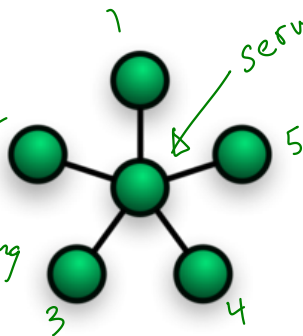
isolation of info: 2,3,4 don't see msg from 5 → 1

Server might be overwhelmed or break

However, robust wrt 1 or 2 breaking

Some potential for buffering

server runs things

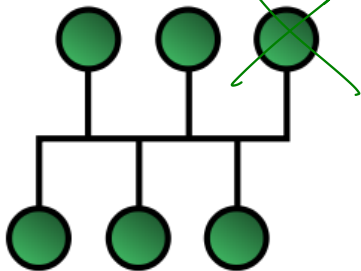


all messages go through server.

all connected

bus configuration - eg ethernet.

So long as a small fraction  
of host fail, the bus continues, communicating



cooperate and back off - for (one hopes) a  
different random time interval.

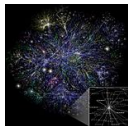
# network of networks

routing

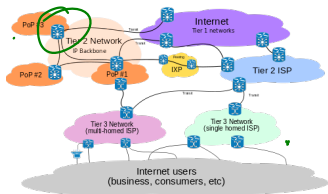
key protocols  
TCP/IP

key idea is  
robust, re-established  
packet passing, rather  
than fixed link..

gateways  
between  
networks.

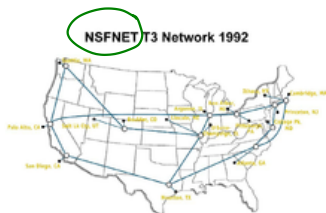


local networks  
interconnected by  
gateways  
(click images)



# the medieval internet

military  $\approx$  1969  $\rightarrow$  199?



2 decades  
of publicly  
subsidized  
internet

▶ email

▶ file transfer protocol

▶ Network File Service

▶ Tim Berners-Lee: WWW impossible without open protocols

asynchronous  
information-dense

open-source  
open protocol



now the internet  $\approx$  WWW

antipodal clicking...



- ▶ where's the content?
- ▶ how's it move around
- ▶ who's in charge?





# sierpinski's triangle

Check out [Scary Sierpinski Skull Time](#) by Vi Hart.



How would you build these?



- ▶ given/required?
- ▶ doodle a bit
- ▶ the recipe must use itself
- ▶ check-expect will use recipe...?

# Notes