The Great Big Jellyfish:

(more commonly known as the Internet)

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Everything is numbers

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There are 10 types of people in the world: those who understand binary and those that don't.

- Everything on computers is represented by binary numbers:
  - Photos
  - Audio
  - Video
- Strings of 1's and 0's rule the world

P.S. 10 in binary is Two in ordinary numbers

The Internet Doubly So

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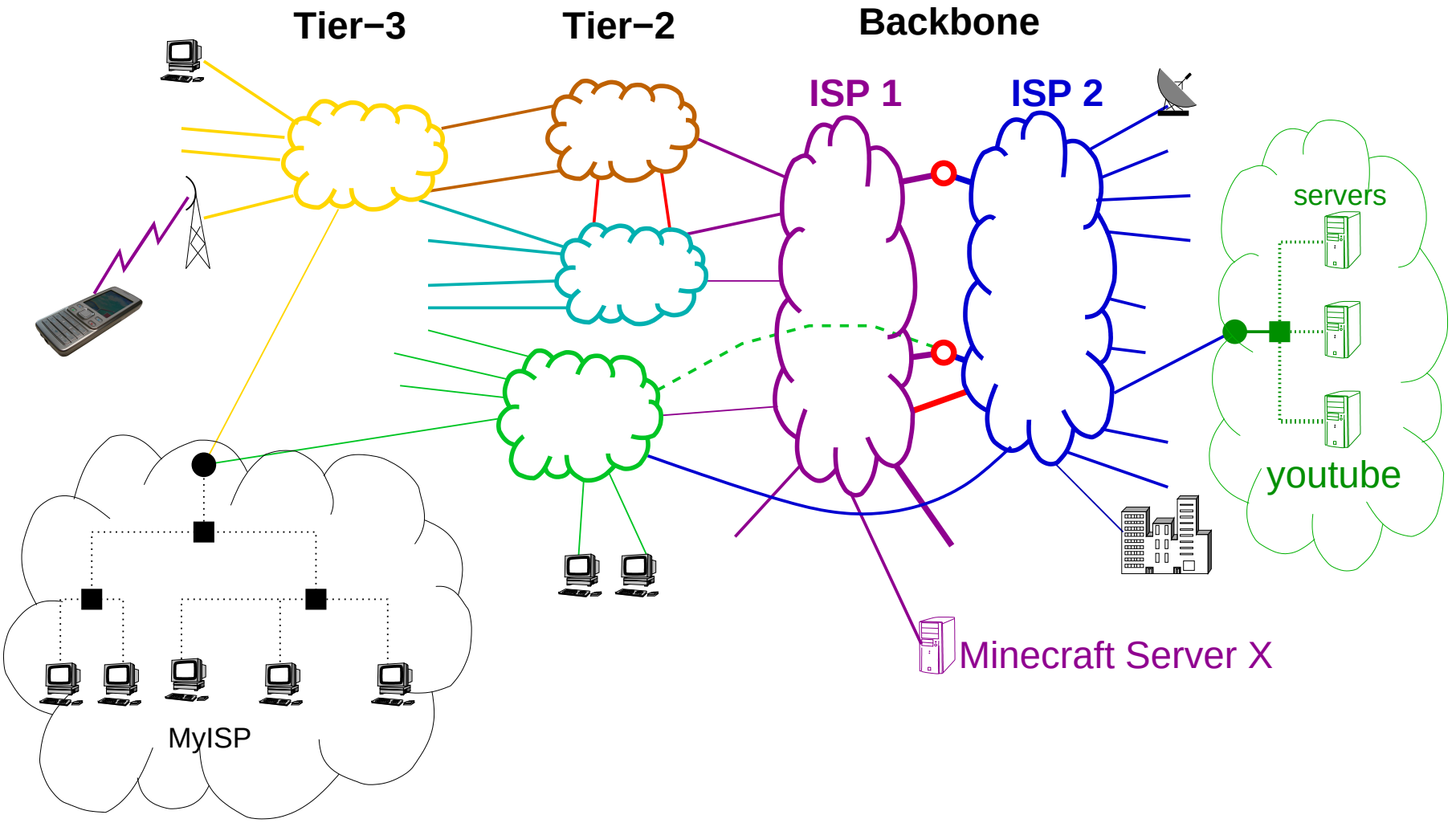
- Everything on the Internet is stored, and transmitted as numbers.
- Even the inspiration for part of the Internet came from a Mathematician:
  - Leonard Kleinrock
  - Kleinrock's insight was that data is bursty
  - Reserving a telephone line (e.g. using a modem) for data connections is a big waste of resources
  - Break your transmission into packets and send them as necessary.
  - He used math to show how this would work

Its a network of networks

Its called the Inter-net because its a network of networks.



Complications!

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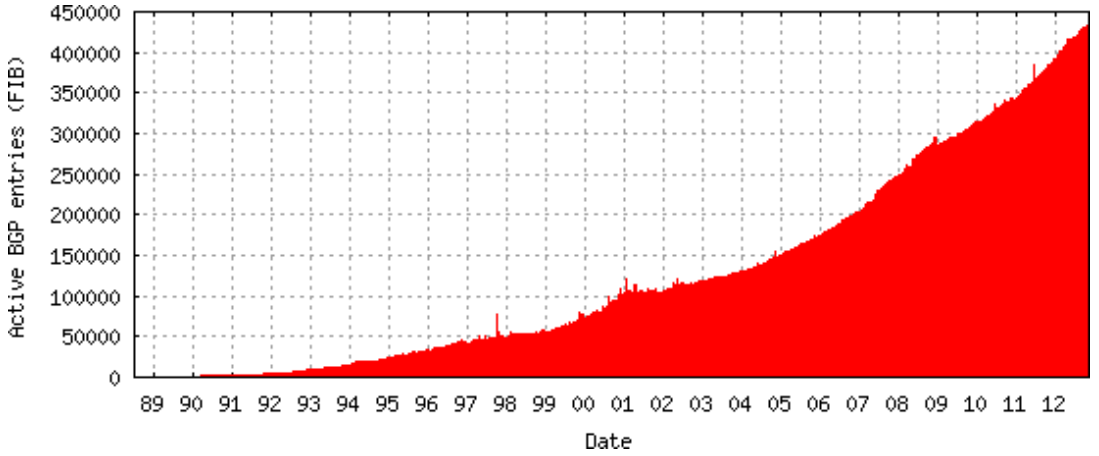
The Internet

- It's big – 100's of thousands of subnets

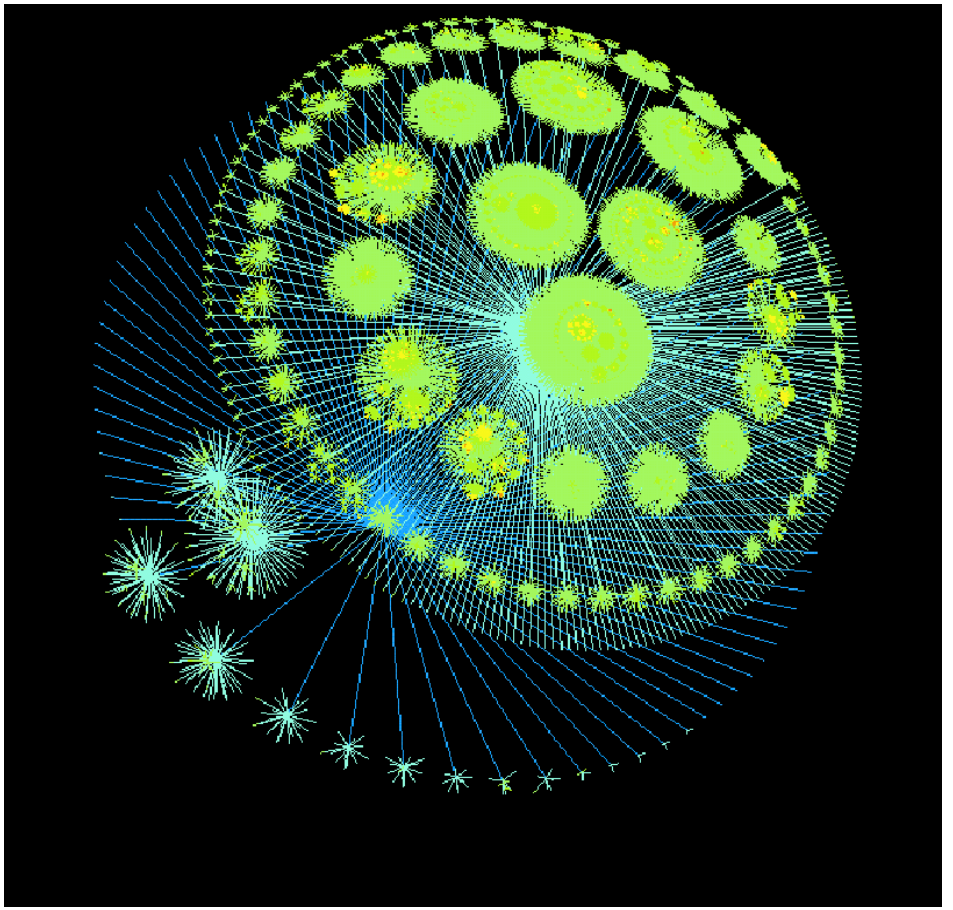


- highly dynamic – changing all the time
- highly heterogeneous
  – some bits look completely different from others

In many ways it resembles some kind of living thing!

What type of living thing?

A Great Big Jellyfish



Created by Ashley Flavel using Walrus.

Problems

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That creates a lot of problems

- How do you work out routes?
  - `http://www.traidwith.me/assignment/t2.php`
    by Matthew Hart
- How do you make sure its all connected?
- How do you make it efficient?
- How do you make it secure?

They're mathematical problems!!!

- There's enough here to keep me busy for the rest of my life
- But what are you going to do?

Douglas Adams on technology

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1. everything that's already in the world when you're born is just normal;

Douglas Adams on technology

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2. anything that gets invented between then and before you turn thirty is incredibly exciting and creative and with any luck you can make a career out of it;

Douglas Adams on technology

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1. everything that's already in the world when you're born is just normal;
2. anything that gets invented between then and before you turn thirty is incredibly exciting and creative and with any luck you can make a career out of it;
3. anything that gets invented after you're thirty is against the natural order of things and the beginning of the end of civilisation as we know it

Conclusion

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The Internet is a collision of all sorts of cool things

- lots of practical problems to solve
- interesting jobs
  - A student of mine (Ashley Flavel) recently finished his PhD, and walked straight into a 6 figure salary at AT&T.
- almost biological complexity
- mathematics