

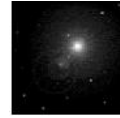
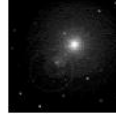


<b>CS 4/55231</b> <b>Internet Engineering</b>	<b>Kent State University</b> Dept. of Computer Science
	<u>LECT-1</u>

	A Course on Internet and Next Generation Networks

*Today's Topic*



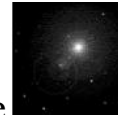
INTERNET  
ENGINEERING

Unit background and administrivia

## Introduction to Internetworking

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### General Course Information



This course will not teach you how to write  
HTML or Java code. Nor will make you a Web  
Master!



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In this course you will learn

- the design principles,
- architecture,
- protocols

behind the components of the complex  
system which is known as **Internet.**

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- **Javed I. Khan**

Email: [javed@cs.kent.edu](mailto:javed@cs.kent.edu)

Phone: 672-9038

Office Hours: MW 12:00 -1:00 pm

- **Web Page:** <http://www.cs.kent.edu/~javed/class-IN12S/>

- **Books:**

- Computer Networks & Internet, Comer, D. E., Prentice Hall, ISBN 0-13-083617-6
- Web Server Technology, Nancy Yeager & McGarth, Morgan Kaufmann, 1996, ISBN 1-55860-376-X
- Web Protocols & Practices, Krishnamurty & Rexford, Addison Wesley, ISBN-0-201-71088-9



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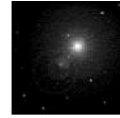
## Class Mechanics

- TO: [JAVED@cs.kent.edu](mailto:JAVED@cs.kent.edu)
- Always need to send email with subject-field set to “IN2012S” to obtain reply.
- Use Computer/Email as much as possible:
  - Reports preferably in Computer.



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## What is Expected Out of You?

- At least 12 hours per week (to pass)
  - Learning by doing
  - questions and exercises
  - reading textbook & materials
  - asking questions
  - taking part in discussions
- Read/Listen Think Do **Ask**

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## Grading

<u>Test Type</u>	<u>Frequency</u>	<u>Weight</u>
Borwser Server Project	2	20%
End Term Exam	1	20%
Mid Term Exam	1	20%
Take Home Assignments	3	20%
Traffic Engineering Lab/Survey (graduate only)	1	20%
Unannounced Quiz	2-5	20%

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# What is Internet?

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A World Wide Network of  
Millions of Computers

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# Internet = Network of Computer Networks

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The Internet is a global network of networks enabling computers of all kinds to directly and transparently communicate and share services throughout much of the world. Because the Internet is an enormously valuable, enabling capability for so many people and organizations, it also constitutes a shared global resource of information, knowledge, and means of collaboration, and cooperation among countless diverse communities.

*-Internet Society  
June 1998*

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The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries an extensive range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support email.

*-Wikipedia, January 2012*



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The Internet is more important in what it enables than what it is; more phenomenon than fact. Yes, the Internet is networks, software, computers and other technologies; but more so, it is a catalyst of change, a new mass medium, a culture, a mind warp, new things never before imagined.

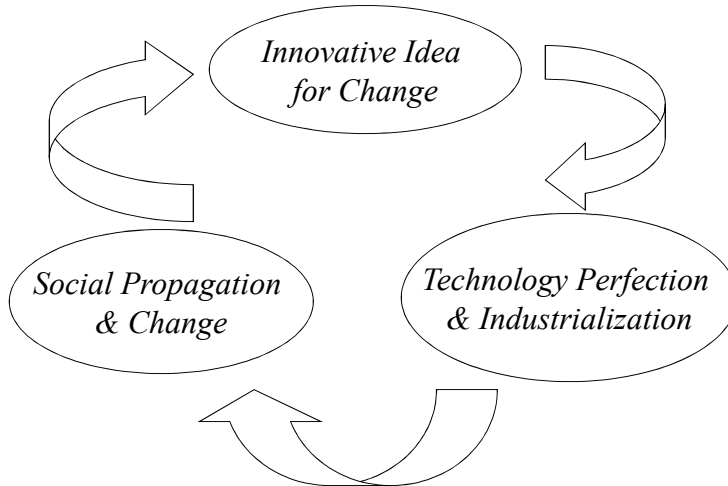
*-J. Neil Weintraut  
Wall Street Technologist*



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## Cycle of Technological Change



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## Structure of Internet

[Click Here](#)

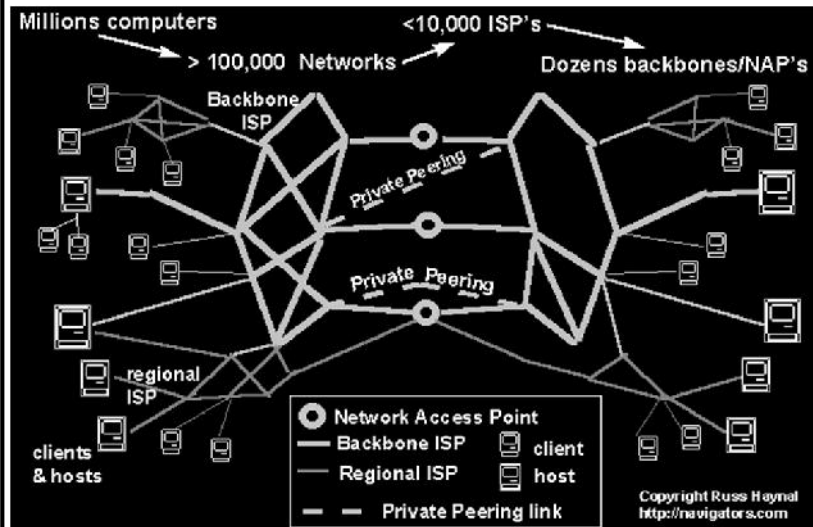


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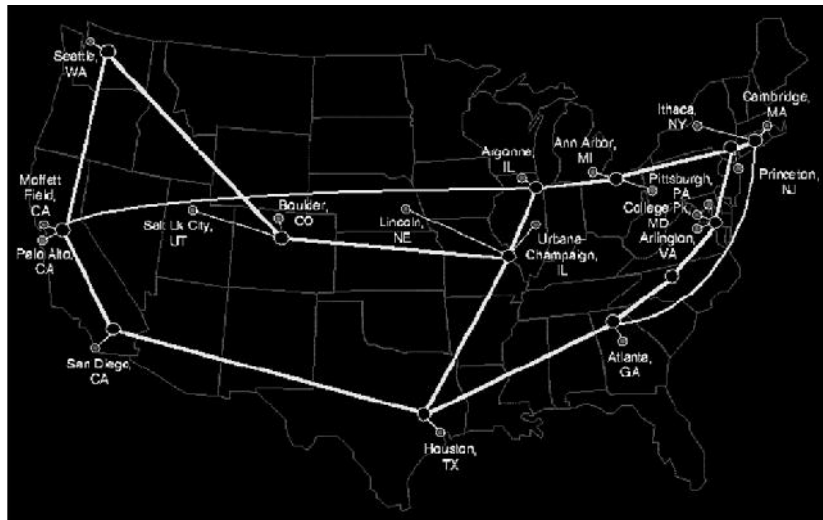


# Physical Network



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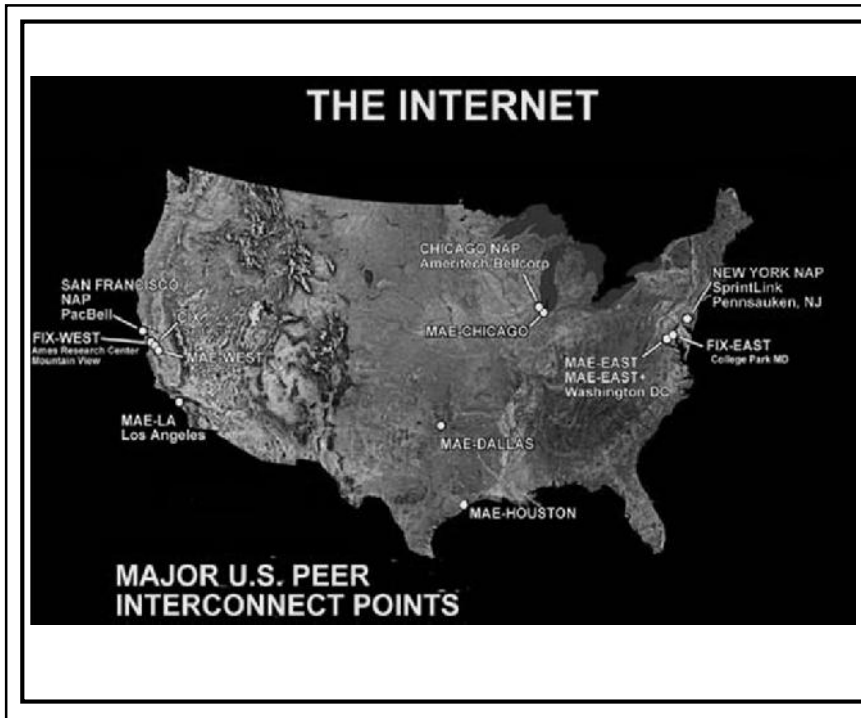


The Wide Area Network that formed the backbone of the Internet before 1992. Funding came from NSF, IBM, MCI, and MERIT



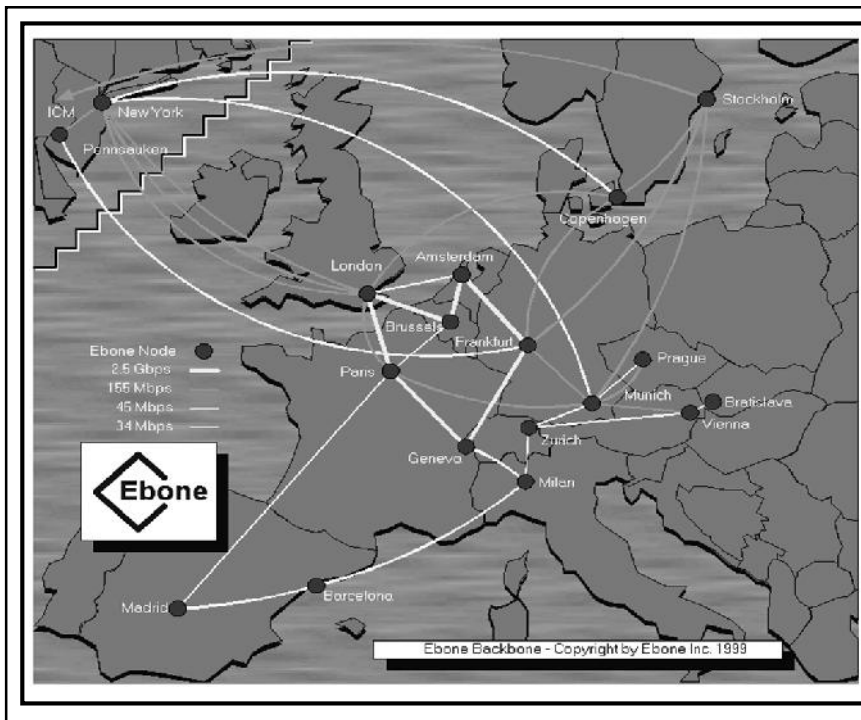
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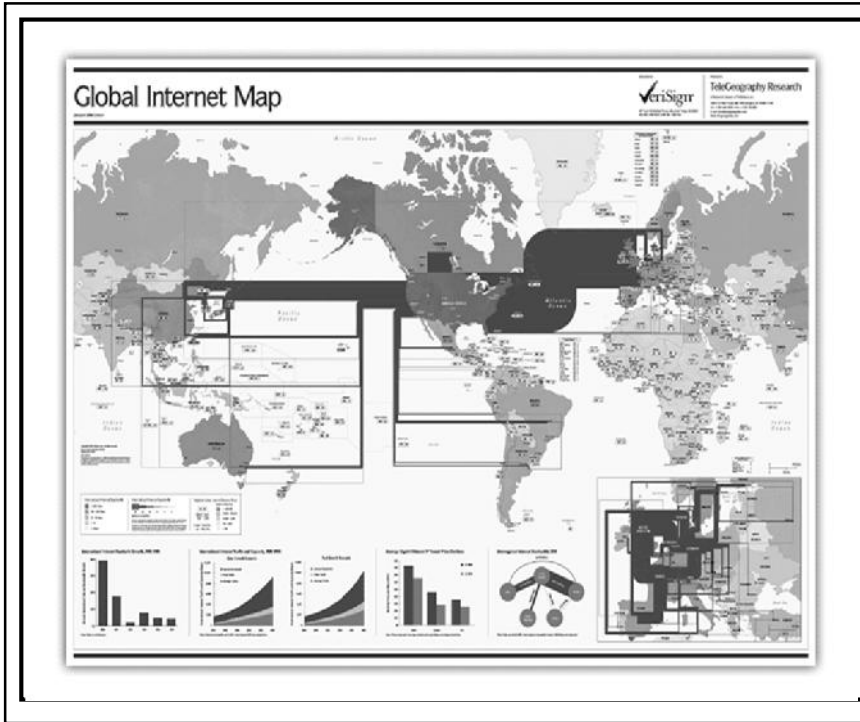
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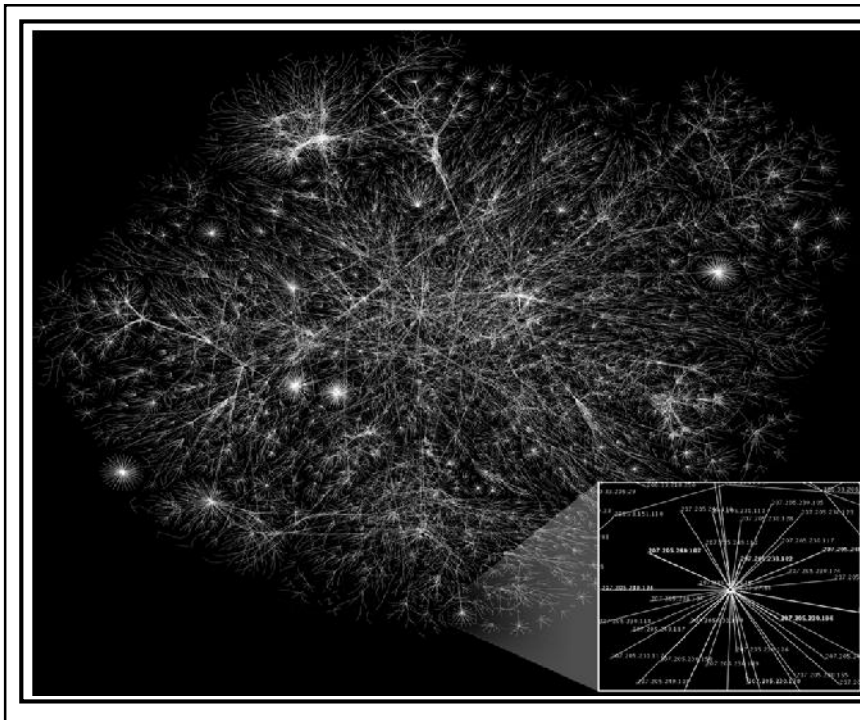
European  
Backbone:  
**EBONE MAP**  
Nov, 1999

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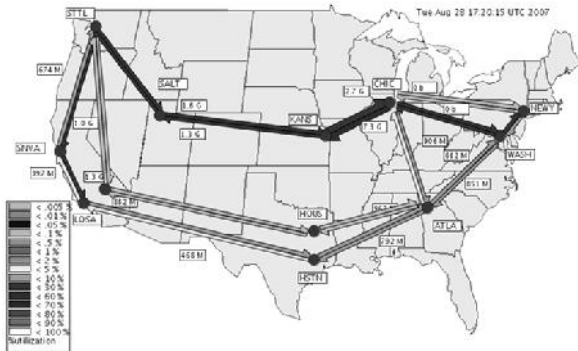


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## Abilene (Internet2) Backbone



*Real Time Abilene Traffic*



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## Next Generation Internet (cont..)

- A network always “one step ahead”
  - HPCC in 1993
  - vBNS launched in 1995.
  - vBNS+ 1997
  - Internet-2 Abilene
  - Grid+ Lambda Rail+ GENI



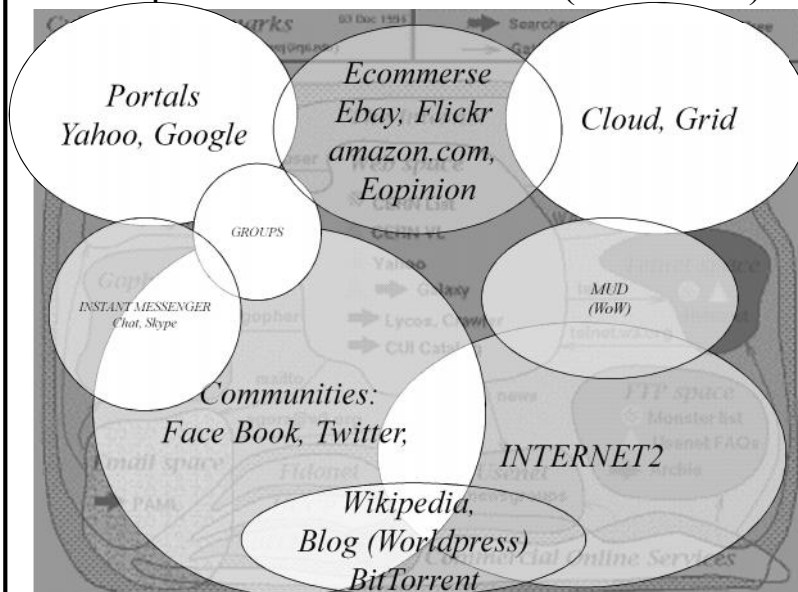
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# Internet Real Estate Map

27

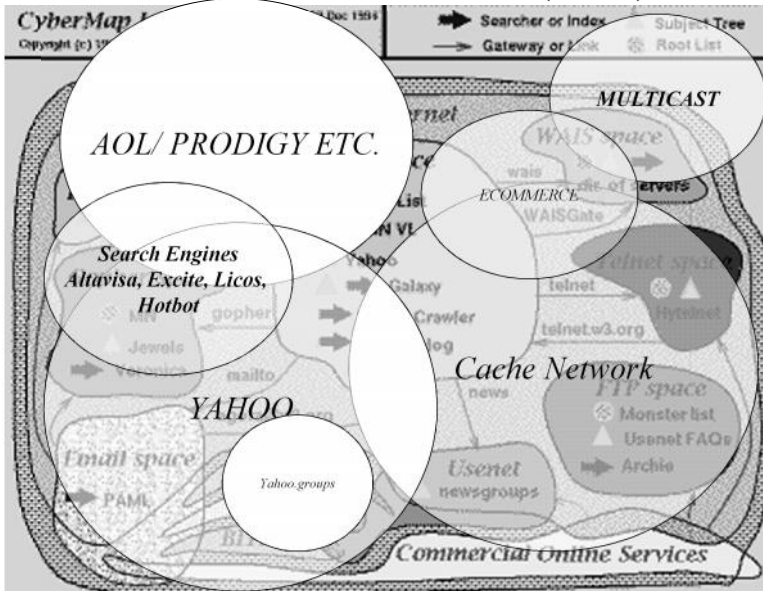
## A Map of Internet Real-State (2005-now)



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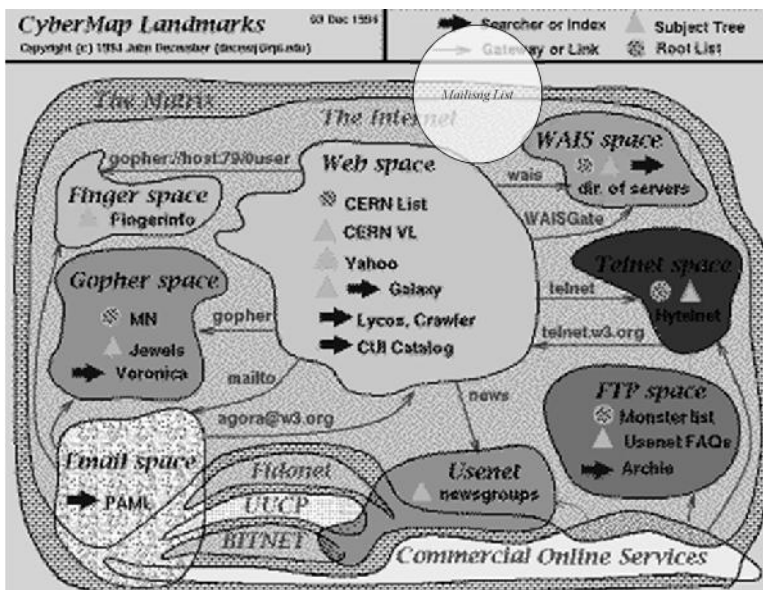
## Internet Real State (2000)



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## A Map of Internet Real-State (1998)



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# Applications & Services

The real story of the Internet excitement is however is the new genre of systems and applications developed on it.

The Internet offer access to data, graphics, sound, software, text, and people through a variety of services and tools for communication and data exchange:

- Hypertext (WWW)
- Remote login (telnet), File transfer (ftp)
- Electronic mail (e-mail)
- Platform independent computing (Java, Cloud)
- Search , Security, Hosting (Google, VeriSign, Akamai)
- E-commerce, Digital Library, Online Banking
- Communities, P2P, Online Virtual Game, Social Networking



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# Class Mechanics

- Web Access:
- Groups Project
  - Next class we will form groups of 1-2
  - group work/ individual report.
  - 2 phases + optional creative enhancement
  - In class group demonstration
- Class attendance will be important



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