

Internet Overview

CSci551: Computer Networks
SP2006 Thursday Section
John Heidemann

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What Is the Problem?

Applications

The Global Network

Technology

Robustness

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What Is....

The Global Network

- Structure
 - **getting started**
 - what and where?
 - getting data there
- Metrics

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Getting started: A Host

- host configuration needs:
 - network card, ISP account, IP address, server access (DNS, etc), wireless password
- how much is automated? how much *could* be automated?
 - manually enter password
 - DHCP: Dynamic Host Config Protocol

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Getting started: A Network

- network configuration needs:
 - router, cables, IP address range, maybe applications or servers on the machines, maybe an internet connection
- automated?
 - not much is automated today's
 - except in some cases (Mac wireless)

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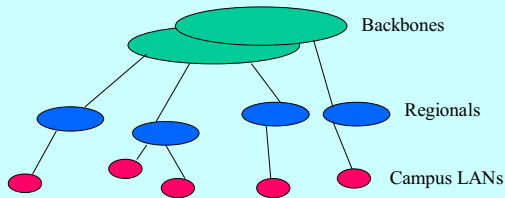
Getting started: An ISP

- ISP needs:
 - a big block of addresses
 - connections to one or more other ISPs, *peerings*
 - multiple routers, probably at *exchange point* (a POP or MAE)
 - servers for your users: mail, web, etc.
 - servers for you: monitoring, etc.
 - an AUP (Acceptable Use Policy)
 - a lawyer

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Idealized Network Structure



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What Is....

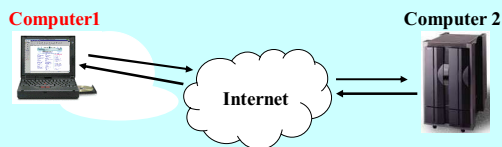
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How Do Computers Find Each Other?



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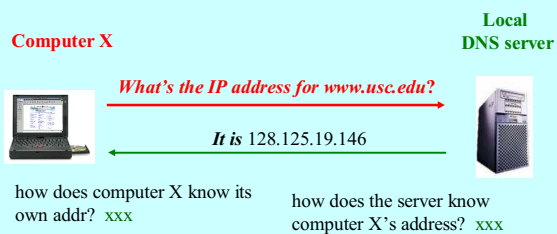
Different Kinds of Addresses

- will talk about names, addresses, binding in [Saltzer81a]
- for now, what are names and addresses in the Internet?
 - XXX

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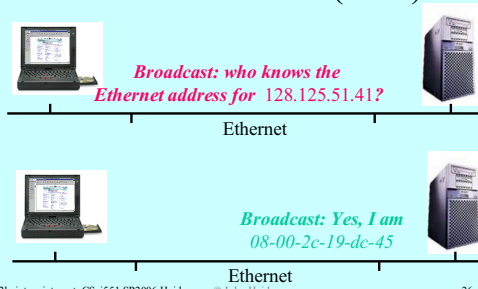
Domain Naming System (DNS)



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Finding Ether Address: Address Resolution (ARP)



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Finding Things: The USER's Perspective

- search engines
 - google on “cs551 usc”
- <http://www.isi.edu/~johnh/TEACHING/CS551/>
 - bunch of pieces...
 - protocol
 - server hostname
 - path

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What Is....

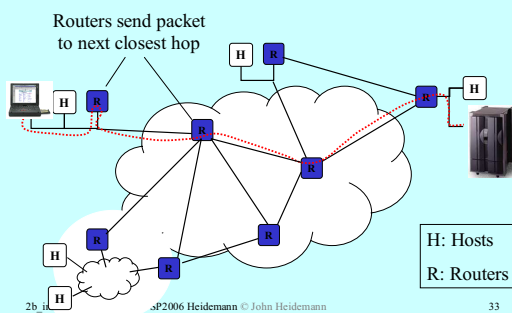
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Packet Traveling Through the Internet



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How Do the Routers Know Where to Send Data?

- *Forwarding tables* at each router populated by *routing protocols*.
 - routing tables optimize distance, subject to policies
 - routing tables may have more complete info and are used to compute the routes and populate forwarding tables
 - Forwarding tables then just give next hops
- Default vs. default-free routing
- Will talk more about this next week.

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- Got to here on Jan 12; will conclude next time

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