Context

Ethernet only a few years old

1982: fairly early on in the net

Basic networking terminology still evolving

Context

Naming and Change

Naming and Change

Naming only matters because things change

Uniqueness:
- globally unique
- unique in some context (locally unique)
- probabilistically unique
- not unique

Networking: globally unique. Unique in some context (locally unique)

Ex: difference between IP addresses, hostnames, MAC addresses

Characteristics of Names

Characteristics of Names

Length

Hierarchical vs. Flat

Temporary vs. permanent

Memorable vs. not memorable

Name:
- what you want

Route/path:
- how to get there

Address:
- where it is

Definition: Name mapping to address

Naming:
- mapping names to addresses

Binding: process of mapping names to addresses

Term:
- how to get there

Key Ideas

[Context]

The state needed to do binding

Ex:
- maps MAC to interface
- maps address to interface
- maps IP address to service to port
- maps service to address
- maps protocol to address

DNS maps host name to IP address

DHCP maps MAC address to IP address

C library call maps service to port

Maps MAC address to interface

[Context]

Defining the terms (objects) for naming

Give characteristics of names

Terminology

[Context]

Defining the terms (objects) for naming

Give characteristics of names

Terminology
Internet interface (network attachment point), not a node

What does an IP address identify?

Nodes vs. Interfaces

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To control where the packets go

Why?

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More on naming in CSci55

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Problems?

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ISP router

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my router

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my PC

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my laptop

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Internal LAN

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10.0.0.2

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10.0.0.3

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10.0.0.254

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8.1.1.2

---

8.1.1.3

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DSL link

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Sometimes you want to get to

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outside

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so firewall rules can tell "outside"

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Problems?

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With interfaces, even though they can call "outside"

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To control where the packets go

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Why?

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ISP router

---

not a node

---

network attachment point

---

Internet

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What does an IP address identify?