

Fragments of Identity

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WISEN '98:

- "Pure" systems issues are not conceptually new
 - ▶ just another distributed system
 - ▶ scalability tools are the usual ones
 - replication
 - hierarchy
 - offload work to clients
 - etc.
- New systems issues are driven by social requirements

TWIST '99:

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Two parts to "internet-scale names"

- Assigning everything a unique address, *somehow*
- Mapping a user-friendly name to the right address
 - ▶ I'm only concerned with characterizing the latter problem
 - ▶ I'm not even going to tell you anything about the mapping -- just about the names.

Who Needs Names, Anyway?

- People

- ▶ That's why this isn't a pure systems issue.
- ▶ Machines can do just fine with entities like
 - 132.22.45.23
 - 0x84162B17
 - (Did you notice that those are the same value?)
- ▶ Tough constraints:
 - Moore's Law doesn't apply to text on business cards
 - Or to hearing and remembering over a phone

My Special Concerns

- Presence and instant messaging
 - ▶ IMPP standards work in the IETF
 - ▶ by now, probably everyone on the planet knows about the AOL/Microsoft dispute...
- Handheld devices
 - ▶ especially interaction with presence

Three Kinds of Names

- People
- Devices
- States

Names for People

- You don't get to name people
 - ▶ they name themselves
 - ▶ and they change their name when they want!
 - ▶ no guarantee of uniqueness
 - lookup can't return 0/1 values
 - capability of "query refinement" required
 - there are 2 Mark Days in IBM
 - Mark Days on the net: physicist, health insurer, urologist, closing agent, filmmaker...

State of the Art?

- Same person:
 - ▶ `mday@lcs.mit.edu`
 - ▶ Mark Day
 - ▶ `Mark_Day@lotus.com`
 - ▶ `Mark Day/CAM/Lotus@lotus`

Three Kinds of Names

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Handheld and other Devices

- Assuming I know who you are...
- ... how do I reach your
 - ▶ cell phone
 - ▶ pager
 - ▶ email
 - ▶ answering machine or voicemail
 - ▶ instant message inbox

Ownership and naming

- My ring
- My glasses
- My watch
- My laptop
- My cell phone
- My office desk
- My office phone
- My car
- My house



more likely to be
shared by others

Big Devices

- How do you name a person's house?
 - ▶ apartment?
 - ▶ dorm room?
- How do you name a person's office?
 - ▶ cubicle?
 - ▶ meeting area?
- How do you name a person's car?

The upcoming nightmare

- You're in a room filled with other people
 - ▶ each with one or more devices
- Your device can establish communication with one or more others
- How do you pick the ones you want to talk to?
- This is already an issue in Bluetooth
 - ▶ "conferencing" scenarios assume pairwise introductions of devices

Three Kinds of Names

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What states do you want to expose?

- Available / unavailable
- Available / busy / idle
- Active / do not disturb / away
- Available to my team / available to all / disturb in emergency / really unavailable
- you get the idea...

Are these really names?

- Yes
 - ▶ Assuming that you register the machine-readable meanings somewhere,
 - ▶ and if you don't, it's hard to get your client to do the right thing on a new markup.
 - ▶ The challenge is to have a good shorthand for those.
 - ▶ URLs don't really cut it as shorthand for states.
 - might work OK to identify namespaces

Conclusion

- Naming people, devices, states
 - ▶ biggest challenges are human and social
 - short intelligible names
 - for a huge and dynamic universe
 - unambiguous identifiers
 - for ambiguous entities and relationships
 - build the systems for the people
 - not vice-versa