Feature Interaction in Internet Telephony

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Internet Telephony Architectural Model

end systems: Internet hosts, dedicated devices

gateways: POTS, pagers, ... $\leftrightarrow$ Internet (SIP, H.323)

Internet $\leftrightarrow$ Internet ➠ similar to mail gateways (firewalls)

Addressing:

* `phone://212.939.7042, sip://user@host`

* terminal: hgs@erlang.cs.columbia.edu

* logical address: h.g.schulzrinne@ieee.org

* ≥ 0 translations possible

* separation: identifying and charging (800, 900), features (700) vs. addressing

* re-use of email infrastructure: location, voice mail

Differences: IT – POTS

- datagram means less bootstrapping

- in-band signaling ⟹ higher speed

- separation of control (SIP, H.323) and transport (UDP) ⟹ no triangle routing

- separation of connectivity from resource availability

- many features in end system: distinctive ringing, caller id, speed dialing

Difference: IT – POTS

- no signaling ambiguity (# problem)

- richer signaling on actions taken ⇛ call forwarding, forwarding on busy

- features: calls between intra-PBX = inter-LATA and general

- multiple call presences ⇛ call waiting easier

- SIP: fewer call states, timers

New Feature Interactions

Ordering of events:

- communications mode (phone, fax, mobile, pager, ...)

- negotiation of media within mode

- resource reservation

- human accessibility

practical: more implementors, two per call

- call forwarding on busy or call waiting

Internet Telephony Feature problems

- adding a third party ⟹ unicast addressing $\longrightarrow$ multicast addressing, address allocation

- user-implemented logic = feature *interaction*?

- externally triggered ⟹ hard to debug ⟹ state-based language? graphical languages?

- email "vacation" programs