Overview

- (Location) Server Support for Endpoints
- Types of Locations
- Location Servers in SIP
- Location Servers in TRIP
- Location and Presence
- Sources of Location Information
- Location Services
- Conclusion
First of all...

There is no such thing like the Location Server (there is also somewhat confusing terminology…)

Could be anything inquired for call routing.
- Integrated with outbound proxies
- Integrated with inbound proxies
- (Backbone) infrastructure call routing servers
- Stand-alone back end servers
- …

Location Server for Endpoints

Help routing a call for an endpoint that
- may not have the means to find the callee
  - Lack of DNS or other protocols
- may not have access to the necessary data
  - Remote site does not reveal internal information
- may not be able to use available information
  - Private IP addresses, firewalls, etc.
- …
Locations…

- **Device**
  - Fixed or wireless phone
  - laptop, palmtop, PC, ...

- **Geographical**
  - GPS coordinates
  - Country, city, address, site, building, floor, room
    - important e.g. for 911
  - Timezone
    - (Orientation, velocity)

- **Frequency of change**
- **Situation, availability, (privacy)**
- **Context (private vs. work)**

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### Location Server in SIP

![Diagram of SIP Server with LS Product](image)

- **SIP Server**
- **DB**
- **SIP Registrar**
  - REGISTER
  - 200 OK

- **Location Service**
  - INVITE
  - 100 Trying

- **SIP Proxy**
  - INVITE
Location Servers in SIP (ctd.)

- DNS
  - A, AAAA, A6
  - SRV
  - NAPTR (ENUM)
- LDAP
- Other DBs
- Other sources
- Location Service
- Web config
- SIP Proxy

Location Servers in TRIP

- ITAD
- TRIP LS
- TRIP LS
- Location Service
- DB
- SIP Proxy
- SIP Gateway
- INVITE
- 100 Trying
Sources of Location Information

- SIP REGISTER, (SIP NOTIFY)
- TRIP messages
- (L2, L3) Registrations (roaming) from mobile networks
- DNS A, SRV, NAPTR records
- LDAP, local databases

How to determine where you really are?
- Multicast search, request forking, sequential search

And how to make a good guess to start with?
- just in case you have a dozen possible locations...
The more advanced sources...

(Quite a bit linked to presence though...)

Endless research on virtual communities...
- finger, rwho, whois, ...
- Latest keyboard / mouse input
- Phone busy or not
- (Active) badges
- 802.11: triangulation from base stations
- GPS
- Motion sensors, chair, workstation camera

Location Services

The basic stuff we need...
- Routing outbound calls for endpoints
  - Simpler endpoints
  - Efficiency gains from caching, routing exchanges
- Finding the party for inbound calls
  - Consider caller/callee preferences, presence state
- Terminating calls to legacy networks
- Load balancing, robustness, policies
Location-based Services

MUCH more interesting…

- Passive Services (Pull)
  - Search the environment according to one’s needs
  - At this moment, I am looking for
    - an ATM, the closest rest room, the next gas station
    - the other guy I am trying to meet (e.g. at an IETF)

- Active Services (Push)
  - Inform me about what I might be interested in
    - This shop has the record you have been looking for.

There is a session Thursday afternoon on this…

Conclusion

Two ways to support endpoints:

- Locate your party when you contact somebody
  - locally, in the backbone, in the remote domain

- Provide your location to enable services from third parties
  - given the environment, context, etc. you are in