RTT TECHNOLOGY TOPIC
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Mobile IP

It is becoming self-evident that the IETF standards making process is moving at a rate several magnitudes faster than the traditional telecoms standards making process. Rather like Linux, who make their source code available so that users can help develop Linux code, the IETF remains impressively open as a standards making body – proposals are posted on the IETF site (www.IETF.org) for general comment – after 6 months they either get dropped or adopted as a defacto standard. (To be approved by the ISO). Contrast this with ETSI, where endless face to face meetings are still required to acquire (uneasy) consensus.

Mobile IP is one example of how and why the IETF will come to dominate standards making as computers and communications converge.

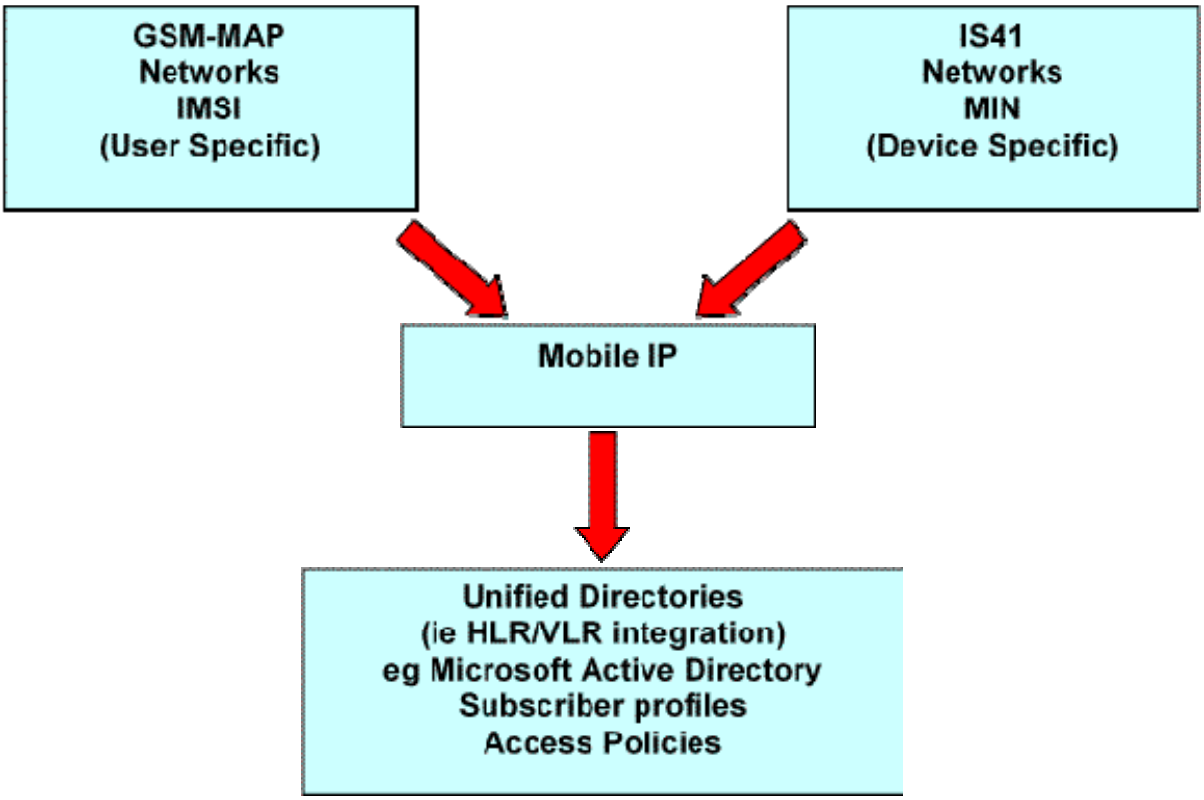
IPV6 was proposed and implemented to provide (amongst other things) an increase in IP address space. There is now sufficient address bandwidth to support 1500 IP devices for every square metre on earth. (It has of course been dimensioned to support inter-stellar IP communications – a Vinton Cerf vision).

So people can have IP addresses (issued at birth) and devices can have IP addresses (issued on the production line).

Mobile IPV6 is being developed to address the issue of IP address mobility – or to user the jargon, macro-mobility management.

It could also be used to address the issue of micro-mobility management –for example the management of devices and/or people supported within a self contained Intranet with or without extended links to the outside world (eg Internet access).

To deliver macro-mobility, mobile IP has to pull together GSM MAP functionality (with its user specific international mobile subscriber identity – IMSI) and IS41 functionality (based on the device specific mobile identity number – MIN).



This then ties into HLR (home location) and VLR (visitor location) registries which in turn will tie into unified directories which will manage subscriber specific or device specific access profiles.

Mobile IP provides the basis for a self-configuring protocol which works on neighbour discovery and neighbour advertisement – mobile nodes detect their position by learning the presence of new routers (as they move into wireless transmission range) and by learning that previous routers are no longer available, ie mobiles advertise to one another. Note incidentally that such self-configuring networks require very little centralised intelligence.

Mobiles can put themselves into promiscuous receive mode – able to receive all packets on the link layer, including those not link level addressed to them and promiscuous transmit node (mobile multicasting).

Within private networks (including networks artificially or physically divorced from the Internet), ie sub-nets, mobiles can copy IP addresses reachable within the sub-net into a sub-net access directory – an instant virtual community. (So why do you need JINI if IPV6 will do the job for you?)

The IPV6 dynamic host configuration protocol codifies this passing of configuration information to and from IPV6 nodes, delivering (amongst other things) configuration parameters to dynamically configurable clients.

In practice, standard IP protocols are rapidly becoming pervasive, disenfranchising telco generated protocols (such as WAP) which are (a) too slow to market and (b) too protective in their outlook to deliver end user value.

IP wins hands down.

POST SCRIPT (1)

In information networks, subscribers are effectively software objects. Software objects can be animate or inanimate – people or devices.

PREDICTION Future IP addresses will be split into user centric IP addresses and device centric IP addresses.

POST SCRIPT (2)

ETHERNET PROTOCOLS

IP is also invading the Ethernet (is the Ethernet in effect becoming a sub-system of the Internet?).

Ethernet protocols are already widely applied in the wireless industry in cordless access protocols (DECT being one example).

Ethernets (And DECT) have dynamic channel allocation based on carrier sense multiple access detection.

It is intriguing to consider that dynamic channel allocation in effect gives you a ready made ability to deliver bandwidth on demand negotiation.

Distributed computing is all about making applications network aware rather than making networks application aware. 3G network and air interface design is still illogically focussed on making the networks application aware – for this reason, Ethernet access and contention protocols, and/or protocols with Ethernet type qualities will become more pervasive over the next 5 years.

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Contact RTT

RTT, the Shosteck Group and The Mobile World are presently working on a number of research and forecasting projects in the cellular, two way radio, satellite and broadcasting industry.

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