



Mobility: Where Are We Going?

At the Istanbul Academy Conference in October, Luc Imbert, an engaging Frenchman with an infectious enthusiasm for his subject, forecast the advances in mobility over the next decade.

The Future for Mobility

Luc believes that future networks will shift to a much broader range of wireless access technologies, ranging from satellite uplinks down to Personal Area Networks with only metres of range. These additional datalink layers will

- enlarge the IP networks to be used managing in real time every aspect of an organisation.
- The typical end-point will not be restricted to an executive Powerbook but could become a delivery truck or a thermal sensor.
- And with most of these end-points lying outside of intranet, some of the most critical data will have to be carried by through third parties infrastructures.

Shift to Wireless

Today we only really use IEEE 802.11 - also known as WiFi - with an emergence of 3G connectivity on laptops, but this is not yet spread far enough. Increasingly, wireless technologies will become dominant but none may fit all requirements, making IP the real convergence layer for applications.

All wireless radio technologies have trade-offs between range, price and speed. Users will expect to roam independently from a layer-2 interface: connecting from anywhere and receiving the appropriate level of service. This requires new infrastructure to provide consistent management across disparate networks. Only simple standards that can be applied regardless of the end-point device, or access technology, can make this viable.

Making the Transition

There are two mandatory requirements – backed up by standards – to make seamless mobility practical:

- Roaming services have to provide authorisation and billing as achieved by the RADIUS protocol in an IP environment
- devices must be able to roam between L3 subnets or L2 technologies without interrupting the connected applications as achieved by Mobile IP protocol suite.

Mobile IP extends the TCP/IP stack to allow clean connection handovers as devices move between IP subnets or networks. A Mobile IP device registers a home IP address, located in the network that "owns" it, and a care-of-address which gives its current network location. Mobile IP aware TCP/IP stacks enable seamless roaming between networks without disrupting running applications.

When a device moves to a new location, it simply subscribes to a new care-of-address. This happens at IP network layer, transparent to the user's applications. Up to now,



mobile IP hasn't been widely deployed due to generation of devices which were not so “mobile”, but with new generation of electronic devices, its benefits for innovative services or new coverage, it's hard not to see it spreading.

AIRS

Recently, the Cisco US Federal team and associated partners have put this into practice by demonstrating an Advanced Incident Response Solution system. AIRS leveraging Mobile IPv6 and several wireless technologies enhance the monitoring capability for emergency teams in public safety. AIRS provides communication channels over both long range radio (3G, WiFi, Satellite), and low power Personal Area Networks (6LoWPAN).

The application helps to monitor every responder's health and position. By deploying smart sensors when progressing in a burning building it enhances the tracking of fires in real time. Solutions like AIRS, demonstrate suitability of today's IP based mobility solutions for even life-critical tasks.

On-Line at all Times

But what does this mean for us as people? We've all seen the impact of mobile phones on our social lives since the 80s. Luc believes that in the developed world we are losing the concept of a person or object being off-line. And that this will increasingly be the case. In the next decade will we all be online, most if not all the time?

“How many people do you meet regularly who don't have an e-mail address? Some may dismiss me for advocating Smartphones for people that are out of work – claiming unemployment benefits from their government. But in 10 years, when you need that Smartphone just to open a bank account, I believe that's what society ought to provide.”

Luc has a vision of the future where we are all able to benefit from wireless technology. Is he right? Watch this space.

At Cisco Europe, Luc is in charge of the Mobility and Wireless business development for the Public Sector Segment. His position puts him in permanent dialogue with end users, as well as technology players in wireless and mobility. He strongly advocates the need for convergence to deliver best of breed solutions.