Wireless Interconnection Network (WIN) Proposal

Although there currently exist several techniques for wireless communication, nothing is available for automatic handover between systems. Current solutions to the handover problem only deal with changing cell (i.e. receiving base station) within the same system, e.g. GSM to GSM.

Currently wireless systems can be seen as separate islands of connectivity. To connect these systems, so that they in practice will become subsystems, will create larger coverage and create synergy effects. These synergy effects will stem from having a more reliable and versatile system, which will increase communication and utilization of resources. This connectivity is something that the future user is expecting to work, seamlessly, without ever knowing how.

We propose to build a system that solves this problem. For example a system with IEEE-802.11, Bluetooth and GSM could automatically choose to connect to the appropriate network according to the preferences of the user regarding speed, price, energy consumption and availability. A specific target is the market for wireless IP-telephony.

The Wireless Interconnection Network (WIN) system will consist of a redirecting server, the Call Management Server (CMS) and client software for the handset. A phone call will be initiated by the client who asks the CMS to connect to a certain device (i.e. the receiver of the call). The CMS then checks with the User Database Server (UDS) whether the receiving end is connected to any of the networks. The CMS then makes the connection. During the call the CMS owns the call and keeps track of any requests for handover. It also keeps track of billing information in the case of usage of a system with a per-minute price. When the client software detects the presence of a system with a higher preference, it sends a request to the CMS of a subsystem change. The CMS then handles the request and makes the switch.

Specification

- 1. The hardware must be compliant with current standards of IEEE802.11 (WLAN), Bluetooth and GSM. It would also be of benefit to add Hiperlan and the third generation mobile system (UMTS) when they are available.
- 2. For Bluetooth devices it is vital that they support the voice communication profile.
- 3. The client software (CS) will manage information about the access

possibilities and send it to the User Database Server (UDS).

- 4. The server software (UDS) managing the current status of the user has to keep track of the users. The user reports information about its current status at regular intervals.
- 5. To be able to manage handover properly, a redirecting server, the CMS, must own the call. The CMS will manage request for handover by the handset.

Market

When the acceptance of IP-telephony has grown sufficiently, the market interest of wireless communication will increase. Corporate buyers will eventually realize the potential of using their existing wireless LAN (IEEE802.11) for speech. A typical hardware platform for the client is the HP Ipac 5000 (former Compaq Ipac). It has integrated GSM and WLAN modules and has optional expansion of Bluetooth. One other obvious platform is mobile phones with integrated Bluetooth adapters. The only problem is how to integrate the client software into the handset. Traditionally third party software is not allowed in proprietary platforms for handsets. That is about to change as several of the big mobile manufacturers are offering their mobile platforms to the OEM market.

According to Ericsson 40 million Bluetooth devices will be shipped during 2002, mostly pc-cards for laptop computers. And within four years 55% of all laptops are expected to have Bluetooth according to Forrester.

When considering the WLAN market, the Gartner group predicts that within three years the market for WLAN will exceed \$5 billion. Corporate buyers will want to get as much out of that investment as possible and the WIN system is a major step towards that goal.