Cell Broadcast

Cell Broadcast (CB) messaging is a mobile technology feature defined by the ETSI’s GSM committee and is part of the GSM standard. It is also known as Short Message Service - Cell Broadcast (SMS-CB). Cell Broadcast is designed for simultaneous delivery of messages to multiple users in a specified area. Whereas the Short Message Service - Point to Point (SMS-PP) is a one-to-one and one-to-a-few service, Cell Broadcast is a one-to-many geographically focused messaging service. Cell Broadcast messaging is also supported by UMTS, as defined by 3GPP.

Cell Broadcast messaging was technologically demonstrated in Paris for the first time in 1997. Some mobile operators use Cell Broadcast for communicating the area code of the antenna cell to the mobile user (via channel 050), for nationwide or citywide alerting, weather reports, mass messaging, location based news, etc. Not all operators have the Cell Broadcast messaging function activated in their network yet, and many handsets do not have the capability to support cell broadcast.

Cell Broadcast is a technology that allows a text or binary message to be defined and distributed to all mobile terminals connected to a set of cells. Whereas SMS messages are sent point-to-point, Cell Broadcast messages are sent point-to-area. This means that one Cell Broadcast message can reach a huge number of terminals at once. In other words, Cell Broadcast messages are directed to radio cells, rather than to a specific terminal. A Cell Broadcast message is an unconfirmed push service, meaning that the originator of the message does not know who has received the message, allowing for services based on anonymity. Mobile telephone user manuals describe how the user can switch the receiving of Cell Broadcast messages on or off.

Cell Broadcast messaging has a number of features that make it particularly appropriate for emergency purposes:

- It is not as affected by traffic load; therefore, it may be usable during a disaster when load spikes tend to crash networks, as the 7 July 2005 London bombings showed. Another example was during the Tsunami catastrophe in Asia. Dialog GSM, an operator in Sri Lanka was able to provide ongoing emergency information to its subscribers, to warn of incoming waves, to give news updates, to direct people to supply and distribution centres, and even to arrange donation collections using Celltick’s Cell Broadcast Center, based on Cell Broadcast Technology.

Cell broadcast is widely deployed since year 2008. In Europe, most handsets do have cell broadcast capability, and the major European operators have deployed the technology in their networks.

Cell Broadcast is a mobile technology that allows messages (up to 15 pages of up to 93 characters) to be broadcast to all mobile handsets and similar devices within a designated geographical area. The broadcast range can be varied, from a single cell to the entire network.
Technology

Cell Broadcast Entities (CBE) are connected to the Cell Broadcast Centre. Cell Broadcast messages are then sent from the Cell Broadcast Centres to the cells, in accordance with the CBC’s coverage requirements. Advanced infrastructures make use of GIS-based interfaces for definition of the used areas.

A Cell Broadcast message page comprises 82 octets, which, using the default character set, equates to 93 characters. Up to 15 of these pages may be concatenated to form a Cell Broadcast message. Each page of such a CB message will have the same message identifier (indicating the source of the message), and the same serial number. Using this information, the mobile telephone is able to identify and ignore broadcasts of already received messages.

Cell Broadcast doesn't use the frequency space reserved for call setup, calls and data but a separate specially defined area. This area is divided into 65,000 channels, the channels from 0 to 999 can be switched on by the terminal user, from 999 to 65,000 can only be switched on via OTA (over-the-air activation) but all channels can be switched off by the user.

Broadcast messages will be used in the United States to send emergency alerts, using the CMAS C-interface protocol, which has been specified jointly by ATIS and TIA. All four major providers have agreed to take part.

Footnotes

• Note a: A "terminal" in this context is a "mobile " or any device (usually a mobile telephone) which can receive voice or data via the GSM/UMTS network.
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