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Future Smartphones Won't Need Cell Towers to Connect

Qualcomm, Facebook, and other tech companies are experimenting with technology that lets smartphones use their LTE radio to connect directly to other devices up to 500 meters away.

By Tom Simonite on September 29, 2014

A new feature being added to the LTE protocol that smartphones use to communicate with cellular towers will make it possible to bypass those towers altogether. Phones will be able to "talk" directly to other mobile devices and to beacons located in shops and other businesses.

Known as LTE Direct, the wireless technology has a range of up to 500 meters, far more than either Wi-Fi or Bluetooth. It is included in update to the LTE standard slated for approval this year, and devices capable of LTE Direct could appear as soon as late 2015.

LTE Direct has been pioneered by Qualcomm, which has been working on the technology for around seven years. At the mobile chip manufacturer's Uplinq conference in San Francisco this month, it announced that it's helping partners including Facebook and Yahoo experiment with the technology.

Researchers are, for example, testing LTE Direct as a way to allow smartphones to automatically discover nearby people, businesses, and other information. Some see the technology as a potential new channel for targeted promotions or advertising.

Despite its long range, LTE Direct uses relatively little power, so a phone could be constantly looking for nearby devices without significantly draining its battery life. A device with LTE Direct active might discover other phones using the technology or communicate with beacons – fixed devices installed in businesses or integrated into the infrastructure of an airport or train station.

"You can think of LTE Direct as a sixth sense that is always aware of the environment around you," said Mahesh Makhijani, technical marketing director at Qualcomm, at a session on the technology. "The world around you is full of information, and the phone can use that to predict and to help you in your everyday life."

Beacons using LTE Direct could broadcast useful information as well as special offers. A beacon installed in an airline check-in desk, for instance, might offer information on delays to people nearby who are booked on an affected flight.

Facebook is exploring how the technology could be used with its mobile app. “LTE Direct would allow us to create user experiences around serendipitous interactions with a local business or a friend nearby,” said Jay Parikh, Facebook’s vice president of infrastructure engineering. “You could find out about events or do impromptu meet-ups.”

LTE Direct can be used much like the iBeacons announced by Apple last year, which retailers including Macy’s are testing as a way to track and connect with shoppers’ mobile devices. However, iBeacon devices use the Bluetooth protocol, which has a much shorter range, and which not everyone leaves switched on.

Yahoo has also begun developing apps that use LTE Direct, says Beverly Harrison, a principal scientist at Yahoo Labs. One is a kind of digital tour guide. If you tell the app how long you have to spare, from 10 minutes to two hours, it will suggest a route past nearby points of interest, drawing on online information about places detected using LTE Direct. Harrison says Yahoo plans to start testing the app in January.

LTE Direct could also help smooth out the network glitches that occur when large numbers of users are trying to connect to the same cell tower. R/GA, an ad agency in New York whose clients include Nike and Beats, is designing a system that would use LTE Direct to serve up to a million people in or around Times Square on New Year’s Eve. Roman Kalantari, a creative director at RG/A, says LTE Direct is the only wireless technology that could keep devices online under such conditions.

RG/A and a technology consultancy called Control Group are also interested in using LTE Direct to serve targeted promotions. A smartphone could use LTE Direct to signal to nearby businesses what types of foods or products a customer is interested in so that it can offer customized deals, says Kalantari. “The idea that every retailer could be observing purchase intent is extraordinary valuable,” he says.

In theory, LTE Direct could be used to create communication apps that route all data from device to device. Some chat apps can already use Wi-Fi and Bluetooth to link up nearby phones (see “The Latest Chat App for iPhone Needs No Internet Connection”), but LTE Direct could offer extended range and better performance. However, carriers will control which devices on their networks can use LTE Direct because it uses the same radio spectrum as conventional cellular links. Wireless carriers might even gain a new stream of revenue by charging companies that want to offer services or apps using the technology, Qualcomm says.

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