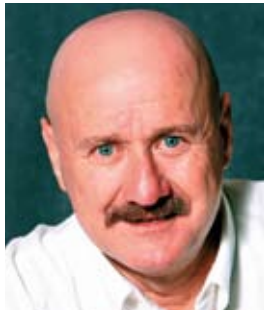


Is High-Speed Packet Access (HSPA) a New Wireless Technology?

JOHN McHUGH



OPASTCO Technical Director John McHugh receives a steady stream of calls and e-mails from OPASTCO members looking for answers to their technical questions. McHugh & A shares some of these questions and answers with the OPASTCO Roundtable readership.

To understand HSPA, and the evolutionary path this wireless technology is predicted to take, it is necessary to review how HSPA was developed. Like all wireless technology, the first generation was voice-only, and one of the dominant versions was Global System for Mobile communications (GSM).

When it was evident that data delivery would become a necessity for wireless operators, the GSM industry moved to an advanced GSM delivery system called Universal Mobile Telecommunications System (UMTS). This third-generation wireless technology supported data transfer rates for both mobile and fixed wireless devices. Although these data rates were limited to less than 1 Mbps in most cases, it enabled text messaging, e-mail, instant messaging (IM), pictures, and other lower bit rate services.

The UMTS Forum was organized to chart the path forward for wireless operators to enable delivery of higher data rates to wireless devices and support the surge in video applications. High-Speed Packet Access (HSPA) was the name chosen by the UMTS Forum to refer to the advancements in GSM/UMTS standards.

Two standards have been approved for HSPA. They are High-Speed Downlink Packet Access (HSDPA) and High-Speed Uplink Packet Access (HSUPA). One refers to the data rates supported to the customer device, the other for data rates from the customer device. Both of these standards allow for increased performance through improvements in the way base stations and customers' wireless devices communicate.

On the downlink path to the wireless device, HSDPA has the capability of reaching data rates up to 14.4 Mbps, although most commercial deployments usually only reach an average of 3.6 Mbps. Earlier this year, Ericsson announced that Telstra "launched the

world's first 200 kilometer-range commercial mobile broadband network." Telstra hopes to offer customers up to 14 Mbps downstream data rates, but in most cases a more realistic speed will be around 4 Mbps.

In the uplink direction HSUPA, the new improvements in how the radios communicate with the devices have led to the possibility of higher data rates, as well. The theoretical upstream data rate could reach up to 5.5 Mbps. The UMTS Forum, www.ums-forum.org, indicates that HSUPA terminals will be available sometime in 2007.

These wireless technology developments have been driven by the Third Generation Partnership Project (3GPP). The 3GPP brought together a number of standards bodies collaborate on advancements in GSM technology. More information on the 3GPP can be found at www.3gpp.org.

One of the more significant projects of the 3GPP is its Long Term Evolution "to improve UMTS, cope with future requirements, improve efficiency, reduce costs, and improve service." This project has several major goals, one being the eventual download capability of 100 Mbps with an upload of 50 Mbps, all within only 20 MHz of spectrum. It is this goal that brings us to the next phase on HSPA.

The future of broadband wireless may be in High-Speed Orthogonal Frequency Division Multiplexing Packet Access (HSOPA). This will be a new set of air interfaces and is expected to reach data rates of 100 Mbps down and 50 Mbps up. Trials are planned for 2007. NTT DoCoMo plans to deploy HSOPA in Japan by 2010 at a cost of \$1.7B USD. Conceivably, the future capabilities of HSOPA will be to offer customers a quad-play consisting of voice, high-speed interactive services, exceptionally large file downloads, and IPTV, all with complete mobility. **R**

Have a technical question about any aspect of your telco business? Your name will not be revealed, but please include it in your e-mail. Questions may be edited in order to provide more relevance to a larger audience. Send your question to roundtable@opastco.org.