Alliance Opts For Interoperable Powerline Broadband Specs

The HomePlug Powerline Alliance has decided to opt for a specification that will meld broadband distributed over power lines inside a building with broadband delivered over the power lines (BPL) to that building. The new BPL specification now in development, to be called HomePlug BPL, will mate with HomePlug AV, the 200 Mb/s standard currently in the in the finalization stage. The formulation of HomePlug BPL is still in an early stage, with the Alliance currently writing the needed markets-requirement document. The decision to mate HomePlug BPL and Home-Plug AV holds forth the promise of a future in which users simply plug in their computer and they're instantly connected to an IP network all the way back to their ISP's point of presence (POP).

What the Alliance did was simply adopt the MAC and PHY specifications from HomePlug AV and define them as also the baseline technology for HomePlug BPL. The group says it had talk to various ISPs; to utilities in both the United

States and Europe; and to various semiconductor and consumer-electronics retailers, and manufacturers before coming to the decision. The Alliance cites a long list of reasons for its decision to use the MAC and PHY specifications from AV for the future BPL standard, starting with an overall reduced cost to every-

one from network operators and utilities to home users because of lower chip and integration costs. It also cites the fact that the AV specifications, including QoS and latency, already are optimized for such services as VoIP.

Oleg Logvinov, president of the Alliance, also predicts that, by using the same specifications, the eventual finalization of HomePlug BPL will ramp up quickly.

Researchers Buoy BPL

Meanwhile, new research out of **Pennsylvania State University**'s Center for Information and Communications Technology Research has offered hints that BPL may eventually be faster than either DSL or cable. Mohsen Kavehrad, director of the center, says researchers developed a new power line model, and they had run computer simulations that show that BPL should be capable of delivering almost 1 Gb/s service over one kilometer on an overhead, medium-voltage, unshielded U.S. electric power line. In contrast, the handful of BPLs currently in U.S. operation typically yield only between 2 Mb/s and 3Mb/s, Kavehrad says. The power lines do have to be conditioned through impedance matching to achieve the 1 Gb/s speed. "If you condition those power lines properly, they're an omni-present national treasure waiting to be tapped for broadband Internet

service delivery, especially in rural areas where cable or DSL are unavailable," Kavehrad said in a prepared statement outlining the research.

Bouncing Signals

The researcher did not suggest that the BPL industry is ready to deliver such speeds any time soon, however. Kavehrad cites phenomena, caused by the junctions and branches in the overhead electrical grid, that create what he called "multipath-like effects" that effect a degradation of the broadband signal. "The signal can bounce back and forth in the lines if there is no proper

impedance matching," he explains. It "remains to be seen" whether there is an "economical alternative" to solve those problem, he adds. The **Penn State** study, which was funded by AT&T [T], was the first ever to evaluate data-rate-handling capacity of overhead, medium-voltage, unshielded U.S. electric power lines. Kavehrad co-authored the study together with doctoral candidate Pouyan Amirshahi.

New Alliance Members

Separately, Duke Power [DUK], EchoStar Technologies [DISH] and Leviton Manufacturing joined the HomePlug Powerline Alliance, which now boasts more than

50 member companies. Duke is the first to join under a new category of membership set up for power utilities. "We believe it is critically important for the facilities-based provider to be represented in the BPL standards development process, specifically as it relates to compatibility and coexistence of access BPL and in-home powerline systems," says Bob Gerardi, powerline communications program manager at Duke Power. >>Oleg Logvinov, HomePlug Powerline Alliance, 925/275-6630; Mohsen Kavehrad, **Pennsylvania State University** Center for Information and Communications Technology Research, 814/865-7179; Bob Gerardi, Duke Power, 704/594-6200 <<

BBF's Take On The Situation

The allure of broadband over power lines is undeniable. We can dream of a system where a broadband power adapter is built into the computer and all the hassles of networking magically disappear. Plug it in and bingo...you've got 100

Mb/s broadband. No wires to string around the house, no worrying about the range and security of radio signals, and

no need for a truck roll for someone to turn on DSL or cable broadband. The establishment of a single standard for both broadband delivered to the premises over power lines and for that broadband to be delivered to the end user inside of the building is a step closer to that dream world. The **Penn State** research, meanwhile, is the first validation that outside power lines may actually be able to carry enough bandwidth to make that dream a reality. It's not something we expect to see in the first decade of the 21st century, however. There's still a lot of work to be done. Those who sell FTTx, ADSL2+ and various wireless technologies aren't going to see their markets evaporate overnight.

HomeplugAV, as Broadband Business Forecast, has said in the past, does have the potential to be a disruptive technology. It could potentially replace WiFi, coaxial cable and even fiber as the preferred method to shuttle data, voice over Internet Protocol (VoIP) and IP video around inside a home. Meanwhile, BPL does have the potential to deliver at least modest bandwidths right now - not enough to satisfy

bandwidth-hungry users but a heck of a lot more than isn't being delivered to underserved, primarily rural areas. We can name some urban dwellers who also aren't getting their share of bandwidth - but they do have electricity.

The HomePlug Alliance's new members also are interesting. Duke, as one of a very few utilities that carries broadband over their power lines (albeit in limited deployment) is obvious as a member. Leviton makes in-home wiring of all sorts, including fiber-optic and Cat 5 cabling. HomePlugAV eventually could obsolete those products, at least in theory. Thus, the time has come when Leviton's got to be on the inside so that it won't eventually be blindsided by new technology.

EchoStar, meanwhile, might seem to be an unexpected member but, realistically, it's in the same position as Leviton. If BPL technology evolves to be substantially cheaper than satellite and equally able to deliver such services as video to rural users, EchoStar had better know about it and start planning strategy now.