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Look Out For A New, Faster Dimension to Wi-Fi

Imagine wirelessly zapping a high-definition movie in seconds to your notebook PC to take along on a plane trip. Or streaming that same film to the laptop for viewing from your easy chair. Tech companies are gearing up to deliver such visions.

Some of the same people who brought us Wi-Fi, that mainstay of laptop life, are expected soon to embrace another communications technology that has much shorter range but much higher transmission speed–well over a gigabit per second. Instead of sending data all around your home and office, think about moving massive files from within the same room.

Underlying the higher speeds is a higher radio frequency–60 gigahertz, compared to the 2.4-gigahertz and 5-gigahertz bands used by Wi-Fi. In that range, relatively wide swathes of unlicensed radio spectrum are available, allowing for "big fat data pipes," says Xavier Ortiz, an analyst at ABI Research.

Exactly how that technology may be combined with Wi-Fi remains to be seen. Mr. Ortiz thinks that speed grades may be offered based on distance; a laptop might download files at extremely high data rates at three feet from a wireless access point, for example, and somewhat lower speeds at seven feet and lower still at 15 feet, he suggests. Then, presumably, if users roam outside the range of 60-gigahertz technology they would default to Wi-Fi speeds.

Industry executives expect more details to emerge as soon as Monday from the Wi-Fi Alliance, possibly in collaboration with another industry consortium called the Wireless Gigabit Alliance. (A spokesman for the Wi-Fi group declined comment; a spokeswoman for WiGig, as the second group is called for short, could not immediately be reached).

Another industry consortium, known as WirelessHD, has already delivered a 60-gigahertz technology for consumer electronics applications–essentially offering a wireless replacement for the cables now needed to connect devices like Blu-ray players to high-definition TVs. Consumers can buy plug-in adapters to connect two devices together using the technology, a pricy option that now costs hundreds of dollars. Several TV makers, including Sony, LG and Panasonic are also starting to build the technology into some models, and Vizio announced at the Consumer Electronics Show that it would follow suit, says John Marshall, WirelessHD's chairman.

WirelessHD's existing technology is rated at a top speed for sending data of 4 gigabits per second, where the latest version of Wi-Fi is rated at a theoretical top speed of 450 megabits. The consortium has announced a specification for a new version of 60-gigahertz technology with maximum bandwidth of 10 to 20 gigabits.

So why develop an alternative 60-gigahertz technology? One reason, Marshall says, is that consumer-electronics applications require a dedicated connection that doesn't slow down if another wireless device comes in range; that could cause glitches when a user watches a video. Data-oriented technologies like Wi-Fi, by contrast, usually are designed so that multiple users can share them–each getting a bit lower speed when others join on. That's good in scenarios like offices where many PC users might arrive and start sharing the same connection, Marshall says.

Meanwhile, Hollywood studios demanded that WirelessHD use special content-protection technology that, among other things, doesn't let multiple users share the same wireless video signals. "I personally negotiated with Hollywood for use of this technology for two years," he says. Networks like Wi-Fi, by contrast, tend to use different sorts of security protocols that often require users to set up a password.

Exactly how these various consortia and groups will interact remains to be seen. But there are a number of common members between WiGig and WirelessHD, including chip makers like Intel and Broadcom, Marshall notes. One company that seems particularly excited about a link between Wi-Fi and 60-gigahertz technology is SiBeam, a Silicon Valley company that has been providing chips used in WirelessHD applications.

John LeMoncheck, SiBeam's president and CEO, says it is in "excellent position" to be first to deliver chips if other applications emerge for 60-gigahertz frequencies. Though the technology costs hundreds of dollars now, he says, that could change quickly with high production volumes if 60-gigahertz technology becomes mainstream. "There is no reason this couldn't be a single-digit cost adder to a device as soon as next year," he says.

Another contender to keep in mind for short-range communications remains Bluetooth. The widely used technology now sends data at two to three megabits per second, but has announced plans for a faster version that operates at 24 megabits a second, says Diana Hoffman, director of global marketing for the Bluetooth Special Interest Group, a trade organization overseeing the technology. Beyond that speed jump, the group has not set "a formal path or roadmap," she says.