

How Mesh Networks Could Expand Wireless

Traditional wireless services such as cell phones, radio and Wi-Fi operate on a “hub-and-spoke model.” [1] For instance, there will be a cell phone tower and all of the cell phones in the range of that tower can get service. However, as soon as you go beyond the range, you lose service. So-called “mesh networks” do not rely on this model. Instead, mesh networks emerge from existing wireless hardware, sending signals skipping from device to device, seeking one that is connected to a wireless access point from which to connect the entire network to the Internet. [2] In effect, “user devices become the network. [3]

Depending on the number of wireless devices that are a part of the network, mesh networks can stretch over vast areas, using very few nodes connected to the Internet to provide service to all of the peers that are a part of the infrastructure. Neil McManus of *Wired* notes that mesh networks have the potential to allow users to bypass broadband providers to create ubiquitous, cheap wireless networks. [4] In fact, Intel Corporation explains how mesh networks could be a last mile solution where one house could connect to the Internet and then “extend access to the entire neighborhood” via a mesh network. [5] The town of Kingsbridge in England has already started a similar project, providing broadband wireless to a portion of the town’s residents with five MeshBoxes purchased from LocustWorld. [6] Mesh networking offers huge possibilities for community networks to provide access to homes and businesses. In addition, mesh networks could be used to connect public access sites throughout a community.

Mesh networks have a number of other benefits. First of all, they are highly adaptable and scalable. Mesh networks can have redundancy built-in so “each device has two or more paths for sending data.” [7] This redundancy makes mesh networks very reliable. More nodes can be added just by bringing another device to link into the network. Also, they can scale to huge numbers of devices and wireless Internet access points participating in the network.

One drawback to the idea of mesh networks is how broadband Internet service providers will react. Currently, many broadband providers disallow shared wireless networks. Seamus McAteer, an analyst for the Zelos Group, tells *Wired* “considering that they installed the broadband pipelines to begin with, they don’t like the idea of residents selling the bandwidth or giving it away for free.” [8] However, as hot spots of wireless access spread, there will be increasing demand for a way to “connect these hot spots for wide-area seamless coverage. [9] Mesh networks certainly offer new opportunities for more widespread and inexpensive wireless networks. With small companies like LocustWorld and large companies like Intel marketing the benefits of mesh networks, this new technology might have a bright future in making wireless Internet access ubiquitous.

Notes

1. McManus, Neil. "A New Spin on the Wireless Web." Wired News. August, 10, 2002. <http://www.wired.com/wired/archive/10.08/start.html?pg=8>
2. Rupley, Sebastian. "Wireless Watchers Eyeing Mesh Networks." ExtremeTech. November 25, 2002. <http://www.extremetech.com/article2/0,3973,725120,00.asp>
3. Ibid.
4. McManus, Neil. "A New Spin on the Wireless Web." Wired News. August, 10, 2002. <http://www.wired.com/wired/archive/10.08/start.html?pg=8>
5. Intel Corporation. "Multi-Hop Mesh Networks- A New Kind of Wi-Fi Network." <http://www.intel.com/labs/features/cn02032.htm>
6. Batista, Elisa. "Mesh Less Cost of Wireless." Wired News. February 13, 2003. <http://www.wired.com/news/print/0,1294,57617,00.html>
7. Poor, Robert. "Wireless Mesh Networks." Sensors. February 2003. <http://www.sensormag.com/articles/0203/38/main.shtml>
8. Batista, Elisa. "Mesh Less Cost of Wireless." Wired News. February 13, 2003. <http://www.wired.com/news/print/0,1294,57617,00.html>
9. Ibid.