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Linux-Powered Multi-Radio Mesh Boosts Bandwidth

By: LinuxDevices.com Staff (/Authors/linuxdevices.com-staff) | March 07, 2005

The new router from startup Mesh Dynamics aims to improve bandwidth by 64 times, requiring a real-time operating system.

A startup in Santa Clara, Calif. is shipping a Linux-based mesh router aimed at VOIP and video. The Mesh Dynamics Module uses multiple radios—along with custom real-time Linux extensions—to create a duplexing backhaul network said to improve bandwidth more than 64 times over conventional mesh technology.

Currently, the technology works well enough that LinuxDevices was able to interview Mesh Dynamics cofounder Francis Dacosta over a four-hop mesh VOIP network. Sound quality was on par with early cell phones, while latency was excellent—the conversation was truly full-duplex, supporting multiple interruptions for pointed questions.

According to Dacosta, normal, single-radio access points function in a half-duplex manner—that is, they must stop transmitting in order to receive, and vice versa, a limitation that reduces bandwidth by 50 percent for each hop in the mesh.

Mesh Dynamics is attempting to solve this problem by dedicating separate radios to upstream and downstream traffic of a "backhaul" network that relays traffic between mesh nodes, thus simulating full-duplex operation.

[/zimages/4/28571.gif](#) Mesh Dynamics in February introduced its MD-300 product family, which aimed to improve bandwidth up to 50 times over traditional mesh networks. [Click here to read more. \(/c/a/Infrastructure/Mesh-Line-Uses-Multiple-Radios/\)](#)

It sounds simple enough, but it turns out that using multiple radios creates a need for a real-time operating system that can satisfy the real-time constraints required by the distributed control system that manages the mesh network.

The company began the project three years ago with the intention of using its own hard-real-time operating system. However, when the developers realized that Linux could "do most of the work," as Dacosta put it, they simply wrote extensions to the Linux kernel to add real-time capabilities.

[/zimages/4/28571.gif](#) Read more here about the growing success of mesh networking. [\(/c/a/Mobile-and-Wireless/Mesh-Networks-Making-Inroads/\)](#)

Asked how the kernel extension is licensed, Dacosta said, "Wed be happy to provide it to anyone once we get it working, although Id question its value without a full development environment, which we probably will not offer."

[/zimages/4/28571.gif](#) Read the full story on LinuxDevices.com: Device Profile: Mesh Dynamics Module access point (<http://www.linuxdevices.com/articles/AT8452908209.html>)

Further reading

[DOJ Suit Against California Deepens Net Neutrality... \(/networking/doj-suit-against-california-deepens-net-neutrality-quagmire\)](#)

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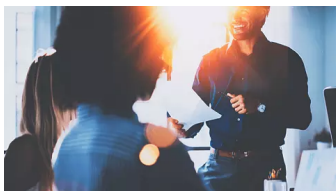


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