

Researchers find way to boost WiFi performance 400-700 percent

14 November 2012

As many WiFi users know, WiFi performance is often poor in areas where there are a lot of users, such as airports or coffee shops. But researchers at North Carolina State University have developed a new software program, called WiFox, which can be incorporated into existing networks and expedites data traffic in large audience WiFi environments – improving data throughput by up to 700 percent.

WiFi traffic gets slowed down in high-population environments because [computer users](#) and the WiFi access point they are connected to have to send data back and forth via a single channel.

If a large number of users are submitting data requests on that channel, it is more difficult for the access point to send them back the data they requested. Similarly, if the access point is permanently given a high priority – enabling it to override user requests in order to send out its data – users would have trouble submitting their data requests. Either way, things slow down when there is a [data traffic](#) jam on the shared channel.

Now NC State researchers have created WiFox, which monitors the amount of traffic on a WiFi channel and grants an access point priority to send its data when it detects that the access point is developing a backlog of data. The amount of priority the [access point](#) is given depends on the size of the backlog – the longer the backlog, the higher the priority. In effect, the program acts like a traffic cop, keeping the data [traffic](#) moving smoothly in both directions.

The research team tested the program on a real WiFi system in their lab, which can handle up to 45 users. They found that the more users on the system, the more the new program improved data throughput performance. Improvements ranged from 400 percent with approximately 25 users to 700 percent when there were around 45 users.

This translates to the WiFi system being able to respond to user requests an average of four times faster than a WiFi network that does not use WiFox.

"One of the nice things about this mechanism is that it can be packaged as a software update that can be incorporated into existing WiFi networks," says Arpit Gupta, a Ph.D. student in computer science at NC State and lead author of a paper describing the work. "WiFox can be incorporated without overhauling a system."

More information: The paper, "WiFox: Scaling WiFi Performance for Large Audience Environments," will be presented at the ACM CoNEXT 2012 conference being held in Nice, France, Dec. 10-13.

Provided by North Carolina State University

APA citation: Researchers find way to boost WiFi performance 400-700 percent (2012, November 14)
retrieved 14 October 2019 from <https://phys.org/news/2012-11-boost-wifi-percent.html>

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