

Mobile Hotspot

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Abstract

The poster presents the research and development results leading to a mobile hotspot. Performance results of a working prototype are also shown.

A Mobile Hotspot is a wireless router/gateway connecting two wireless interfaces and routing packets between them. This connection between a lower tier interface, usually a Wireless LAN, such as Wifi 802.11, and an upper tier, such as a 3G Cellular Network, allows the router to become mobile while still providing connectivity to devices nearby via the lower tier.

As the Internet is rapidly becoming more of a part of people's daily lives, there is a growing demand for connectivity, even while not at home or at the office. People want to be connected everywhere possible. The Mobile Hotspot is useful in places such as buses, trains, and other sorts of public transportation. Places that want to offer high speed access, but have no existing wired solution can also take advantage of this.

To date, a prototype Mobile Hotspot has been implemented on a laptop with a IEEE 802.11 interface as the lower tier, and CDMA 1xEVDO as the upper tier. The prototype distinguishes itself from commercially available mobile hotspots, that recently became available, by its flexibility of supporting different media at the upper and lower tiers (such as 1xEVDO, EDGE, WiMAX and 802.11a,b,g,n, Bluetooth) and by the security aspects of the gateway. It supports WEP, WPA, and WPA2, as well as IEEE 802.1x

PEAP which encrypts all communication and requires each user to have a unique username and password combination to log-on.

The prototype also supports two different deployment scenarios, namely high-tier service by a third party provider with local access control and billing, and by the upper-tier service provider (3G Cellular) with through-registration access control and billing in the upper tier core network.

Performance evaluations of the Hotspot prototype with various upper and lower tiers (1xEVDO, 802.11b, Bluetooth) are presented. In addition, the operation of two hotspots in a stacked configuration (1xEVDO-802.11b,Bluetooth) is outlined.