

Extending Citywide Wi-Fi Indoors with Pepwave Surf

Flexibility and Convenience with Integrated Home Wi-Fi Access Point

Overview

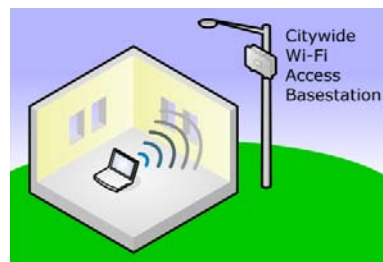
As the walls and roofs of buildings greatly diminish the strength of Citywide Wi-Fi signals, Citywide Wi-Fi at present typically covers only outdoor areas. Available on the market are Wi-Fi Modem devices that extend Citywide Wi-Fi to indoor areas through an Ethernet cable. However, though technically connected with Citywide Wi-Fi, the user experience with these devices is not completely wireless. This application note presents how Pepwave Surf, with Integrated Home Wi-Fi Access Point, deliver a completely wireless user experience while extending Citywide Wi-Fi to indoor areas.

Benefits and Considerations

Citywide Wi-Fi Signal Penetration

In order to extend Citywide Wi-Fi coverage indoors, practical challenges around signal penetration must be overcome:

- After passing through a building's walls, roof, and/or other physical obstacles, Citywide Wi-Fi signals become too weak to be received by typical consumer Wi-Fi equipment.
- The Wi-Fi signals from typical consumer wireless equipment are designed to connect with Access Points in close proximity. As a result, they do not possess sufficient transmission power to penetrate buildings and communicate with outdoor Citywide Wi-Fi Access Base-stations.



Typical consumer wireless equipment lack sufficient power.

Pepwave Surf

The user-friendly and standards-based Pepwave Surf Indoor Series of Wi-Fi modems extend Citywide Wi-Fi to indoor areas. To help find the best location with the strongest signals, built-in signal bars that display the signal strength in real-time come standard with all Pepwave Surf models.

Integrated Home Wi-Fi Access Point, on Surf AP E200, 200, and 400, relays the Wi-Fi signal to an indoor local area network via 802.11b/g Wi-Fi in addition to standard Ethernet.



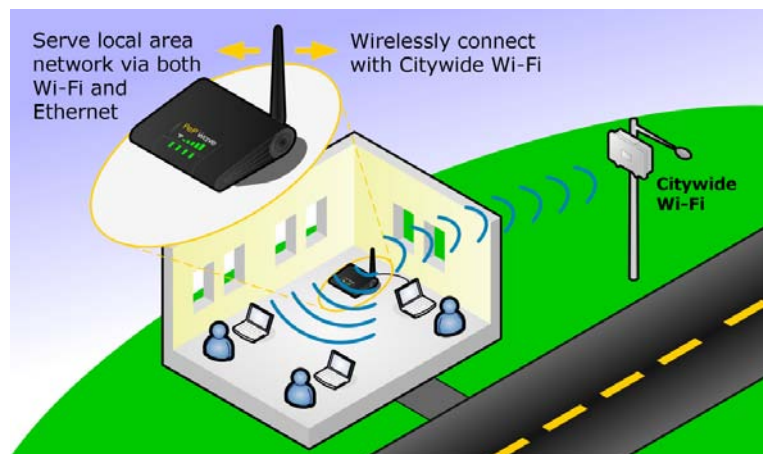
Current Market Offerings

A variety of Wi-Fi Modem devices are available on the market, and offer partial solutions to the practical issues surrounding Citywide Wi-Fi signal penetration:

- At one end through a radio unit, the Wi-Fi Modem wirelessly establishes a network connection with Citywide Wi-Fi.
- Through standard Ethernet at the other end, the Wi-Fi Modem connects the indoor area with Citywide Wi-Fi. Some Wi-Fi Modems are capable of serving an indoor local area network consisting of multiple devices, while others can connect with only one device at a time.

A significant limitation with these devices is that connecting via an Ethernet cable makes the indoor user experience somewhat restricted, when compared to the truly wireless Citywide Wi-Fi experience outdoors.

The Solution: Pepwave Surf



A true wireless experience: Integrated Home Wi-Fi Access Point

Pepwave Surf flexibly extends Citywide Wi-Fi to indoor areas:

The Integrated Home Wi-Fi Access Point capability of Pepwave Surf can wirelessly serve an indoor local area Wi-Fi network consisting of multiple 802.11b/g devices, and delivers a true wireless user experience.

A 200mW (on Pepwave Surf mini) or 400mW (on Pepwave Surf AP 400) radio unit, and a 5dBi antenna ensure sufficient transmit power and receive sensitivity for enhanced Citywide Wi-Fi signal penetration.

Integrated Home Wi-Fi Access Point

The basic idea behind Integrated Home Wi-Fi Access Point is that the radio unit on Pepwave Surf is utilized to wirelessly connect with Citywide Wi-Fi, and at the same time serve an indoor local area Wi-Fi network.

With the Integrated Home Wi-Fi Access Point functionality, Pepwave Surf can be set up to serve a wireless indoor local area network. Installation is quick and simple, even in areas with minimal or no existing network infrastructure.

In addition to the convenience of wireless connections, Pepwave Surf also provides the flexibility to connect with local devices through Ethernet, thus enabling devices without Wi-Fi capabilities to connect as well.

Radio Unit and Antenna

The Pepwave Surf is also specially equipped with a radio unit and an antenna whose purpose is to enhance signal penetration through physical obstacles such as the roof and walls of a building. The 5dBi antenna is capable of receiving, from indoor locations, weakened Citywide Wi-Fi signals. The 200mW (Pepwave Surf mini) or 400mW (Pepwave Surf AP 400) radio unit enables signals to penetrate most buildings and communicate with Citywide Wi-Fi.

The result is that Wi-Fi connections are consistent and reliable, both between indoor devices and Pepwave Surf, as well as between Surf and Citywide Wi-Fi.



Powerful signals from Pepwave Surf penetrate the walls and roofs of buildings.

Other Considerations and Benefits

As well as catering to end-customers, Pepwave Surf also brings practical convenience and efficiency benefits to network operators. Pepwave Surf, as with all Pepwave Surf models, can be remotely managed through InControl, an integrated suite of administration tools currently utilized by network providers to manage the inventory and deployment of Pepwave devices, firmware, configuration, and security profiles.

For further details on the applications and benefits of Pepwave Surf, as well as other Pepwave products, visit www.pepwave.com.