

# Wireless network

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**Wireless network** refers to any type of computer network that is wireless, and is commonly associated with a telecommunications network whose interconnections between nodes is implemented without the use of wires.<sup>[1]</sup> Wireless telecommunications networks are generally implemented with some type of remote information transmission system that uses electromagnetic waves, such as radio waves, for the carrier and this implementation usually takes place at the physical level or "layer" of the network.<sup>[2]</sup>

## Contents

- 1 Types
  - 1.1 Wireless PAN
  - 1.2 Wireless LAN
  - 1.3 Wireless MAN
  - 1.4 Mobile devices networks
- 2 Uses
- 3 Environmental concerns and health hazard
- 4 See also
- 5 References
- 6 External links

## Types

### Wireless PAN

Wireless Personal Area Network (WPAN) is a type of wireless network that interconnects devices within a relatively small area, generally within reach of a person. For example, Bluetooth provides a WPAN for interconnecting a headset to a laptop. ZigBee also supports WPAN applications.<sup>[3]</sup>

### Wireless LAN

Wireless Local Area Network (WLAN) is similar to other wireless devices and uses radio instead of wires to transmit data back and forth between computers on the same network. Wireless LANs are standardized under the IEEE 802.11 series.

- Wi-Fi: Wi-Fi is a commonly used wireless network in computer systems to enable connection to the internet or other machines that have Wi-Fi functionalities. Wi-Fi networks broadcast radio waves that can be picked up by Wi-Fi receivers attached to different computers or mobile phones.



- **Fixed Wireless Data:** Fixed wireless data is a type of wireless data network that can be used to connect two or more buildings together to extend or share the network bandwidth without physically wiring the buildings together.

## Wireless MAN

Wireless Metropolitan area networks are a type of wireless network that connects several Wireless LANs.

- WiMAX is the term used to refer to wireless MANs and is covered in IEEE 802.16d/802.16e.

## Mobile devices networks

- **Global System for Mobile Communications (GSM):** The GSM network is divided into three major systems which are: the switching system, the base station system, and the operation and support system (Global System for Mobile Communication (GSM)). The cell phone connects to the base system station which then connects to the operation and support station; it then connects to the switching station where the call is transferred to where it needs to go (Global System for Mobile Communication (GSM)). This is used for cellular phones, is the most common standard and is used for a majority of cellular providers.<sup>[4]</sup>
- **Personal Communications Service (PCS):** PCS is a radio band that can be used by mobile phones in North America. Sprint happened to be the first service to set up a PCS.
- **D-AMPS:** D-AMPS, which stands for Digital Advanced Mobile Phone Service, is an upgraded version of AMPS but it is being phased out due to advancement in technology. The newer GSM networks are replacing the older system.

## Uses

Wireless networks have had a significant impact on the world as far back as World War II. Through the use of wireless networks, information could be sent overseas or behind enemy lines easily, efficiently and more reliably. Since then, wireless networks have continued to develop and their uses have grown significantly. Cellular phones are part of huge wireless network systems. People use these phones daily to communicate with one another. Sending information overseas is possible through wireless network systems using satellites and other signals to communicate across the world. Emergency services such as the police department utilize wireless networks to communicate important information quickly. People and businesses use wireless networks to send and share data quickly whether it be in a small office building or across the world.<sup>[5]</sup>

Another important use for wireless networks is as an inexpensive and rapid way to be connected to the Internet in countries and regions where the telecom infrastructure is poor or there is a lack of resources, as in most developing countries.

Windows. Figure 1, left, shows that not all networks are encrypted (locked unless you have the code, or key), which means anyone in range can access them. Figures 2 and 3, middle and right, however, show that many networks *are* encrypted.



An embedded RouterBoard 112 with U.FL-RSMA pigtail and R52 mini PCI Wi-Fi card widely used by wireless Internet service providers (WISPs) in the Czech Republic.

Compatibility issues also arise when dealing with wireless networks. Different components not made by the same company may not work together, or might require extra work to fix these issues. Wireless networks are typically slower than those that are directly connected through an Ethernet cable.

A wireless network is more vulnerable, because anyone can try to break into a network broadcasting a signal. Many networks offer WEP - Wired Equivalent Privacy - security systems which have been found to be vulnerable to intrusion. Though WEP does block some intruders, the security problems have caused some businesses to stick with wired networks until security can be improved. Another type of security for wireless networks is WPA - Wi-Fi Protected Access. WPA provides more security to wireless networks than a WEP security set up. The use of firewalls will help with security breaches which can help to fix security problems in some wireless networks that are more vulnerable.

## Environmental concerns and health hazard

In recent times, there have been increased concerns and research linking usage of wireless communications with poor concentration, memory loss, nausea, premature senility and even cancer.<sup>[6]</sup> Questions of safety have been raised, citing that long term exposure to electromagnetic radiation of the sort emitted by wireless networks may someday prove to be dangerous.<sup>[7]</sup>

## See also

- Exposed terminal problem
- Physical layer
- Public Safety Network
- Wireless community network
- Warchalking
- Wireless LAN
- Wireless LAN client comparison

## References

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## External links

- Wireless ([http://www.dmoz.org/Computers/Data\\_Communications/Wireless/](http://www.dmoz.org/Computers/Data_Communications/Wireless/)) at the Open Directory Project

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