

CHECKING THE RELIABILITY OF WIRELESS TOUCH NETWORKS

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Annotation: The article provides detailed information about wireless sensor networks and their applications. It is said that how important they are in these areas is important.

Keywords: Network, wireless sensor, computer, topology, device, internet, environment.

In recent years, the effective design of wireless sensor networks has become a leading area of research. A sensor is a device that detects and responds to signals coming from a physical or environmental condition. The response signal of the sensor is usually an electrical signal, which in turn is sent to the controller for further processing. A wireless sensor network is a network of many sensors and actuators connected to each other by a radio channel, and such a network is self-organizing. Such networks can cover an area of several meters to several kilometers, where messages are sent from one node to another until they reach the destination. In other words, a wireless touch network can be defined as a network of devices that can transmit data from a monitored area using a wireless connection.

In other words A wireless sensor network is a wireless network that consists of base stations and many nodes. These networks are used to monitor physical or environmental conditions using sound, pressure, and temperature, and together transmit intra-network data to the primary address via the network:

To organize automated monitoring of the territory to obtain operational information about the presence of the aggressor, his actions and unauthorized actions in the area adjacent to the most important.

It is very important at the moment (government, military, nuclear) facilities, in the state border or in the zone of responsibility Much attention is paid to the organization of automated monitoring of the regions To rationally solve these problems, it is necessary to use a new generation of technical tools and algorithms that are radically different from those currently used.. The creation of wireless sensor networks is the most promising direction in this field. This allows for full targeted monitoring of large areas. As for the security systems of the facilities, they need to identify and classify the intruders, determine their coordinates and predict the direction of its movement. A system with a distributed tracking network allows you to independently change the direction of data flows, for example, bypassing nodes that are failing or temporarily failing, and moving data to a controlled area and hub reliable transmission. There is also the prospect of a sensor communication network, in which the receiver of each sensor is actually an object detection sensor.

Wireless communication is primarily the transmission of data without the use of a cable system. The advantage of wireless communication is convenience. If you don't need to use physical wiring in the office, the installation process can be quick and inexpensive. Wireless connectivity also makes it easier to manage hard-to-reach facilities such as storage and factory buildings. The cost of setting up a wireless connection is cheap because it eliminates the problems associated with wired communication and the costs associated with the process.

Any wireless network consists of at least two main components:

a wireless access point,

a wireless network client (a special mode in which wireless network clients communicate with each other directly without an access point).

The standards provide that wireless networks 802.11 a / b / g provide multiple user authentication mechanisms and several security mechanisms, including the introduction of encryption during data transmission.

You can use laptops, laptops, smart phones equipped with special devices to the Wi-Fi network. Today, almost all modern laptops and laptops are Wi-Fi compatible. Advantages of Wi-Fi:

a) simple and convenient way to connect to the service;

b) there is no need to connect additional devices to connect to the Internet, modems, telephone lines, dedicated channels;

d) easy way to set up the computer;

e) there is no dependence on the time of service use, payment is only for used for internet traffic;

f) data transfer / reception speed - up to 54 M bit / s;

data security;

g) an expanding network of Wi-Fi hotspots.

It is the most common technology of wireless data today. Increased maximum distance compared to IQ connection There is no need for direct visibility between connected devices between two connected devices to establish a stable Wi-Fi connection, multiple data transfer speeds.

There are two types of Wi-Fi networks: Ad-hoc and Infrastructure. Ad - hoc (Point - to - Point). Connect the two devices directly using a Wi-Fi adapter installed or additionally installed on both devices. Such the connection is called a point. These devices can be electronic devices such as desktop, laptop, PDA, smart phone. A Wi-Fi network like Ad-hoc is similar to a simple wired local area network with a line topology. a peer-to-peer network of the first computer to the second, from the second to the third, and so on. Infrastructure. Temporary network connection to the Internet or other private network. Access point (Wireless access point) used to establish this connection. It is equipped with a single LAN connector for connecting a wired Internet connection cable and as a rule consists of the same connectors for connecting computers to create a wired local area network. The access point, network card, and Wi - Fi card can be changed by the host computer (server). The first serves to connect the server to the Internet, the second connects to the computer via a wireless LAN. The same is true in both cases in terms of functionality. Wireless communication systems must provide the required level of secure data transmission. Purchased equipment should pay special attention to this, because not all modems, routers or transmitters are capable of good signal encryption and data leakage. At the same time, the most common protocols can protect data encryption, reliable data or "broadcast" WEP, WPA2, WPA and others. An alternative method of protection is often used to access access test certificates, access permissions, and passwords.

To ensure high reliability and protection of data transmitted over a sensor network, it is necessary to develop its own radio protocols that are resistant to changes in the characteristics of the communication channel, blocking the radio receiver, data capture and interception. In this case, it is recommended to use spectrum distribution technologies - DSSS (Direct-Sequence Spread Spectrum - Direct Serial Spread Spectrum) and FHSS (Frequency-Hopping Spread Spectrum - Frequency Acceleration Spectrum).

The article describes touch networks in terms of communication and service. In short, wired or wireless touch networks have distinctive features that distinguish them. Sensor networks perform not only data transmission, but also their collection, processing, data, network and resource management, automation (data reading and execution operations), as well as other functions and services.

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