ОСОБЛИВОСТІ СУЧАСНОГО РОЗВИТКУ Wi-Fi МЕРЕЖ

Пантєлєєв В.О, Ажраб Басіл Саліба, Нуіна Маруане
Науковий керівник – проф. Журавка А.В.
Харківський національний університет радіоелектроніки
(61166, Харків, пр. Науки, 14, каф. Інфокомунікаційної інженерії,
тел. (057) 702-13-20)

The object of the study is the convergent 4G communication network and the modern technology of wireless access to the Internet - Wi-Fi.

The subject of the research is the methods of security of elements and mechanisms of information protection in converged 4G and Wi-Fi networks.

The purpose of the work is to study the technologies and problems of the protection of modern wireless access technology and the convergent network of general use.

Research methods - the analysis of the prospects for the development of Wi-Fi and 4G and features of modern development has been carried out.

In the next few years we can expect further development of the Wi-Fi solutions line, with all major marketing directions. Mastering the 60 GHz band. The Wireless Gigabit Alliance (WiGig Alliance) is actively working on the development of 60 GHz Wi-Fi technology with peak transmission speeds of up to 7 Gb/s for picocell coverage. Such an increase in Wi-Fi performance is a major step forward, even compared to high-speed IEEE 802.1 in solutions up to 300 Mbps, which involve the use of two or three user streams and the integration of two 20 MHz radio channels. The limiting factor for this solution is the short range, as well as the need to simultaneously support basic Wi-Fi frequency bands - 2.4 GHz and 5 GHz. But the prospects for developing "cloud" services and services based on high-speed 60 GHz Wi-Fi seem quite realistic.

The development of Wi-Fi Direct solutions that allow for standard Wi-Fi speeds to provide direct connections between a variety of client devices (communicators, smartphones, printers, digital still cameras / video cameras, etc.), bypassing traditional hotspots and wireless routers. Following the example of Bluetooth technology, the Wi-Fi Alliance, as a developer of Wi-Fi Direct solutions, supports a number of specifications, in particular, for information security - Wi-Fi Protected Access 2 (WPA2). And also support for improved VoIP solutions with a new suite of protocols to further develop competitive alternative voice services.

An important advantage of cellular Wi-Fi networks is also the self-organization of the network modules and the ability to recover when some nodes fail. The introduction of the IEEE 802.11s specification will allow you to create simpler and less expensive Wi-Fi networks with alternative routes and increased reliability. Further improve the Wi-Fi radio interface. IEEE 802.11n

specification enhancements to radio parameters are complemented by enhanced chipset reliability, parity encoding technology, and improved access to access points by optimizing antenna beamforming.

The development of the IEEE 802.11v specification aims to support mechanisms for managing Wi-Fi radio network settings in terms of reducing power consumption. In turn, the introduction of 802.11k to improve radio resource management will allow Wi-Fi networks to identify weak signals or areas of uncertain reception and, accordingly, optimize wireless service.

Finally, let us identify the most important contemporary problems. At the same time, along with the growing popularity of Wi-Fi hotspots, a number of problems remain related to the lack of convenience and ease of use of this wireless technology [1]. Authorization procedure problem. During the hot spot access procedure, a Wi-Fi user through the browser enters authorization information, which in some cases may be blocked. For example, starting a Wi-Fi subscriber at a terminal of a certain program (such as e-mail). At the same time, the status of the established connection will be indicated on the Wi-Fi subscriber terminal. A time-limited access issue may occur in time-bound services, such as when using a Wi-Fi temporary service card in public places, such as in a hotel. After the set time of service, the connection to the Wi-Fi hotspot will be lost, although the user interface will indicate that the terminal is still connected. There was a problem choosing Wi-Fi hotspot. In many specific cases, the maintenance of the user terminal is in the area of simultaneous radio coverage of several Wi-Fi networks. The subscriber device recognizes the available Wi-Fi service identifier (SSID) and establishes a connection to this network. But if SSID is not recognized, the user will have to complete the entire procedure of Internet access, manually select SSID, enter a new URL in the browser and confirm the authorization information. In addition to being annoying to the user, this in itself is a rather cumbersome procedure that depletes the terminal device's battery and can lead to accidental errors. In some cases, the time spent may be critical, for example, when transmitting voice calls. The problem of supporting hotspots for roaming partners. In a situation where a Wi-Fi subscriber is authorized in a hot spot managed by a roaming partner. To overcome these problems, the Wi-Fi Alliance has proposed the specification of Wireless Internet Service Provider roaming (WISPr) 1.0. Equally important is the modern problem of maintaining the necessary level of information security in Wi-Fi hotspots.

References

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