

What are Wibree and Bluetooth? Similarities and differences between Wibree and Bluetooth

Wibree is a new short-range wireless technology, developed to enable the connection of short-range devices. Bluetooth can be used to transmit audio and multimedia files. To better understand what Wibree and Bluetooth are? The similarities and differences between Wibree and Bluetooth, readers can refer to in the article below.

When transmitting data, you often think of downloading data from the internet or using Bluetooth for short-range data exchange. But have you ever heard of **Wibree** ? This is a technology quite similar to **Bluetooth** , with many different advantages and disadvantages compared to Bluetooth. To clearly know both of these technologies and differentiate them, please read the article What are Wibree and Bluetooth? The similarities and differences between Wibree and Bluetooth are below.



What is Wibree?

Wibree is a wireless technology (potentially becoming an open standard for wireless connectivity) designed to consume extremely low power over a short range of **10m/30ft** based on the microchip transceiver in each device.

Wibree, also known as Bluetooth Ultra Low Power technology , consumes only a fraction of the power of other radio technologies, is low cost, and easily integrates with Bluetooth solutions.

Wibree Origin

In 2001, Nokia researchers identified various scenarios that current wireless technology could not address. To solve this problem, **Nokia Research Center** has begun developing a wireless technology standard based on the

Bluetooth standard, providing lower power usage and cost while minimizing the difference between Bluetooth and other technologies. new.

The results were published in 2004, and at that time Wibree was called **Bluetooth Low End Extension** . After further development with partners, in October 2006, Wibree was officially announced and used the current name Wibree.

After negotiations with Bluetooth SIG members , in June 2007 an agreement was accepted that included future use of Wibree.



Wibree technical specifications

Wibree is similar to many popular Bluetooth standards today. Both standards use the **2.45 GHz** frequency band for data transmission and a **1 Mbps** transfer rate (although the newer Bluetooth 2.0 standard has incorporated a 3.0 Mbps transfer rate) and a range of **10m** . These two complementary technologies differ in size, price and power consumption.

Wibree uses just a fraction of the power that today's Bluetooth chips consume, resulting in longer battery life and more compact devices. While Bluetooth can be used to transmit audio and multimedia files, Wibree is designed to extend this network by allowing applications to transmit only small amounts of data and in size, Costs are priorities.

Many applications are ineffective using current Bluetooth technology, such as watches, health sensors, and a variety of other applications, but can be developed using Wibree technology. .

There are two types of Wibree - one based on a standalone Wibree chip and one based on a dual-mode Wibree-Bluetooth chip - used for different purposes and installed on different devices.

The standalone Wibree chip is installed in small, low-cost devices, such as wireless mice and keyboards, sensors, and toys.

The dual-mode Wibree-Bluetooth chip is integrated into mobile devices, allowing users to experience both standards - high-speed Bluetooth 2.0 and Wibree's low power consumption and expandability for communication. with a new generation of small wireless devices.

Wibree is proposed to replace **the Radio and Media Access Controller (MAC)** for the **802.15.4** standard - the foundation of ZigBee and other wireless networks.

Wibree includes a physical layer, lightweight protocol and application-specific profile, designed to connect mobile phones and personal computers to a variety of coin-cell battery-powered devices. Nordic Semiconductor was one of the first participants to develop Wibree and is a member of the Wibree specification group. Other members include CSR, Broadcom, Epson, Suunto, and Taiyo Yuden.

These specifications describe short-range RF communications technology with ultra-low power consumption, lightweight protocol, and integration with Bluetooth. Wibree operates in the 2.4 GHz ISM (industrial, scientific & medical) band. It has a physical layer with a transmission speed of 1Mbit/s over a range of 5 to 10m. This specification has two features: **dual-mode** and **stand-alone**. In dual-mode mode, the Wibree function is integrated into the Bluetooth circuit.

Wibree is designed to work alongside and complement Bluetooth. It operates in the 2.4 GHz ISM band with a layer transmission rate of 1 Mbit/s. Key applications such as wristwatches, wireless keyboards, toys and low-power sports sensors - were key to the requirement for Wibree.

Wibree is not designed to replace Bluetooth, but rather to complement the technology in supported devices. Wibree-enabled devices are smaller and more energy efficient than Bluetooth devices. This is especially important for devices such as wristwatches, where Bluetooth models can be too large and heavy and the user will feel uncomfortable.

Types of Wibree

There are two types of Wibree: one based on a standalone chip and another based on a dual-mode Wibree-Bluetooth chip. Each type of Wibree is used for different purposes and is installed and integrated on different devices.

Wibree Stand-alone chips are integrated into small, low-cost devices such as wireless mice and keyboards, sensors, and toys. The Wibree Stand-alone chip is designed for use with applications requiring ultra-low power consumption, small size, low cost and low data transmission.

It is the ideal solution for small devices that use only short data messages and must have long battery life. Some devices that use the Wibree Stand-alone chip include: watches, sports equipment, health care equipment and wireless keyboards.

The Wibree-Bluetooth dual-mode chip is integrated into devices such as mobile phones, allowing users to experience both standards - high-speed Bluetooth 2.0 and Wibree's low power consumption and expandability. to communicate with a new generation of small wireless devices.

The Wibree-Bluetooth dual-mode chip is designed for use in Bluetooth devices. In this case, the Wibree functionality can be integrated with Bluetooth, using the existing main Bluetooth and Bluetooth RF components, and the cost will increase slightly.

Distinguish between Wibree and Bluetooth



Similarities and differences between Wibree and Bluetooth

Basically, Wibree and Bluetooth have many differences:

The biggest difference between Wibree and Bluetooth technology is that Wibree consumes only **1/10** the power consumption of Bluetooth.

- **Data transmission speed** : new Bluetooth specifications, notably Bluetooth 2.0, are designed to emphasize throughput, or data transmission speed. Under ideal conditions, Bluetooth 2.0 devices can exceed speeds of 350 kb/s. This is about 3 times the maximum speed of Wibree devices - data transfer speeds are no faster than 128kb/s.
- **Use Frequency Hopping** : Bluetooth uses frequency hopping technique to avoid interference from other devices operating on the same frequency. Wibree does not use frequency hopping techniques.
- **Packet Length** : Bluetooth uses a fixed packet length. This increases energy usage because it transmits data even when it is not needed. Wibree has variable packet length and only transmits data when needed.
- **Battery usage** : Bluetooth consumes a lot of device battery because it is needed to maintain operation. Wibree consumes and uses extremely low battery. In contrast to Bluetooth, Wibree will go into sleep mode when not transmitting data. When in sleep mode, the radio turns off and saves energy. The Wibree device is only 'awakened' when transmitting data.
- **Traffic characteristics** : The main difference between Wibree and Bluetooth is traffic characteristics. Bluetooth is quite useful in the case of transferring files, using hand free., the amount of data to be transferred is significant.
- **Type of data transferred** : Wibree is used in case of transmitting short data, sensor data, etc.

Wibree application

Imagine a wireless keyboard and mouse that has a long battery life and stays connected to your computer for more than a year. Imagine a watch equipped with a wireless connection that communicates with both a tiny set of sports sensors 'embedded' in the user's shoe and on the mobile phone.

Or imagine a series of personal devices that connect to cell phones or personal computers, but don't have to be charged every week. In fact, Wibree will help you do all this - and more.

- Wibree-equipped **mobile phones** enable a range of new accessories such as call/input controls, sports and health sensors, and security and payment terminals with Battery life up to 3 years (depending on usage pattern).

Wibree will bring wireless connectivity to high-performance computer accessories such as mice, keyboards and multimedia remote controls with up to 1 year of battery life. In addition, Wibree will add wireless connectivity to watches and sports sensors (such as heart rate monitors) without affecting the device's battery life.

- **Mobile phone accessories** : mobile phones equipped with Wibree technology will enable the use of a range of new accessories such as call controls/input devices, sports and health sensors, secured and paid. These devices will 'benefit' from Wibree's ultra-low power consumption feature, which means the battery life of compact coin cell battery-powered devices can be up to 3 years (depending on depends on the actual application).

- **Computer accessories** : Wibree is designed to provide wireless connectivity to high-performance computer accessories such as mice, keyboards and multimedia remote controls. Wibree's ultra-low power consumption extends device battery life by more than 1 year. Nordic will build on its position as a leading provider of ultra-low-power 2.4 GHz technology to encourage the adoption of Wibree into computer accessories such as next-generation wireless mice and keyboards. .

- **Watch** : Imagine your watch is equipped with a wireless connection that communicates with both a tiny set of sports sensors 'embedded' in your shoes and on your mobile phone.

Advantages of Wibree over Bluetooth

Wibree is the first wireless technology to address the below needs in a single solution.

- Extremely low energy consumption.
- Extremely low cost and small size for accessories and human interface devices (HID).
- Minimal cost and additional size for mobile phones and personal computers.
- Global interaction, intuitive and secure.

Limitations of Wibree compared to Bluetooth

Data transmission is very slow, only 1 Mbit/s. Additionally, Wibree cannot be used in applications that require high bandwidth.

Wibree also significantly extends battery life on some wireless devices such as keyboards, mice and remote controls. Maximum power efficiency is 10 times that of Bluetooth.

Conclude :

Wibree and Bluetooth both operate on the 2.4GHz band and within a range of about 10m. The biggest difference between Wibree and Bluetooth is the continuity of data transmission. While Bluetooth is used for continuous data transfers or voice connections, Wibree is ideal for occasional data transfers - where the connected device needs to consume less power.

Bluetooth and Wifi are both wireless networking standards that provide connectivity over radio waves. The main difference here is that Bluetooth uses a cable replacement, while Wifi is used mainly to provide wireless access, high speed Internet access or local area networks.

Wibree wireless technology complements other local connectivity technologies, consuming only a fraction of the power of other wireless technologies, allowing small data transfers, low costs, and easy integration with other wireless technologies. Bluetooth solution.

Wibree is the first open technology to provide connectivity between mobile devices or personal computers and small battery-powered devices, such as watches, wireless keyboards, toys, and sensors. sport variation.

Bluetooth wireless technology is a short-range communication technology intended to replace cables connecting mobile devices and provide a high level of fixed security. The main features of Bluetooth technology are robustness, low energy, and low cost. The Bluetooth specification defines a unified structure for a wide range of devices to connect and communicate with each other.

Most of today's laptop models support BlueTooth technology to help users connect and share data between phones and computers effectively. We have provided detailed instructions on how to connect a computer to a phone via Bluetooth. carefully, if you are interested, you can refer to how to connect your computer to your phone via bluetooth here

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