

Difference Between Bit Rate and Baud Rate

The terms bit rate and baud rate are both used to describe how quickly data is transmitted. The difference between bit rate and baud rate is that bit rate is used to determine the number of bits conveyed per unit of time. However, the baud rate is used to determine the number of signal units transmitted per unit of time.

Bit Rate VS Baud Rate	
Bit Rate	Baud Rate
The quantity of bits transferred per second is known as bit rate.	The Baud Rate is the number of signal units per second.
The bit rate is obtained by dividing the baud rate by the number of bits per baud.	The Baud Rate is determined by dividing the Bit Rate by the number of bits per baud.
Bit rate cannot determine the bandwidth.	Baud rate can determine the bandwidth required for signal transmission.
Computer efficiency is the main concern.	The main concern of baud rate is data transfer through the channel.
The bandwidth cannot be determined by bit rate.	It can figure out how much bandwidth is required to transmit the signal.
Bit rate= Baud rate x counts of rates per signal unit	Baud rate= Bit rate/ number of bits per signal unit

What is Bit Rate?

The quantity of bit intervals per second is known as the bit rate. The time required to transfer one bit is known as a bit interval. The bit rate is simply the number of bits transferred in a second, typically given in bits per second (bps). A few examples of bit rate are Gigabits per second (Gbps), kilobits per second (Kbps), and so on.

- Sometimes the non-standard term "bps" is used in place of the traditional sign "bit/s". As a result, 1 Mbps denotes a million bits per second.
- In most computer and digital communication environments, one byte per second (1 B/s) corresponds to 8 bits per second.

What is Baud Rate?

The number of times a signal can change on a transmission line in a second is known as the baud rate. Typically, two signal states are used on the transmission line, setting the baud rate to the maximum number of bits per second that can be sent.

- It is the measure of symbol rate or modulation rate in pulses per second or symbols per second.
- It is the number of distinct symbol changes (signalling events) made to the transmission medium per second in a digitally modulated signal or a "bd rate line code."
- The gross bit rate, which is expressed in bits per second, is referred to as "baud."
- Baud and bit per second (bit/s) are equivalent if the system only uses two symbols, typically 0 and 1.

Key Difference Between Bit Rate and Baud Rate

The key difference between bit rate and baud rate is as follows.

- The bit rate is known as the number of bits (0s and 1s) transferred per second. On the other hand, the number of times a signal made up of bits travels is known as the baud rate.
- Baud rate can determine the bandwidth, while it is impossible to determine the channel's bandwidth or the amount needed to convey a signal using bit rate.
- The following equation can be used to represent bit rate:

$$\text{Bit rate} = \text{baud rate} \times \text{the number of bits per signal unit},$$

- On the other hand, the following equation represents the baud rate:

$$\text{Baud rate} = \text{bit rate} / \text{the number of bits per signal unit}$$