

# Learn about Decibel (dB) in computer networks

Decibel (dB) is a standard measurement unit, used to measure the strength of wired and wireless network signals.

Decibel (dB) is a standard measurement unit, used to measure the intensity of Wi-Fi wireless radio signals. The decibel is also used as a measurement unit for audio equipment and some other electronic radio equipment, including mobile phones.

## What is Decibel (in computer network)?

Specifically a decibel is the ratio of two values that measure signal strength, such as voltage, current or power. This ratio is expressed in logarithmic form. Mathematically, P1 and P2 are power measurements (signal strength), the decibel is calculated as follows:

$$dB = 10 \log_{10} (P1 / P2)$$

Decibel is used in network cabling systems to measure signal stability. In this case, P1 is the strength of the signal when it enters the cable system and P2 is the strength of the signal at some point after entering the cable system such as the repeaters, connectors and other components of cable system. The following table shows the signal strength ratio expressed in decibels for conversion purposes.

Signal Strength Ratio (P1:P2)	Decibels (dB)
1:1 (no signal loss)	0 dB
2:1 (50 percent signal loss)	-3 dB
4:1 (75 percent signal loss)	-6 dB
10:1 (90 percent signal loss)	-10 dB
100:1 (99 percent signal loss)	-20 dB
1000:1 (99.9 percent signal loss)	-30 dB

For example:

The twisted-pair core cable does not have a noise-resistant enclosure (UTP) with a 5-core version with a signal loss of 30 dB / 1000 feet. (30 dB / 304.80m)

Meaning that after moving 1000 feet along the UTP cable, the signal's electrical intensity is usually reduced by 99.9% and is only 0.1% of its original power.

For wireless networks, on Wi-Fi transceivers and radio transceivers, the parameters are specified in dBm, in which 'm' represents power milliwatts.



In general, Wi-Fi devices with higher dBm values mean they are capable of receiving or transmitting wireless signals over a larger distance. However, larger dBm values also suggest that Wi-Fi devices will consume more power, which adversely affects battery life on portable Wi-Fi transceiver systems.

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