**Data Communication Terminologies**

Data means information in digital format and communication means to exchange information between two or many users in anyways like speaking, texting, or any other modes of the medium. So, data communication is simply the exchange of data between two or many users through the transmission media like twisted pair cable, coaxial cable, optical fibers, radio wave, satellite microwave, etc. The user or device that sends the data is the source and the user that receives the data is a receiver. For data interchange to take place, the communicating devices must be a part of a system comprising of a combination of hardware and software. Its efficiency depends on four fundamental characteristics.

**CHARACTERISTICS:**

* **Delivery:** Data must be delivered to the correct destination and must be received by the intended receiver only.
* **Accuracy:**Data delivered must be accurate. Any alteration to the data during transmission renders it useless.
* **Timeliness:** Data must be delivered within the ideal time else it is useless. In case of audio and video, the data must be delivered as they are produced, in the same ordered they are produced without significant delay. This kind of delivery is called real-time transmission.
* **Jitter:** It is the variation in the arrival time of audio or video packets or unevenly delay in the delivery of the audio or video packets.

**DATA REPRESENTATION:**Information is represented in various forms such as text, numbers, images, audio and video.

* **Text:** In data communication, it is represented as a bit pattern, a sequence of bits (0s and 1s). Different sets of bit patterns, called code, have been designed to represent text and symbols and the process of representing them is called coding. Characters can be represented in Unicode by using the American Standard Code for Information Interchange (ASCII).
* **Numbers:** They are also represented by bit patterns. To simplify mathematical operations the number is directly converted to a binary number.
* **Images:** They are also represented by bit patterns. In its simplest form, an image is composed of a matrix of pixels, where each pixel is a small dot. Resolution determines the size of the pixel.
* **Audio:** It refers to the recording or broadcasting of sound or music. Audio is by nature different from text, numbers, images. It is not discrete, but continuous.
* **Video:**It refers to the recording or broadcasting of a picture or a movie. It can either be produced as a continuous entity, or can be a combination of images, each a discrete entity, arranged to convey the idea of motion.

Here are some data communication terminologies listed below:

1. **Data Channel :**   
   Channel simply means a path to carry or flow. Data channel means the flow of data or to carry the data from one device to another. In other words, we can say the data channel is a computer path or medium used to transfer the data from sender to receiver.   
   There are some data channel protocols:

* SCTP (Stream Control Transmission Protocol) – Flow and Congestion Control
* DTLS (Datagram Transport Layer Security) – Provides Security
* UDP (User Datagram Protocol) / IP (Internet Protocol) – Connectionless communication protocol, NAT (Network address translational) traversal

**2. Baud :**   
It’s actually a common measurement unit of data transfer. Baud rate measures the rate at which the data is transferred from the sender to the receiver in the data channel. It can be expressed in terms of bps (bits per second). It simply determines the speed of data transfer.

**3. Bits Per Second (bps) :**   
Its symbol is “bit/s”. It can be present in two forms i.e. bps (bits per second) and Bps (Bytes per second). It’s also a measurement unit of speed at which the data is transferred. Some other forms are also present as shown in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Rate | Denoted By | Full Form |
| 1 | Rate of thousand bits per second | kbps | Kilobits per second |
| 2 | Rate of thousand bytes per second | Kbps | Kilobytes per second |
| 3 | Rate of million bits per second | mbps | Megabits per second |
| 4 | Rate of Million bytes per second | Mbps | Megabytes per second |

**4. Bandwidth :**   
It’s the range of frequencies over which a communication system works. It generally measures the amount of data that can be transferred in a given amount of time over a data channel. It’s the difference between the highest and the lowest frequencies of a data channel. The measurement unit of frequency is cycles per second i.e. hertz.

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Type of the Signal | Range of Frequency in Hertz | Bandwidth in Hertz |
| 1 | Voice signal | 300-3400 | 3, 100 |
| 2 | TV signal | 0-5 MHz | 5 MHz |
| 3 | Digital Data | 300-3400 | 3, 100 |
| 4 | Music Signal | 20-15000 | 14, 980 |

**5. DTR (Data Transfer Rates) :**   
It determines the rate of speed at which the data is transferred from one point to another. Its measurement unit is bits per second (bps), Bytes per second (Bps), or baud. In computer, data transfer is mainly measured in Bytes per second. Data transfer between devices such as Hard disk and CD-ROM is usually measured in milliseconds.