

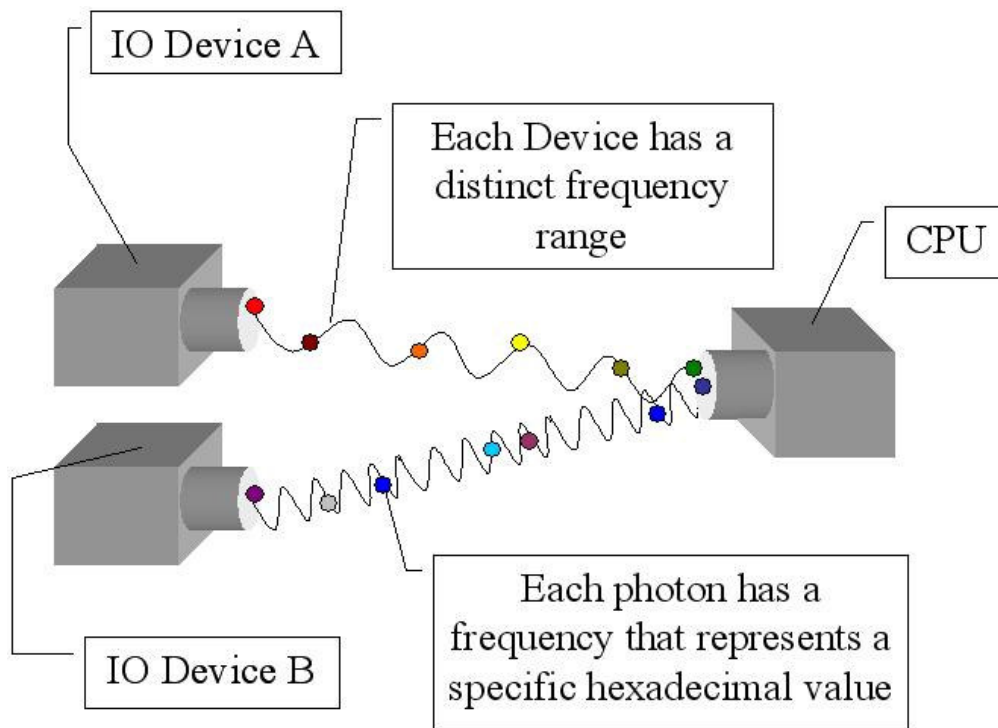
Photonic Computing

Currently, computers process information in binary units by identifying an electric charge, or the absence thereof, as being a “one” or a “zero.” This allows the computer to calculate at a rate of 2^x bpt (bits per unit time), with ‘x’ being the current limit across the system bus. However, the use of Photonic computing could easily increase the rate of computing power to 16^x bpt. For example, the current limit for most desktop computers is 32 bpt, so the total output is 2^{32} bpt, or 4,294,967,296 bpt. While that may seem rather fast, the same computer utilizing Photonic Computing Technology would output information at a rate of 16^{32} or 340,282,366,920,938,463,463,374,607,431,770,000,000 bpt. This is 79,228,162,514,264,337,593,543,950,336 times more powerful than most desktop computers.

To accomplish this, an IO device in a Photonic system must first be given a specific light wave frequency range in order to communicate with the CPU (similar to how the Interrupt Request settings work in most PCs). This frequency will allow the computer to know which IO device the incoming information is from. This frequency is further divided into 16 subsequent ranges, each representing a different hexadecimal digit. This allows the device to communicate directly in hexadecimal digits, without needing to translate to binary.

The device will then send the information to the CPU in the form of photons. For example, if the device were a keyboard sending the following hexadecimal value “78AE6C,” a total of 6 photons would be sent to the CPU, each at a different light frequency, but each one being within the limits of that device. This information will then travel at the speed of light through the connecting medium (typically optic fiber) until it reaches the processing chip.

The processor will then identify the incoming IO source by the photon’s frequency range, and will then interpret the value of the photon by the same method. The processor can then carry on processing the information in hexadecimal digits rather than binary. The diagram below summarizes this process.



Photonic Computing not only increases the speed of data transmission, but also dramatically increases the quantity of information being transmitted. The limits of computational power have yet again stretched far beyond anything previously imagined.