NEWTON'S TELECOM DICTIONARY

The Official Dictionary of Telecommunications & the Internet

15th Updated, Expanded and Much Improved Edition

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not hesitate make micropayments freely. While still rhetorical, micropayments were to apply to such services as custom newsfeeds, processing applets and data queries.

Microphone A transducer that changes the air pressure of sound waves into an electrical signal that can be recorded, amplified and/or transmitted to another location.

Microprocessor An electronic circuit, usually on a single chip, which performs arithmetic, logic and control operations, with the assistance of internal memory. The microprocessor is the fabled "computer on a chip," the "brains" behind all desktop personal computers. Typically, the microprocessor contains read only memory — ROM — (permanently stored instructions), read and write memory — RAM, and a control decoder for breaking down the instructions stored in ROM into detailed steps for action by the arithmetic logic unit — ALU — which actually carries out the numerical calculations. There's also a clock circuitry which connects the chip to an exterior quartz crystal whose vibrations coordinate the chip's operations, keeping everything in step. And finally, the input/output section directs communications with devices on the outside of the chip, such as the keyboard, the screen and the various disk drives.

The Fortune Magazine issue of May 6, 1991 contained a very good explanation of chips and microprocessors (usually used interchangeably). Here is the article, slightly condensed:

Chips today can store and retrieve data, perform a simple mathematical calculation, or compare two numbers or words in a few billionths of a second. And they can carry out tens of thousands of such tasks in the blink of an eye. Today's chips contain millions of transistors, capacitors, diodes, and other electronic components, all connected by metallic threads a fraction of the diameter of a human hair. A single chip the size of a fingernail can store dozens of pages of text or combine circuits that can perform scores of tasks simultaneously.

Most chips fall into one of two categories - memory chips and logic chips. Memory chips have the easier job: They merely store information that will be manipulated by the logic chips, the ones with the smarts. Today's biggest-selling memory chip (mid-1991) is the one-megabit dynamic random access memory, or DRAM. Each DRAM is a slice of silicon embedded with a lattice of 1,000 vertical and 1,000 horizontal aluminum wires that circumscribe one million data cells. The densest DRAM designed so far has 64 million cells.

Think of those wires as streets and those cells as blocks. Each block contains a transistor that can be turned on or off — to signify 1 or 0 — and that can be identified by it's unique "address" in the wire grid, much like a house in a suburban subdivision. Each digit, letter, or punctuation mark is represented by 1's or 0's stored in eight-cell strings. (See ASCII.) The word "chip" takes up 32 cells in a memory chip. Most PCs sold today have at least eight one-megabit DRAMs.

It's the job of the logic chips to turn those transistors in the DRAMs on or off, and to retrieve and manipulate that information once it's stored. The most important and complex logic chips are microprocessors like Intel's 80386DX, the brains of the more powerful IBM-compatible PCs sold today. If the structure of a memory chip is a suburban subdivision, the layout of a microprocessor is more like an entire metropolitan area, with distinct neighborhoods devoted to different activities. A typical microprocessor contains among other things:

- A timing system that synchronizes the flow of information to and from memory and throughout the rest of the chip.
- An address directory that keeps track of where data and program instructions are stored in the DRAMs.
- An arithmetic logic unit with all the circuits needed to crunch numbers.
- On-board instructions that control the sequence of microprocessor operations.

Other logic chips in a computer take their cues from the microprocessor millions of times each second to draw images on the screen, to feed instructions from a spreadsheet program, say, out of the disk drives into DRAMs, or to dispatch data to a modem or a printer. Perhaps most amazing of all, memory and logic chips can accomplish all this with just a trickle of electricity - far less than it takes to light a flashlight bulb.

Ted Hoff at Intel invented the microprocessor in 1971. See also 1971 in the beginning of this dictionary.

Microprocessor Controls A control system that uses computer logic to operate and monitor an air conditioning system. Microprocessor controls are commonly used on modern precision air conditioning systems to maintain precise control of temperature and humidity and to monitor the unit's operation.

Microsecond One millionth of a second. A microsecond is ten to the minus six. One microsecond — a millionth of a second — is the duration of the light from a camera's electronic flash. Light that short freezes motion, making a pitched ball or a bullet appear stationary. See ATTO, NANOSECOND, FEMTO and PICO.

Microsegmenting The process of configuring Ethernet and other LANs with a single workstation per segment. The objective is to remove contention from Ethernet segments. With each segment having access to a full 10 Mbps of Ethernet bandwidth, users can do things involving significant bandwidth, such as imaging, video and multimedia.

Microsegmentation Division of a network into smaller segments, usually with the intention of increasing aggregate bandwidth to devices.

Microslot The time between two consecutive busy/idle flags (60 bits, or 3.125 milliseconds at 19.2 kbps). It is used in CDPD only. A cellular radio term.

Microsoft Founded in 1975 by Bill Gates and Paul Allen, Microsoft is (or was at the time of writing this edition of this dictionary) one of the largest software companies in the world. It is the originator of At Work, MICROSOFT AT WORK, MS-DOS, Windows, Windows NT and Windows Telephony. See AT WORK, MS-DOS, WINDOWS, WINDOWS NT and WINDOWS TELEPHONY.

Microsoft At Work A new architecture announced by Microsoft on June 9, 1993 and then put into retirement a couple of years later. Many of its features and ideas surfaced in Windows 95. It consisted of a set of software building blocks that will sit in both office machines and PC products, including:

- Desktop and network-connected printers.
- Digital monochrome and color copiers.
- Telephones and voice messaging systems.
- Fax machines and PC fax products.
- Handheld systems.
- Hybrid combinations of the above.

According to Microsoft, the Microsoft At Work architecture focuses on creating digital connections between machines (i.e. the ones above) to allow information to flow freely throughout the workplace. The Microsoft At Work software architecture consists of several technology components that serve as building blocks to enable these connections. Only one of the components, desktop software, will reside on PCs. The rest will be incorporated into other types of office devices (the ones above), making these products easier to use, com-

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