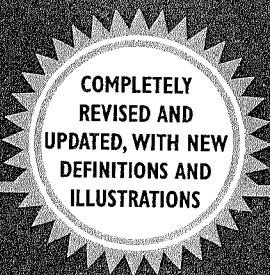


EXHIBIT 20


MICROSOFT PRESS®

COMPUTER DICTIONARY

SECOND EDITION



COMPLETELY
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DEFINITIONS AND
ILLUSTRATIONS



THE COMPREHENSIVE
STANDARD FOR
BUSINESS, SCHOOL,
LIBRARY, AND HOME

Microsoft
P R E S S

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to maintain control of the bus while they send multiple blocks of data. *See also* burst speed.

Burst also refers to the process of breaking apart fanfold continuous-feed paper at its perforations, resulting in a stack of separate sheets.

burster A device used to burst, or break apart at the perforations, fanfold continuous-feed paper.

burst mode A method of data transfer in which information is collected and sent as a unit in one high-speed transmission. In burst mode, an input/output device takes control of a multiplexer channel for the time required to send its data. In effect, the multiplexer, which normally merges input from several sources into a single high-speed data stream, becomes a channel dedicated to the needs of one device until the entire transmission has been sent. Burst mode is used both in communications and between devices in a computer system. *See also* burst.

burst rate *See* burst speed.

burst speed Also called burst rate. The fastest speed at which a device can operate without interruption. For example, various communications hardware, such as some devices used on data networks, can send data in bursts, and the speed of such equipment is sometimes measured as the burst speed (the speed of data transfer while the burst is being executed).

For a printer that prints one character at a time, the burst speed is the number of characters per second that the printer can print on one line without a carriage return or linefeed. Burst speed contrasts with *throughput*, which is the number of characters per second when an entire page or several pages of text are being printed. Burst speed measures the actual speed of printing, without consideration of the time taken to advance paper or to move the print head back to the left margin; throughput is a more practical measurement of printer speed in real-life situations.

For virtually all character printers—including daisy-wheel, thimble, ink-jet, thermal, and wire-pin dot-matrix printers—the speed claimed by the manufacturer is the burst speed. For bidirectional daisy-wheel and thimble printers, throughput is usually only a little slower than burst

speed. For other kinds of printers, throughput depends heavily on the paper-handling capabilities of the printer but is typically about half of burst speed. In comparing printers, relative burst speeds are far less important than throughput speeds.

bus A set of hardware lines—wires—used for data transfer among the components of a computer system. A bus is essentially a shared highway that connects different parts of the system—including the microprocessor, disk-drive controller, memory, and input/output ports—and enables them to transfer information. Usually supervised by the microprocessor, the bus is, in computers such as the Apple Macintosh and IBM and compatible models, specialized for carrying different types of information. One group of wires (actually, traces on a printed circuit board), for example, carries data; another carries the addresses (locations) where specific information can be found; yet another carries control signals to ensure that the different parts of the system use their shared highway without conflict. Buses are characterized by the number of bits they can transfer at a single time. A computer with an 8-bit data bus, for example, transfers 8 bits of data at a time, one with a 16-bit data bus transfers 16 bits at a time, and so on. Because the bus is integral to internal data transfer and yet computer users often need to add extra components to the system, most micro-computer buses allow for expansion through one or more expansion slots (connectors for add-on circuit boards). Such boards, when they are added, make an electrical connection to the bus and effectively become part of the system.

bus extender A device that expands the capacity of a bus. IBM PC/AT computers use a bus extender to add onto the earlier PC bus and allow the use of 16-bit expansion boards in addition to 8-bit boards. *See also* bus.

Also, a special circuit board used by engineers to raise an add-in board above the computer's cabinet, making it easier to work on the circuit board.

business graphics *See* presentation graphics.

business information system Abbreviated BIS.

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