

# Glossary

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**active ADB device** The last ADB device to have sent data to the ADB Manager.

**activity timer** A timer maintained by the Power Manager that measures the time that has elapsed since the last relevant system activity.

**ADB** See *Apple Desktop Bus* .

**ADB command** A 1-byte value sent by the ADB Manager to devices on the ADB. The ADB command encodes the register the command refers to and the desired action the target device should perform.

**ADB device** Any input device connected to the ADB that conforms to requirements described in the *Apple Desktop Bus Specification*.

**ADB device handler ID** An 8-bit value that further identifies a specific ADB device type (such as the Apple Extended Keyboard) or its mode of operation (such as whether the keyboard differentiates between the right and left shift keys).

**ADB device register** One of four locations, identified as registers 0 through 3, that an ADB device uses to store data.

**ADB device table** A structure, located in the system heap, that contains information about all ADB devices attached to the computer.

**ADB device table entry** The part of the ADB device table that specifies for an ADB device its device handler ID, its default ADB address, its current ADB address, the address of its device handler, and the address of the area in RAM used for storage by the handler.

**ADB Manager** The part of the Macintosh Operating System that allows you to communicate with and get information about hardware devices attached to the Apple Desktop Bus (ADB).

**ADB transaction** A communication between the computer and an ADB device, consisting of a command sent by the computer, followed by a data packet sent either by the computer or the device.

**address collision** When more than one ADB device responds to commands sent to a particular address. See also *address resolution* .

**address mapping** The assignment of portions of the address space of the computer to specific devices.

**address resolution** When the ADB Manager reassigns addresses for ADB devices until they are all unique. See also *default ADB device address* .

**address space** A range of accessible memory. See also *address mapping* .

**A5 world** An area of memory in an application's partition that contains the QuickDraw global variables, the application global variables, the application parameters, and the jump table—all of which are accessed through the A5 register.

**Apple Desktop Bus (ADB)** A low-speed serial bus that connects input hardware devices to Macintosh computers and other equipment.

**application program interface (API)** The set of routines that applications and device drivers use to access services provided by system software.

**arbitration phase** The phase in which an initiator attempts to gain control of the SCSI bus.

**asynchronous communication** A method of data transmission in which the receiving and sending devices don't share a common timer and no timing data is transmitted.

**asynchronous device driver** A device driver that can begin processing a request and return control to the Device Manager before the request is complete. This type of driver typically uses hardware interrupts and callback routines to carry out background processing.

**autosense** A feature of SCSI Manager 4.3 that automatically sends a REQUEST SENSE command in response to a CHECK CONDITION status, and retrieves the sense data.

**baud** A measure of the bit sampling rate of a serial communication device.

**bit-bucketing** The practice of throwing away excess data when a SCSI target tries to supply more data than the initiator expects. Also includes sending meaningless data when a target requests more data than the initiator is prepared to supply. Both of these situations are abnormal and cause the SCSI Manager to return an error result code.

**blind transfer** A Macintosh-specific method of transferring data between memory and the SCSI controller hardware, in which the SCSI Manager assumes that the SCSI controller (and the target device) can keep up with a specified transfer rate. Compare *polled transfer*.

**block device** A device that reads or writes blocks of bytes as a group. Disk drives, for example, can read and write blocks of 512 bytes or more. See also *character device*.

**board sResource** A unique sResource in an expansion card's declaration ROM that describes the card so that the Slot Manager can identify it. An expansion card can have only one board sResource. The board sResource entries include the card's identification number, board flags, vendor information, initialization code, and so on.

**bus** A path along which information is transmitted electronically within a computer. Buses connect computer devices, such as processors, expansion cards, and memory.

**bus free phase** The phase in which no device is actively using the SCSI bus.

**bus interface** The electronics connecting the processor bus to the NuBus expansion interface in Macintosh computers.

**byte lane** Any of 4 bytes that make up the 32-bit NuBus data width. NuBus expansion cards may use any or all of the byte lanes to communicate with each other or with the Macintosh computer.

**card** See *expansion card*.

**character device** A device that reads or writes a stream of characters, or bytes, one at a time. The keyboard and the serial ports are examples of character devices. See also *block device*.

**close routine** A device driver routine that deactivates the driver and usually deallocates memory. All device drivers must implement a close routine.

**collision detection** The ability of an ADB device to detect that another ADB device is transmitting data at the same time.

**command descriptor block (CDB)** A data structure defined by the SCSI specification for communicating commands from an initiator to a target.

**command phase** The phase in which a SCSI target requests a command from the initiator.

**configuration ROM** See *declaration ROM*.

**control routine** A device driver routine used to send control information. The function of the control routine is driver-specific. This routine is optional and need not be implemented.

**data communication equipment (DCE)** Any device connected to the serial port, such as a modem or printer.

**data phase** The phase in which data transfer takes place between a SCSI initiator and target.

**data terminal equipment (DTE)** The initiator or controller of a serial data connection, typically the computer.

**declaration ROM** A ROM on a NuBus expansion card that contains information identifying the card and its functions, and that may also contain code or other data. Proper configuration of the declaration ROM firmware will allow the card to communicate with the computer through the Slot Manager routines.

**default ADB device address** A 4-bit bus address between \$0 and \$E that uniquely identifies the general type of ADB device (such as a mouse or keyboard).

**device** A physical part of the Macintosh, or a piece of external equipment, that can exchange information with applications or with the Macintosh Operating System. Input devices transfer information into the Macintosh, while output devices receive information from the Macintosh. An I/O device can transfer information in either direction.

**device control entry (DCE)** A Device Manager data structure containing information about a device driver.

**device driver** A program that controls devices.

**device handler** A low-level routine that communicates with a particular ADB device.

**Device Manager** The part of the Macintosh Operating System that controls the exchange of information between applications and device drivers.

**device package** A type of code resource that responds to Chooser messages. The device package is responsible for communicating the user's choices to a device driver.

**driver reference number** A number that identifies each installed device driver. It is the one's complement of the driver's unit number.

**expansion card** A removable printed circuit card that plugs into a connector (slot) in the computer's expansion interface. Macintosh computers can use expansion cards designed for the NuBus expansion interface or for the processor-direct slot expansion interface. Expansion cards are also referred to as slot cards or simply as cards.

**firmware** Programs or data permanently stored in ROM.

**Flush** An ADB command to a device that forces it to remove any existing user-input data from the appropriate device register. See also *Listen*, *SendReset*, and *Talk*.

**format block** An element in the firmware structure of a declaration ROM that provides a standard entry point for other elements in the structure. The format block allows the Slot Manager to find the declaration ROM and validate it.

**functional sResource** An sResource in an expansion card's declaration ROM that describes a specific function of the card. For example, a video card may have separate functional sResources for all of the display modes it supports.

**hicharge counter** A counter in portable Macintosh computers that measures the time required to raise the battery voltage to 7.2 volts.

**host bus adapter (HBA)** The hardware that controls a SCSI bus.

**idle state** A power conservation state of portable Macintosh computers in which the processor slows from its normal clock speed to a 1 MHz clock speed. Also called the rest state. See also *power-saver state* and *sleep state*.

**initiator device** A device capable of initiating SCSI transactions.

**interrupt service routine (ISR)** A routine that processes interrupts generated by the processor, expansion cards, or external devices.

**Listen** An ADB command to a device that instructs it to prepare to receive additional data. See also *Flush*, *SendReset*, and *Talk*.

**logical block** An abstract location on a storage device, defined by software and independent of the physical characteristics of the device. See also *physical block*.

**message phase** The phase in which SCSI devices exchange message information.

**minor slot space** An Apple-specific term that describes the first megabyte of the 16 MB standard slot space.

**NuBus expansion interface** A 32-bit-wide synchronous, multislot expansion bus used for interfacing expansion cards to some Macintosh computers. See also *bus interface*, *NuBus slot*.

**NuBus slot** A connector on the NuBus expansion interface in a Macintosh computer, into which an expansion card can be installed.

**open routine** A device driver routine that allocates memory and initializes the driver's data structures. It may also initialize a hardware device or perform any other tasks necessary to make the driver operational. All drivers must implement an open routine.

**partition** A series of contiguous logical blocks on a storage device that have been allocated to a particular operating system, file system, or device driver.

**physical block** A fixed location on a storage device that is defined by the physical characteristics of the device. See also *logical block*.

**polled transfer** A Macintosh-specific method of transferring data between memory and the SCSI controller hardware, in which the SCSI Manager senses the state of the internal registers of the SCSI controller to determine when the controller is ready to transfer another byte. Compare *blind transfer*.

**polling** When the ADB Manager repeatedly sends each ADB device a Talk Register 0 command to see if it has new data to return.

**portable Macintosh computer** Any Macintosh computer that can be battery powered.

**power cycling** A method of entering the idle state in which power to the CPU is cycled on and off for increasing intervals, until some relevant system activity is detected.

**Power Manager** The part of the Macintosh Operating System that controls power to the internal hardware devices of battery-powered Macintosh computers. The Power Manager also provides some service unique to portable Macintosh computers—such as reading the current CPU clock speed—that are not directly related to power control.

**Power Manager IC** The 50753 microprocessor in the Macintosh Portable computer and some other portable Macintosh computers. The Power Manager IC (along with other circuits) controls power to the various subsystems of the computer. The power control functions may be handled by different hardware on other portable Macintosh computers.

**power-saver state** A power conservation state of portable Macintosh computers in which the processor slows from its normal clock speed to some slower clock speed. On the PowerBook 180 computer, for example, the CPU clock speed can be reduced from 33 MHz to 16 MHz in order to conserve power. See also *idle state* and *sleep state*.

**prime routine** A device driver routine that implements the input and output functions of the driver. This routine is optional and need not be implemented.

**processor-direct slot (PDS)** An Apple-specific expansion interface architecture included in some Macintosh computers. It uses a single connector that allows an expansion card direct access to all of the microprocessor signals.

**protocol** A standard set of rules for coordinating transmission between a sender and receiver.

**reentrant device driver** A device driver that is capable of handling multiple requests simultaneously.

**reselection phase** An optional phase in which a SCSI target device reconnects to the initiator.

**rest state** See *idle state*.

**scatter/gather list** A SCSI Manager 4.3 data type consisting of one or more elements, each of which describes the location and size of one data buffer.

**SCSI (Small Computer System Interface)** An industry standard parallel data bus that provides a consistent method of connecting computers and peripheral devices.

**SCSI bus** A bus that conforms to the physical and electrical specifications of the SCSI standard.

**SCSI command** An instruction from an initiator to a target to conduct an operation, such as reading or writing a block of data. See also *command descriptor block*, *command phase*.

**SCSI device** A device connected to the SCSI bus, either a peripheral device or a computer.

**SCSI ID** An integer value from 0 to 7 that uniquely identifies a device during SCSI transactions.

**SCSI interface module (SIM)** A software module between the transport (XPT) and the host bus adapter (HBA) in SCSI Manager 4.3. The SIM processes and executes SCSI requests, and provides a hardware-independent interface to the HBA.

**SCSI Manager** The part of the Macintosh Operating System that controls the exchange of information between a Macintosh computer and peripheral devices connected through the Small Computer System Interface (SCSI).

**SCSI message** Information exchanged by the target and initiator at the completion of a SCSI transaction. See also *message phase*.

**selection phase** The phase in which a SCSI initiator selects the target device for a transaction.

**SendReset** An ADB command that instructs all ADB devices to reset themselves to their startup states. See also *Flush*, *Listen*, and *Talk*.

**Serial Driver** The part of the Macintosh Operating System that provides low-level support for asynchronous, interrupt-driven serial data transfers through the modem and printer ports.

**service request signal (SRQ)** A signal sent by an ADB device to inform the ADB Manager that it has data to send.

**sleep demand** A message from the Power Manager that informs a sleep procedure that the Power Manager is about to put the computer into the sleep state.

**sleep procedure** A procedure that the Power Manager calls before it puts a portable Macintosh computer into the sleep state or returns it to the operating state. Sleep procedures are maintained in the sleep queue.

**sleep procedure selector code** An integer passed (in register D0) to a sleep procedure that specifies whether the procedure is being called with a sleep request, a sleep demand, a wakeup demand, or a sleep-request revocation.

**sleep queue** An operating-system queue that contains pointers to all currently installed sleep procedures.

**sleep queue record** A data structure that contains information about a sleep procedure. Defined by the `SleepQRec` data type.

**sleep request** A message from the Power Manager that informs a sleep procedure that the Power Manager would like to put the computer into the sleep state. The sleep procedure has the option of denying this request.

**sleep-request revocation** A message from the Power Manager that informs a sleep procedure that the Power Manager has canceled a sleep request. The procedure can then reverse any changes it made in response to the sleep request.

**sleep state** A power conservation state of portable Macintosh computers in which the Power Manager and the various device drivers shut off power or remove clocks from the computer's various subsystems, including the CPU, RAM, ROM, and I/O ports. See also *idle state* and *power-saver state*.

**slot** 1. A connector attached to the processor bus or the NuBus expansion interface. 2. A region in address space allocated to a physical slot.

**slot ID** The hexadecimal digit corresponding to each card slot. For Macintosh computers with the NuBus expansion interface, each slot ID number is established by the main logic board of the computer and communicated to the card through the `/IDx` signals.

**slot information record** A Slot Manager data structure containing information about a slot. If a card is installed, the slot information record contains the card's initialization status, a pointer to the sResource directory, and other information.

**Slot Manager** The set of Macintosh Operating System routines that communicate with an expansion card's declaration ROM and allow applications to access expansion cards.

**slot resource** See *sResource*.

**slot resource table (SRT)** A private Slot Manager data structure that lists all of the sResource data structures currently available to the system. Applications and device drivers use Slot Manager routines to get information from the slot resource table.

**slot space** The address space assigned to expansion cards in Macintosh computers. See also *standard slot space*, *super slot space*.

**sResource** A data structure in the firmware of an expansion card's declaration ROM that defines a function or capability of the card. An sResource is also called a *slot resource*; the small *s* indicates a slot resource as opposed to the type of resource associated with the Resource Manager. There is one board sResource that identifies the card, and a functional sResource for each function a card can perform.

**sResource directory** An element in a card's declaration ROM that lists all the sResources and provides an offset to each one.

**sResource ID** A field in the sResource directory that identifies the type of sResource contained in or pointed to by the offset field.

**SRQ** See *service request signal* .

**standard device drivers** The device drivers built into the Macintosh ROM or Operating System.

**standard slot space** The upper one-sixteenth of the total address space. These addresses are in the form \$Fsxx xxxx, where *s* is a slot ID and *x* is any hexadecimal digit. This address space is geographically divided among the NuBus slots according to slot ID number. Compare *super slot space*.

**status phase** The phase in which a SCSI target sends 1 byte of status information to the initiator.

**status routine** A device driver routine used to return status information from a driver. The function of the status routine is driver-specific. This routine is optional and need not be implemented.

**super slot space** The portion of memory in the range \$9000 0000 through \$EFFF FFFF. NuBus addresses of the form \$sxxx xxxx address the super slot space that belongs to the card in slot *s*, where *s* is a slot ID and *x* is any hexadecimal digit. Compare *standard slot space*.

**synchronous device driver** A device driver that completes each request before returning control to the Device Manager. This type of device driver has no provision for background processing.

**Talk** An ADB command that requests a specific device to send the contents of a specific device register across the bus. See also *Flush*, *Listen*, and *SendReset* .

**target device** A SCSI device that responds to commands from an initiator.

**TIB instructions** Commands that control the SCSI Manager data transfer routines.

**TIB pseudoprogram** A sequence of TIB instructions.

**transfer instruction block (TIB)** A data structure used to pass instructions to the SCSI Manager data transfer routines.

**transport (XPT)** The part of SCSI Manager 4.3 that accepts I/O requests and passes them to the appropriate SCSI interface module (SIM).

**unit number** The position of a device driver's entry in the unit table. It is the one's complement of the driver reference number.

**unit table** A Device Manager data structure containing an array of handles to the device control entries of all installed device drivers.

**virtual bus** The grouping of SCSI devices on different buses into a single logical bus for compatibility with software that cannot address multiple buses.

**virtual ID** The SCSI ID of a device on the virtual bus.

**wakeup demand** A message from the Power Manager that informs a sleep procedure that it must reverse whatever steps it followed when it prepared for the sleep state.

**wakeup timer** A timer that the Power Manager uses to return a portable Macintosh computer from the sleep state to the operating state at a specific time.