

A

A/V Professional

To meet the demands of the digital A/V storage industry, Seagate Barracuda, Cheetah and Elite drives offer not only industry-leading performance in capacity and speed, but also embedded servo technology to ensure uninterrupted data transfers.

Since 1995, Seagate has also collaborated with industry partners to offer the A/V Professional program. Through this partnership, it is possible for Seagate customers to purchase drives preconfigured to meet the demands of the high-end A/V production market. Through changes in the SCSI sense mode pages Seagate A/V Professional partners can customize the characteristics of the drive to meet the demands of a specific application. This policy offers Seagate's customers a clear advantage over the "one configuration fits all" approach to the A/V market.

A/V customization takes place in the following mode sense pages:

- Error Recovery (mode sense p.01)
- Disconnect/Reconnect (p.02)
- Cache Configuration (p.08)
- Error Logging (p.0A)
- S.M.A.R.T. (p.1C)
- Adjustable retries

For a list of Seagate's A/V partners, please access our Web site: www.seagate.com.

adaptive caching

This allows the drive to tune the cache (adjustable number or segments and segment size) to best suit the system's needs and allows the system to operate as fast as possible.

Advanced SCSI Architecture II (ASA II)

Advanced SCSI Architecture II (ASA II) is a highly leveraged second-generation enhancement of the field-proven SCSI architecture used on high-end disc products. ASA II provides significant SCSI performance improvements in common operating environments such as DOS/Windows or UNIX. Advanced SCSI Architecture allows easy migration to higher capacity or performance levels as system requirements change. Today's highly-competitive computer environment requires the performance advantage of Seagate SCSI disc drives and ASA II. Rotational-position seek/sort is a special feature of ASA II. This feature enhances the drive performance when operating in a random seek environment. An airlines reservation system is a good example of a random seek environment. Rotational-position seek/sort provides up to 50 percent performance improvement in random operation.

apple talk

Apple networking protocol with data-transfer rate of 230 Kbits per second.

application program

A sequence of instructions that tell the computer how to perform an end-user task, accounting, word processing or other work for the computer system user.

areal density

The number of data bits in a given area. Obtained by multiplying the number of bits per inch (amount of data on one inch of the innermost track) by the number of tracks in one inch. That is BPI times TPI.

auto-park

An automatic process where the heads are moved to the innermost location of the disc where data is not stored and then allowed to land. This process happens whenever power is removed from the spindle motor.

average seek time

The average time required for the heads to move from one track to any other track.

B

- backup** Copy of information from a hard disc onto another data storage medium.
- backup device** Disc or tape drive used with a hard drive to make copies of files or other data for offline storage.
- backward compatibility** The ability of a current product to read tapes written on earlier drives and, if so specified, to write tapes in the same format.
- basic input/output system (BIOS)** A collection of information (firmware) that controls communication between the central processing unit (CPU) and its peripherals.
- bit density** Expressed as bits-per-inch (BPI), bit density defines how many bits can be written onto one inch of a track on the disc surface (especially the innermost track).
- block** A group of bytes handled, stored and accessed as a logical data unit such as an individual file record. Typically, one block of data is stored as one physical sector of data on a disc drive.
- boot** Transfer of the disc operating system (DOS) program from hard disc to the computer's working memory during system startup. When a computer is first powered on, it is unintelligent. The boot process loads its basic smarts and allows it to control or manage the later-requested user-application programs.
- byte** A sequence of adjacent binary digits or bits considered as a unit—8 bits in length. One byte is sufficient to define all the alphanumeric characters. There are 8 bits in 1 byte. Storage capacity of a disc drive is commonly measured in megabytes, which is the total number of bits storable, divided by eight million.

C

- cache buffer** A bank of solid-state memory inside the drive that stores some data from the discs. The system may then refer to this memory for information instead of going to the media, increasing the processing speed.
- cache hit** This occurs when the data requested is in the cache buffer. A cache hit saves the time of getting the data from the rotating disc, eliminating the seek, latency and read times.
- capacity** The total amount of data that can be stored on a device, usually measured in megabytes.
- | | |
|--------------|---|
| compressed | Effective capacity after data has been processed to reduce storage space required while maintaining data integrity...software and hardware compression are available. |
| uncompressed | Capacity for data that has not been processed to reduce the effective size or volume; sometimes referred to as "native". |
- client/server** Architecture where computing responsibility is distributed between front-end and back-end systems and programs.
- cluster size** The number of sectors that the operating system allocates each time disc space is needed.

- compression (data compression)** An algorithm that reduces redundant strings of data, resulting in decreased file sizes; can be performed by hardware or software—but only one time.
- common access method (CAM)** A standard that allows programmers of different computers to use the same command set to control SCSI devices.
- cylinder** The location formed by identical track numbers on vertically stacked discs. At any location of the head positioning arm, all tracks under all heads are the cylinder. The cylinder number is one of three address components required to find a specific address component. Head and Sector are the other components.

D

- DAT (Digital Audio Tape)** Storage device that records digital information on a magnetic tape 4mm wide.
- data transfer rate** Speed at which bits are sent. In a disc storage system, the communication is between the CPU and the controller, plus the controller and the disc drive. Typical units are megabits-per-second—also known as megahertz (MHz). Internal transfer rate is the rate that data is written to and read from the discs.
- DC6000 Data Cartridge** Outdated tape drive technology designed by 3M.
- DDS (Digital Data Storage)** A data-storage format that was developed from digital audio tape (DAT) to reliably store computer data. DDS is defined by international standards and is supported by many manufacturers, but more importantly, it is subject to thorough collaborative testing programs, which ensure that tapes (or media) written by one manufacturer's drives can be read by those of other manufacturers.
- design maturity test (DMT)** The process provides a demonstration of product design reliability simulating customer use.
- Differential SCSI** The Differential SCSI interface allows longer cable lengths from the drive to the host with no degradation of data. It is ideal for mainframe, RAID and server applications.
- digital** Any system that processes digital binary signals that have the values of 1 or 0 only. An example of a nondigital signal is an analog signal that continuously varies, such as TV or audio.
- disc operating system (DOS)** A computer program that continuously runs and mediates between the computer user and the application program and allows access to disc data by disc file names.
- disc platter** For hard drives, a flat circular disc substrate, coated on both sides with a magnetic substance (iron oxide or thin-film metal media) used for storing data. The substrate may consist of metal, plastic, ceramic or glass. Surfaces of discs are usually lubricated to minimize wear during drive startup or power down.
- DiscWizard** "A Seagate Exclusive"
Available on all ATA-compatible drives with capacities greater than 2,160 Mbytes.



DiscWizard (continued)

DiscWizard is a Windows based program bundled with Seagate disc drives making installation and partitioning of large drives much easier.

When launched, DiscWizard automatically analyzes the system being upgraded and identifies key characteristics such as operating system version, capabilities of the system BIOS, type and speed of processor, and make and model of existing hard drive. It uses this information to guide the user through the installation process by identifying correct jumper settings and offering detailed instructions about how to accomplish the type of installation that best suits the user's needs.

DiscWizard has advanced partitioning features including graphical representations of drive partitions, simplifying the task of partitioning larger-capacity drives.

These features, coupled with DiscWizard's online help directories provide a fail-safe installation process for your customers with upgrade needs.

Features

Analyzes the system before the drive is installed

Provides for user input during installation

Identifies BIOS limitations and provides drivers

Advanced partitioning assistance

Extensive online help system

Benefits

Guides the installer based on system configuration

Allows user to decide how the drive will be used with existing drives

Avoids systems lockup and maximizes drive and system performance

Allows user to maximize storage efficiency

Allows nontechnical people to install their drives flawlessly

DiscWizard compared to DOS typical installation programs

Program	DiscWizard Suite	Typical Program
Analyzes system to be upgraded	X	
Queries user about new drive setup	X	
Provides jumper settings	X	X
Provides detailed custom-installation instructions	X	
Overcomes 528-Mbyte BIOS limitation	X	X
Overcomes 2.1-Gbyte BIOS limitation	X	X
Guides user through 4,096 cylinder setup	X	
Guides user through 8.4-Gbyte BIOS/OS limitation	X	
Formats and partitions the drive	X	X
Advanced graphical partitioning features	X	

DiscWizard installation diskette includes the following programs:

- DiscWizard Application
- DiscWizard Uninstaller
- DiscWizard File Copy (for copying data between drives)
- DiscWizard CD Update (for renaming files on new logical volumes)
- Setup (Seagate's 32-bit driver for use with Windows)
- Disk Manager (to overcome legacy BIOS limitations)

diskette

A floppy disc. A plastic (mylar) substrate, coated with magnetic iron oxide, enclosed in a protective jacket.

DLT (Digital Linear Tape) drive

An expensive, high-capacity, high-performance tape drive.

A computer memory device with motor-driven moving storage media (disc or tape.)

E**electrostatic discharge (ESD)**

The circuitry of chips can be damaged or destroyed by small static discharges. People handling electronic equipment should ground themselves before touching the equipment. Electronic equipment should always be handled by the chassis or frame.

embedded servo system

A certain part of each cylinder contains servo positioning data. This data maintains position of the head on the associated track.

Enhanced IDE (Integrated Drive Electronics)

A high-speed, low cost interface to connect up to 4 devices found on 99% of PCs. Usually hard disc, tape drive and CD-ROM.

error-correction code (ECC)

ECC circuits correct data errors at the bit level.

ethernet

An access protocol that runs over coaxial or twisted pair wires with a data-transfer rate of 10 million bits per second.

F**Fast ATA-2/ATA-3 Enhanced IDE**

Desktop drive interfaces that support the industry-standard PIO Mode 4 and DMA Mode 2 protocols. This enables data-transfer rates of up to 16.6 Mbytes/sec.

Fast ATA-3 is the third generation of the Fast ATA interface. This iteration includes S.M.A.R.T. technology, hardware password protection, and auto-termination. ATA-3 provides the same maximum external transfer rate (16.6 Mbytes/sec) as Fast ATA-2.

These protocol modes need to be supported by the system or host adapter BIOS; otherwise, the drive defaults to whatever slower transfer rate is supported by both the BIOS and the drive.

Fast Wide SCSI-2

The Fast Wide SCSI-2 interface provides a 16-bit wide SCSI bus, compared to the normal Fast SCSI-2, 8-bit SCSI bus. The wider 16-bit bus provides a transfer rate of 20 Mbytes per second compared to 10 Mbytes per second with Fast SCSI-2 8-bit interfaces.

fibre channel arbitrated loop interface

The Fibre Channel Interface is an American National Standards Institute (ANSI) serial interface. The FC-AL interface was created to answer the need for a pluggable disc drive that offers both hot pluggability and loop resiliency, at an economical cost. The interface has the capability of transferring data up to 100 Mbytes per second, and 200 Mbytes per second dual loop. It can operate over copper and fibre optic cabling at distances up to 10 kilometers. The Fibre Channel interface is ideal for storage, video, graphic, and mass data-transfer applications. Fibre Channel, also supports up to 126 devices on a signal node, which is ideal for large Raid subsystems. Additional information about Fibre Channel is available through your Seagate Sales rep or by calling 1-800-SEAGATE.

file allocation table (FAT)

The operating system uses this to keep track of which clusters are allocated to which files and which are available for use.

file name

Each file has a name, just like the name on the tab of a file folder. When you want DOS to find a file, you give DOS the file name and it finds it.

- firmware** A computer program written into a storage medium that cannot be accidentally erased, such as ROM. It can also refer to devices containing such programs.
- flying height** The height a head flies above the disc, usually a few millionths of an inch.
- formatted capacity** Actual capacity available to store user data. The formatted capacity is the total capacity, less the capacity taken up by the overhead data used in formatting the discs. While the unformatted size may be 100 Mbytes, only 85 Mbytes of storage may actually be available to the user after formatting.

G

- G** Hard disc drive shock specifications are usually specified in Gs. A shock specification of 40 Gs nonoperating means that a drive will not suffer any permanent damage if subjected to a 40-G shock. This is roughly equivalent to dropping the drive to a hard surface from a distance of one-half an inch.
- gateway** A device that connects two incompatible networks and translates information from one network to another.
- gigabyte (Gbyte)** 1,000 megabytes or 1,000,000,000 bytes.

H

- half-height drive** A drive that is 1.63 inches high.
- hard disc drive** A device that stores data on and retrieves data from nonflexible (hard) rotating discs.
- head** An electromagnetic device that can write/record, read/playback or erase data on magnetic media. Examples include: monolithic, composite, thin-film and magnetoresistive.
- head/disc assembly (HDA)** The heads, actuator, frame and discs of a drive. The key mechanical components of a drive.
- head landing and takeoff** In hard drives, the head is in contact with the disc when the drive is not powered. During the power-up cycle, the disc begins rotation and an air bearing is established (the head “flies”) as the disc spins up to full rotating speed. This air bearing prevents any mechanical contact between head and disc during operation.
- head landing zone** A nondata area of the disc set aside for takeoff and landing of the heads when the drive is turned off. Also known as dedicated landing zone.
- hub** A network wiring concentrator.

I

- input/output (I/O)** The process of entering data into or removing data from a computer system.
- INT 13 (interrupt 13)** A BIOS limitation restricting capacity to 8.4 Gbytes per physical device.
- intelligent peripheral** A device that contains a processor or microprocessor to enable it to interpret and execute commands, relieving the computer for other tasks.

interface	The protocol data transmitters, data receivers, logic and wiring that link one piece of computer equipment to another, such as a disc drive to an adapter or an adapter to a system bus, such as pinout on an integrated circuit. Protocol means a set of rules for operating the physical interface, such as don't read or write before the drive is ready.
interface standard	The interface specifications agreed to by various manufacturers to promote industry-wide interchangeability of products such as the disc drives and controllers. An interface standard generally reduces product costs, allowing buyers to purchase from more than one source and allows faster market acceptance of new products.
interleaving	The interleave value tells the controller where the next logical sector is located in relation to the current sector. For example, an interleave value of one (1) specifies that the next logical sector is physically the next sector on the track. Interleave of two (2) specifies every other physical sector, three (3) every third sector, and so on. Interleaving is used to improve the system throughput based on overhead time of the host software, the disc drive and the controller. For example, if an application program is processing sequential logical records of a disc file in CPU time of more than one second but less than two, then an interleave factor of 3 will prevent wasting an entire disc revolution between accesses.
ipx	NetWare's LAN communication protocol.
K	
Kilobyte (Kbyte)	1) 1,000 bytes; is used to describe drive capacity. 2) 1,024 bytes (2 to the 10th power is used with semiconductor memory).
L	
large-scale integration (LSI)	An integrated circuit with a large number of gates or transistors, usually more than 100,000.
latency (rotational)	The average time required for the disc to rotate to a desired sector. On average, latency is the time for half of a disc revolution.
local area network (LAN)	A series of computers connected into a system to allow communication and sharing of peripherals. Usually consists of a file server and one or more workstations.
locking auto-park	A lock that secures the actuator after it has moved to the innermost tracks of the disc and holds it there until the drive is powered up again.
low voltage differential (LVD)	See Ultra 2 SCSI.
M	
mean time between failures (MTBF)	A number that loosely denotes the reliability of a drive. The higher the MTBF, the more reliable the drive is expected to be.
mean time to repair (MTTR)	The average time to repair a given unit. Limited to a qualified technician with proper equipment.
media	The magnetic layers of a disc or tape. See disc (platter).

megabyte (Mbyte)	1) 1,048,576 bytes for semiconductor memory 2) 1,000,000 bytes for drive capacity.
microsecond	One-millionth of a second.
millisecond	One-thousandth of a second.
MR heads	Magnetoresistive heads—a technology in recording heads, which allows higher areal densities. This head consists of two elements: a read and a write.
multimedia-ready	Multimedia-ready drives are capable of running full-screen, full-color, full-motion video without dropping frames. Near-broadcast-quality video can now be achieved on value-class single-user desktop computer systems, allowing multimedia to be brought to the mass market. Multimedia-ready drives are used in different applications and platforms than professional A/V-ready drives. Multimedia-ready drives are typically not customized through firmware as with professional A/V-ready drives. Also, multimedia-ready drives can provide near-broadcast-quality playback of video, business presentations and entertainment. Professional A/V drives are capable of broadcast-quality video and are used for professional recording, editing and video-on-demand. Also, multimedia-ready drives are often used on a low- to moderate-cost desktop PC with a video card, sound card and speakers, while professional A/V drives are integrated with RISC workstations, A/V servers, etc.
multiple segment caching	This allows the user to divide the cache into segments so that different blocks of data can be cached simultaneously and subsequent commands will have a higher probability of a cache hit.
multitasking	The ability of a computer system to execute more than one program or program task at a time.
multiuser	The ability of a computer system to execute programs for more than one user at a time.

N

near-line storage	Data not immediately accessible by the host but available without human intervention (for example, a data-storage library system).
node	Any computer on a network.

O

off-line	Processing or peripheral operations performed while not connected to the system CPU through the system BUS.
ongoing reliability testing (ORT)	Intended to establish the reliability of a product by an extended functional test under realistic user conditions.
operating system	An operating system is a program that acts as an interface between the user of a computer and the computer hardware. The purpose of the operating system is to provide an environment in which a user can run programs.

P

parking	Parking the disc drive heads means the recording heads are moved so they are not stopped over the disc's data areas. Drives have an auto-park feature where the heads are automatically parked when power to the drive is shut off.
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- partitioning** A method for dividing an area on a disc drive for use by more than one disc operating system or for dividing large disc drives into areas that the File Allocation Table (FAT) can deal with when in use. This limit can be overridden using partitioning software written for this purpose.
- path** The DOS term path has three definitions, and each definition involves directories. A path may be defined as 1) the names of the chain of directories leading to a file, 2) the complete file or directory name and 3) a DOS command.
- peripheral equipment** Auxiliary memory, displays, printers, disc drives and other equipment usually attached to the computer system CPU by controllers and cables (they are often packaged together in a desktop computer).
- plated thin-film disc** Magnetic disc memory media that has its surface covered with a thin coating of a metallic alloy instead of oxide.
- printed circuit board (PCB)** The circuit board with the chips attached.
- printed wire assembly (PWA)** A completed circuit board with components installed. (Same as PCB)
- printed wire board (PWB)** A circuit board without components installed, also known as a bare board.
- PRML** Partial-response, maximum likelihood—advanced technology read channel that contributes to a faster data throughput rate.
- product maturity test (PMT)** Test used to detect and correct deficiencies in product during manufacturing processes.
- protocol** A set of rules governing the format of messages exchanged within a communications system.

Q

- QIC** Quarter-Inch-Cartridge. Defines a standards committee and tape media.

R

- RAID Systems** RAID (redundant array of independent discs) is a concept in storage subsystems that can deliver higher levels of protection against downtime and data loss than conventional disc drives. RAID refers to a drive architecture designed to safeguard critical data through redundancy. In theory, RAID arrays composed of conventional discs can function for hundreds or even thousands of years without losing data because of a disc failure. RAID also offers other benefits: it can improve input/output performance, make servicing simpler and quicker and allow users to fine-tune the drive system to match the needs of specific applications.
- The RAID concept was first articulated by a group of Berkeley researchers in 1987. Their work defined five levels of RAID: five ways of distributing data across an array of discs so that the failure of a single disc does not cause data loss. Of the original designs, three have proven commercially attractive: Level 1, Level 3 and Level 5. Though not strictly RAID, an additional level, Level 0, is commonly included among RAID designs because of its similarity to the original designs.
- Level 0 distributes data across discs by striping—a technique for storing consecutive chunks of data on different discs. Striping improves I/O

(continued on next page)

RAID Systems (continued)

throughput but provides no more data protection than conventional drives. Level 1 achieves data redundancy through mirroring—keeping identical data on two separate discs. Mirroring offers excellent reliability and some improvement in I/O throughput but is relatively inefficient in its use of total disc capacity. Level 3 and Level 5 combine striping with parity codes to allow recovery of data if a disc fails. Level 3 and Level 5 both use disc capacity more efficiently than Level 1.

There is more to RAID than redundancy. RAID contributes to automatic load balancing, avoiding hot discs where 80 percent of the I/O requests target 20 percent of the disc capacity. The right choice of RAID level can speed up data transfers or handle more I/O requests per second. Level-3 drives process large amounts of data quickly by transferring data from all discs in parallel, shortening transfer times for applications such as image processing or CAD that read in large, sequential files. Level-5 arrays can handle large numbers of I/O requests concurrently, so they are a good match for applications that make many small requests: office automation, transaction processing and general-purpose multitasking. ("Understanding RAID" ©1994 DATARAM, Inc. Used with permission)

random access memory (RAM)

Memory where any location can read from or write to in random order. RAM usually refers to volatile memory where the contents are lost when power is removed. The user-addressable memory of a computer is random access memory.

read

To access a sector or block of data to obtain previously recorded data.

RAW (read after write)

A method of ensuring that data written to tape is correct. See also RWW.

read only memory (ROM)

A chip that can be programmed once with bits of information. This chip retains the information even if the power is turned off. When the information is programmed into the ROM, it is called burning the ROM.

restore

Retrieval of information from a tape drive and the recording of it on a disc drive.

rotational speed

The speed at which the media spins, measured by revolutions per minute (RPM).

router

A network device that can handle multiple protocols by sending data between dissimilar networks.

RWW (read while write)

A method whereby data being recorded onto tape is read and verified on the same pass as it is written.

S

SCAM (SCSI Configured AutoMagically)

This feature provides automatic SCSI ID configuration for multiple peripherals on a SCSI bus when used in conjunction with a supporting operating system, such as Windows '95, and a supporting SCSI host adapter.

SCSI Small Computer Systems Interface

A high-speed interface standard to connect up to 7 devices on the same controller. Usually hard discs, tape drive and CD-ROM.

SCSI-3

SCSI-3 is the latest evolution of the SCSI interface. The ANSI standard specification includes enhanced SCSI commands and Ultra SCSI for better parallel I/O performance. SCSI-3 also defines various solutions for serial architecture. Seagate has chosen fibre channel-arbitrated loop as the optimal serial I/O strategy for high-end solutions.

SNA (Systems Network Architecture)

IBM's protocol for connecting computers.

SafeRite Shock Sensor

SAFEWRITE™
PROTECTED

Seagate's SafeRite shock-sensor technology provides superior data protection for mobile applications. Sophisticated SafeRite electronics sense shock events (that is, the drive being jarred) and instantly stop the writing action of the drive. This eliminates data corruption due to offtrack writes and delivers mobile products with the highest operating shock ratings in the industry.

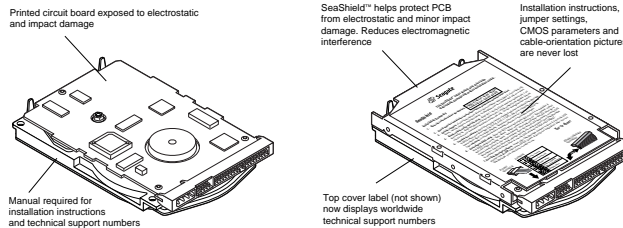
SeaShield

SeaShield™

"A Seagate Exclusive"

SeaShield is a protective metal cover for the drive's PCB (printed circuit board), which is currently offered on most Medalist drives and may soon be offered on other drives.

This feature helps improve the reliability of the drive and makes installation much easier.



Electrostatic discharge—a primary reason for drive failure—results from foreign objects coming in contact with the drive's PCB. A loose screw on a workbench or a minor electrostatic discharge from the installer's hand is enough to zap the drive, leaving it inoperable. SeaShield covers the PCB, eliminating the chance of contact to the sensitive electronics of the drive.

The SeaShield label provides the user with installation instructions, a drive parameter table, jumper settings and technical support phone numbers, making drive installation easier and faster.

Features

- Protects PCB from electrostatic discharge
- Protects PCB from minor impact damage
- Installation diagram and instructions printed on shield
- Reduces electromagnetic emissions

Benefits

- Improves drive reliability
- Easier to handle
- Easier and faster installation
- Improved system reliability

sector

A sector is a section of track whose size is determined by formatting. When used as an address component, sector and location refer to the sequence number of the sector around the track.

seek

The movement of the heads to a specified track address.

seek time

Time required, on average, to move the data heads to another location (cylinder) on the discs. Seek time varies from 8 msec to 16 msec.

server

A computer deliberately devoted to sharing its files and resources, such as discs and printers, with other computers on the network.

- sequential access** Writing or reading data in a sequential order such as reading data blocks stored one after the other on magnetic tape—the opposite of random access.
- servo track** A prerecorded reference track on the dedicated surface of a closed-loop servo disc drive. All data track positions are compared to their corresponding servo track to control the position of the data heads.
- silicon** Semiconductor material generally used to manufacture microprocessors and other integrated circuit chips.
- single-connector attachment (SCA)** The single-connector attachment incorporates all the disc functionality and configurations into a single point of connection. This is a cost-effective solution for multidisc and removable applications that require easy installation.
- Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T.)** S.M.A.R.T. is a way to improve the data integrity of a system by alerting the end-user of predictable failures. It allows the disc drive to monitor several internal attributes and report to the system if it senses that a failure is imminent. This allows the end-user or system administrator to back up the data in a nondisruptive manner before replacing the drive. To implement S.M.A.R.T. in an ATA environment, driver software on the host is required to receive the information from the drive and to decide when to send the alarm to the end-user. SCSI implementations of S.M.A.R.T. use commands that exist as part of SCSI-3, and more driver software is required on the host, although coding for an end-user/system administrator informational panel should be done as part of the system design. This software is not developed by Seagate, but Seagate can make available sources of this software to interested parties.
- spindle motor** The part of the disc drive that rotates the discs.
- storage capacity** The amount of data that can be stored in memory, specified in megabytes (Mbytes) or gigabytes (Gbytes).
- storage density** Usually refers to recording density (BPI, TPI, or their product, areal density).
- substrate** The material that forms a base for the magnetic media that carries information.
- surface-mount technology (SMT)** A process of attaching electronic components to one surface of a PWB as opposed to using feed-through components. Allows for the use of both sides of the board to increase part density and decrease board size.
- surface-mounted device (SMD)** A chip in a smaller integrated surface package without through-hole connection leads.

T

- tagged command queuing** The drive can accept commands while processing a current command and reorder the commands to reduce seek time. Tagged command queuing sets the priorities for the reordering. To use these advanced features, the host adapter must be at least SCSI-2 compatible. If the adapter is not at least SCSI-2 compatible, the disc drive will still work, but not all of the features will be implemented.

TCP/IP
(transmission control
protocol/internet
protocol)

A set of protocols used on the Internet to connect dissimilar computers and offer services such as Telnet and FTP.

10BaseT

An Ethernet LAN standard that uses unshielded twisted-pair wiring.

telnet

Internet protocol/application program that allows a user to remotely log in to another computer.

thin film heads

A read/write head whose read/write element is deposited using integrated circuit techniques rather than being fabricated from ferrite and hand-wound coils.

topology

The wiring scheme of a network.

track

The radial position of the heads over the disc surface. A track is the circular ring traced over the disc surface by a head as the disc rotates under the heads.

tracks per inch (TPI)

Track density, number of tracks per inch.

Travan

Tape technology with a wide range of capabilities: 400 Mbytes to 10 Gbytes.

U

Ultra ATA

Industry-accepted standard that allows a maximum data transfer rate of 33 Mbytes per second using an ATA (IDE) interface.

Ultra SCSI

Ultra SCSI is an evolution of the standard SCSI interface. Sometimes referred to as Fast 20, Ultra SCSI enables external transfer rates of up to 20 Mbytes per second on an 8-bit bus and up to 40 Mbytes per second on a 16-bit bus.

Ultra SCSI uses the same physical connections as SCSI-2 and is fully backward-compatible. To reach the maximum transfer rates of up to 20 (8-bit) or up to 40 (16-bit) Mbytes per second, the controller and disc drive both must be Ultra SCSI devices. Ultra SCSI also reduces total cable lengths to half of the Fast SCSI-2 specification.

Ultra SCSI represents the parallel SCSI solution defined in the SCSI-3 ANSI standard specification.

Ultra2 SCSI

Provides bus data rates of 80 Mbytes per second and easy integration of up to 16 devices on the SCSI bus using cable lengths of 12 meters. Low Voltage Differential doubles SCSI bus rates and provides the integration flexibility and data integrity of High Voltage Differential at single-ended costs. Ultra2 SCSI LVD is fully backward-compatible to all previous single-ended versions of SCSI, taking advantage of the previously installed multibillion dollar product base. When an Ultra2 drive is installed on a previous version SCSI bus, performance will default to the specifications of that bus.

unformatted

Drive byte capacity before formatting. Maximum capacity of a disc drive before formatting, which is equal to bits per track times the number of heads times the number of cylinders.

V

verification

This feature lets the computer go back and read what it just wrote to the disc to ensure the data was written correctly.

**voice coil motor
(VCM)**

A positioning in which a wire coil is placed in a stationary magnetic field. When current is passed through the coil, the resultant force causes the coil and the attached actuator assembly to move.

volatile

Memory that will be erased if power is lost. Typically, main memory is volatile.

W

**wide area network
(WAN)**

A communications system used to connect computers and other devices across a large area. It can be a private connection or a public (phone) network.

write

To access a storage location and store data on the magnetic surface by encoding the magnetic particles in the media using a R/W head.

write caching

With host-controlled write immediate, a write-complete signal status is returned when data is transferred to the drive buffer instead of waiting until the data is written to the media. The seek, latency and write times are cut out of the total command completion as seen by the host.

Z

zero latency read

This reduces the delay in transferring data from the drive to the initiator due to rotational latency delays. Data is read out of order from the disc and is transferred to the host where the requested order is restored.

**zone bit recording
(ZBR)**

With a fixed data-transfer rate and a fixed spindle speed, the maximum amount of data that can be recorded on each track is limited by how closely the data bits can be placed on the media. This limit occurs on the innermost track. Tracks outside the inner track have the data bits further apart, resulting in successively less efficient use of recording space. To remedy this, the data rate is changed according to where the data is being recorded on the disc. For example, let's say the disc is divided into three zones: an inner, middle and outer zone. In each of these zones: the data rate is selected to pack the data as tightly as possible. The data rate is slowest for the inner zone, faster for the middle and fastest for the outer. Increased storage capacity and data-transfer rates are the advantages of ZBR.