FACEOFF: SCSI vs. ESDI

SCSI lets resellers configure flexible systems that allow their customers to grow their systems orderly, painlessly and at an affordable price.

Doug Houseman, Irwin Magnetic Systems

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Stephen Goldman, Distributed Processing Technology

SCSI the interface for heavy workload

By Doug Houseman

When it comes to configuring a computer system, selecting the right peripheral interface is a critical part of the job. Fortunately, the system integrator's choices are clear-cut. If your only requirement is for a very fast hard disk, then a specialized interface such as ESDI might fill the bill. But if you want to make one interface do a lot of work for you and allow for modular computer configurations that can grow with your customers, then SCSI is the way to go.

Today's SCSI (Small Computer Systems Interface) is versatile. Currently, more peripherals are available for SCSI than for any other interface. SCSI enables the reseller to connect up to seven devices on a single chain. And because SCSI is designed as a plug-and-play interface, you do not have to create commport settings to use a SCSI device. Instead, you can combine scanners, hard disks, pen plotters, laser printers, and many other kinds of peripherals through a single port. No other interface will self-configure the way SCSI will.

That kind of flexibility is important in today's system integration arena for a number of reasons. For one thing, it's common for a customer to return to a system integrator or dealer and request a change to a previously specified system. More often than not, the integrator had informed the leasing company that the customer would have to grow the system to support additional tasks in the near future; the leasing company then advises the customer to do so immediately.

When customers follow up on such advice, system integrators that choose SCSI need only pull the request peripheral device off the shelf, install the SCSI device drivers, and ship the product with little or no delay. Continued customer satisfaction is thus ensured.

Another benefit of SCSI's flexibility is that it enables small independent dealers to stock product for a large variety of computers without incurring inventory "sprawl." Today, SCSI boards are sold not only with Macintosh computers, but also with pcs, PCs, PS/2s, and VME bus computers. And since SCSI dealers can use a single brand of hard disks, printers, scanners or other devices across all four computer architectures, they can thereby hold down inventory while almost always meeting customers' demands for immediate delivery.

SCSI simplifies training of sales and support staff as well. After an hour or two of training on SCSI devices, a new salesperson normally is not only able to configure a system for a customer on the fly, but also to do most of the setup. A SCSI setup is considerably easier to master than methods that use RS-232, parallel ports, comm ports, hard disk interfaces, and floppy disk interfaces, particularly for sales personnel with no previous computer experience.

A SCSI solution is also easier to explain to potential customers compared with the more complex configurations associated with other interfaces. Consequently, setup and training of both customers and sales staffs is easier. The result is easier sales and fewer demands on support staff.

SCSI lets resellers configure flexible systems that allow their customers to grow their systems orderly, painlessly and at an affordable price. ●

About the author. . .

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High-end systems better off with ESDI

By Stephen Goldman

ESDI and ST506 disk drives mostly benefit network file servers and multiuser operating systems like Unix or Pick.

There are advantages and disadvantages to SCSI, ESDI (Enhanced Small Device Interface) and ST506. Use depends on what you want to accomplish.

ST506 is the simplest, and thus, least expensive disk interface, but ST506 drives are limited in capacity to 140 Mbytes (or 210 Mbytes if RLL encoding is used). If capacities greater than this are required, then either ESDI or SCSI drives may be used.

ST506 and ESDI drives are very similar in that they both require a disk controller card which plugs into the pc and interfaces to the drive. The controller provides most of the intelligent drive functions.

SCSI drives come with an embedded controller on the drive, so no disk controller card is needed. However, SCSI drives do require an SCSI host adapter card in order to interface with the pc. Strangely enough, these cards often cost more than the disk controller cards required by ST506 or ESDI drives.

SCSI's advantage, its proponents say, is performance. However, quite often the performance of ESDI or even ST506 drives can exceed that of SCSI drives—if the right disk controller is used.

In the case of SCSI drives, the disk controller is embedded in the drive itself. SCSI drive manufacturers, unfortunately, must deal with some severe constraints when designing an embedded disk controller for their product.

The first constraint is cost. The SCSI drive maker must design his embedded controller to satisfy the largest fraction of potential users. Since 90 percent of the drive market is satisfied with low- or medium-range performance, and do not wish to pay a premium for the performance levels required by say, multiuser applications, most drive manufacturers will not add more than $150 to the cost of their drive for the embedded controller.

And, if an expensive high-end embedded SCSI disk controller existed for high performance systems, its market would be very limited because the controller would be more expensive compared to using a high-end controller and amortizing the cost over several ESDI or ST506 drives.

Space is the second constraint facing embedded SCSI controller designers. It is usually limited to about 10 square inches just for the controller's electronics. With 3.5-in. and 2-in. drives, the problem is even worse.

The bottom line is that the SCSI interface itself does not limit performance, but the embedded disk controllers provided on SCSI drives do.

Today's high performance disk controllers use high-speed 16-bit microprocessors and lots of RAM chips for things like buffering and caching. There is no free ride. In order to provide the high levels of disk performance required by modern multiuser operating systems such as Unix and Pick or network file servers, money and space must be allocated for the disk controller—usually more than the manufacturers of SCSI drives are willing or able to provide. In this case, it makes much more sense to utilize ST506 or ESDI drives and high-end disk controller cards, depending upon the storage capacities required.

ESDI and ST506 are more cost-effective than SCSI for high-end systems.

About the author. . .

Stephen Goldman is president of Distributed Processing Technology, Maitland, Fla., a member of ANSI X3T9.2 (the SCSI committee) and a proponent of the SCSI II standard.