



Let's Talk About SCSI

Begin with the Basics

SCSI (pronounced "scuzzy") stands for Small Computer System Interface, the technology that allows you to connect various internal and external devices to your PC or PC server. This connection is made using a SCSI card that fits inside your computer.

The Benefits of SCSI

Performance

- Supports up to 320 MByte/sec transfer rates per channel with Ultra320 SCSI
- Connects high-performance devices such as hard disk drives, CD-RWs, and other high-speed peripherals to your PC

Connectivity

- Connectivity for internal and external SCSI devices
- Single SCSI card can connect up to 15 devices per channel

Compatibility

- Accommodates previous generations of the same technology
- SCSI allows older peripherals to co-exist with the latest technology without hampering speed or performance

Reliability

- SCSI has traditionally been the most reliable choice for IT professionals with regard to data integrity, component failure, and product quality
- SCSI presence as an I/O choice over many years attests to its continued execution

The Newest SCSI Features

Features added with Ultra320 SCSI:

- 320 MByte/sec performance per channel
- Packet Protocol and its reduction in command overhead allows increased speed without bandwidth issues
- Quick Arbitration Select (QAS) increases bus utilization by streamlining release and re-use of the bus by the various peripherals
- Cyclic Redundancy Check (CRC) for all SCSI bus phases. CRC improves data integrity by detecting data integrity errors. Previous versions of SCSI only checked the data phase.

The Types of SCSI

| Type | Speed | Hard drive/peripheral connections |
|----------------------------------|---------------|--|
| Ultra320 SCSI (16-bit Wide) | 320 MByte/sec | State-of-the-art hard drives |
| Ultra160 SCSI (16-bit Wide) | 160 MByte/sec | Hard drives |
| Ultra2 SCSI (16-bit Wide) | 80 MByte/sec | Hard drives |
| Ultra Wide SCSI (16-bit Wide) | 40 MByte/sec | Hard drives and tape drives |
| Ultra SCSI (8-bit Narrow) | 20 MByte/sec | CD-R, CD-RW, tape, removable storage (Jaz), and DVD drives |
| SCSI-2, Fast SCSI (8-bit Narrow) | 10 MByte/sec | Scanners, Zip drives, and CD-ROM |

Server Technology Comparison

| | SATA | Fibre Channel | SCSI |
|-----------------|---|---|---|
| Best suited for | Entry-level to mid-range servers | Server-to-server, campus networks | Mid-range to enterprise servers |
| Advantages | <ul style="list-style-type: none"> Performance of first-generation Serial ATA products: 150 MByte/sec Expected low cost, but still an emerging technology | <ul style="list-style-type: none"> Performance: 200 MByte/sec Hard drive reliability Highest hard disk drive expandability | <ul style="list-style-type: none"> Performance: 320 MByte/sec per channel High hard drive and peripheral reliability Connectivity to the largest variety of peripherals Expandability |

Single-User Technology Comparison

| | USB | ATA | SCSI |
|-----------------|--|--|--|
| Best suited for | Basic desktop | Basic desktop | Performance desktop/workstation |
| Advantages | <ul style="list-style-type: none"> No added cost* Easy, external connectivity for simple devices like joysticks, keyboards, mice, and entry-level scanners | <ul style="list-style-type: none"> No added cost* Industry-standard interface for connecting internal devices such as hard disk drives and CD-ROMs | <ul style="list-style-type: none"> Highest performance Highest device reliability Connection to the largest variety of peripherals Expandability |

* ATA and USB connections are standard on all new Windows® computer systems.

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Glossary

| | |
|---|--|
| Basic Input/Output System (BIOS) | A motherboard BIOS controls the basic functions of the computer such as the keyboard, monitor, etc. The BIOS on a SCSI card is used to control SCSI hard disk drives and perform the hard disk boot function. |
| Bus Mastering | The ability to process SCSI commands on the SCSI card due to its built-in processor without using the system's CPU. |
| Direct Memory Access (DMA) | The fastest method of data transfer available for multitasking operating systems. Data is transferred from SCSI devices to system memory (RAM) via the SCSI card without using the system's CPU. |
| Daisy Chain | A cable configuration in which internal and external SCSI devices such as hard drives, CDs, scanners, and tape drives are connected in a series to the SCSI card. |
| Input/Output (I/O) | An operation, program, or device that enters data into or extracts data from a computer. |
| Low Voltage Differential (LVD) | Introduced with Ultra2 SCSI, and further enhanced with Ultra160 and Ultra320 SCSI, LVD technology enables data transfer to 320 MByte/sec and supports cable lengths to 12 meters. |
| Quick Arbitration Select (QAS) | An Ultra320 SCSI feature that improves the control release between SCSI devices, reducing command overhead. |
| Packet Protocol/Packetized SCSI | This Ultra320 SCSI feature speeds the transfer of data, command, and status packets over earlier generations of SCSI. |
| SCSI Bus | A host adapter and one or more SCSI peripherals connected by cables in a linear chain configuration. The host adapter may exist anywhere on the chain, allowing connection of both internal and external SCSI devices. A system may have more than one SCSI bus by using multiple host adapters. |
| SCSI ID | A unique identification number used for each device on the SCSI chain. |
| Termination | A feature that stops the data signal at the beginning and the end of the SCSI bus. The first and last devices on the SCSI bus must be terminated. |

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