SCSI Manager 4.3: Compatibility and Features (5/96)

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TOPIC ---

This article provides compatibility and feature information of Small Systems Computer Interface (SCSI) Manager 4.3.

DISCUSSION ---

SCSI Manager 4.3 adds several new features to the SCSI architecture of the Macintosh. These features include:

- SCSI-2 compliance
- Concurrent asynchronous I/O
- Disconnect and reconnect

SCSI Manager 4.3 is supported on all Power Macintosh, and 68040 Macintosh desktop computers. However, the Macintosh 630 family* requires SCSI Manager 4.3.1 which is included in System 7.5.1 and later. SCSI Manager 4.3 is not supported on any Macintosh PowerBook computers, including Duos.

SCSI Manager 4.3 is part of the ROM in all Power Macintosh and Quadra AV computers. Other 68040 Macintosh computers require the SCSI Manager 4.3 extension (System 7.5) or the SCSI Manager extension (System 7.5.1 or later).

SCSI-2 Compliance

All mandatory SCSI-2 messages and protocol actions, as defined by the initiator, are supported. However, optional hardware features of SCSI-2, such as fast SCSI and wide SCSI, are supported by the interface but not by the Macintosh hardware. This means that expansion cards can be designed to offer this functionality and SCSI Manager 4.3 supports these cards.

Concurrent Asynchronous I/O

Concurrent asynchronous I/O means that reads and writes can be requested and the processor is free to do other things until the device completes the request and notifies the SCSI Manager by using an interrupt. Multiple drivers can issue multiple requests; SCSI Manager 4.3 tries to overlap the operations as much as possible. Applications need to call the File Manager asynchronously to take advantage of the asynchronous operation of SCSI Manager 4.3.

Disconnect and Reconnect

Disconnect and reconnect lets devices disconnect from the SCSI bus while processing a command and reconnect when needed. With this feature requests can be sent to multiple devices and executed in parallel. For example, a driver for a disk array can send a request to one disk, which disconnects, then issue another request to a different disk. The two disks can then process the requests simultaneously, reducing the time needed to accomplish the task.

Direct Memory Access

Direct memory access is also used by SCSI Manager 4.3. This capability is available on the Quadra 660av, Quadra 840av and all Power Macintosh computers. This allows direct transfer of data from the SCSI bus to memory without going through the main processor. This frees the main processor to do something else at the same time as the data transfer.

Multiple SCSI Bus Support

SCSI Manager 4.3 also supports multiple SCSI buses. Some Macintosh models (such as the Power Macintosh 8100/80) have dual SCSI buses. These Macintosh computers support 14 SCSI devices (7 on each bus) as long as the drivers for these devices support SCSI Manager 4.3. Also, Nubus and PDS cards can be developed to add even more SCSI buses.

Parity Detection

Parity detection is now used to check for errors in data received by the SCSI Manager. This feature can be enabled or disabled on a per transaction basis for compatibility. The original SCSI Manager did not check for parity errors of incoming data. All Macintosh computers generate parity for write operations.

Compatibility

SCSI Manager 4.3 is backward compatible with the original SCSI Manager. All of the original SCSI Manager functions and TIB instructions are supported except for scComp (compare).

Additional and programming information can be found in "Chapter 4 - SCSI Manager 4.3" of "Inside Macintosh: Devices".

*Note: The following computers are in the Macintosh 630CD family: LC 630, Quadra 630, Performa 630, Performa 635, Performa 636, Performa 637, Performa 638, and Performa 640.

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