

TO: X3T9.2 Committee
FROM: Bill Dallas
SUBJECT: CAM-2 Study Group Minutes of 11-92
DATE: December 2, 1992

There currently is a need to update and broaden the scope of the Common Access Method (CAM). The study group was formed to take input on the directions/compatibility/enhancements for the CAM-2 specification. This input will then be used as the basis for the areas of investigation for the CAM-2 specification. Please note that the scope of investigation is not limited to the ideas/proposals of the CAM-2 Study group but is open to the general community.

CAM as a specification has taken over 4 years produce a broad generic software interface allowing manufacturers of host adapters to interpret requests in a common manner. All changes to the CAM specification should not break the original objectives CAM. Below is a little history from the CAM specification Revision 3.0.

When the Small Computer System Interface (SCSI) was introduced, a large number of systems integrators included support in their operating systems. However, they were parochial in implementation and a diverse set of strategies to support SCSI devices were implemented in software.

Some companies published their specifications and encouraged third-party suppliers to add new peripherals. Others failed to add support for SCSI or did not publish the specifications. An increasing demand developed for some common method to attach SCSI peripherals to a number of operating systems and a large range of computer systems. Much of this impetus stemmed from the growth in the desktop computing environment.

In October 1988 a number of peripheral suppliers formed the Common Access Method Committee to encourage an industry-wide effort to adopt a common software interface to dispatch input/output requests to SCSI peripherals.

The primary objective was to define a set of software constructs and tables that would permit the manufacturers of host adapters to provide software or microcode to interpret requests in a common manner.

Out of the proposals made by a large number of contributors, the CAM Committee selected the best concepts and used them to develop the standard.

Some of the companies which contributed had designed their own methods to support SCSI devices, and for the most part set aside individual business considerations to foster the development and adoption of this standard.

Results of November 1992 CAM-2 Study Group

Compatibility:

Proposed Project Plan states "CAM Extensions shall maintain a high degree of compatibility with the CAM standard." Investigate if backwards compatibility can be maintained. Methods of maintaining compatibility can be developed but at a cost. Are the tradeoffs acceptable.

Issues on Compatibility:

- 64-bit systems verse 32-bit systems.
- The CAM standard was developed toward a 32-bit system model.
- 32-bit systems "may" be maintained with tradeoffs.

Tradeoffs are readability standard, maintainability of software, mechanisms for decomposing/composing addresses, and generic performance considerations (64-bit).

Driver Portability:

- It is estimated that driver portability is 80% of driver code is transportable between operating systems.
- 95% of driver code is transportable between same operating systems different platforms. The same holds true for XPT and SIM.

Callbacks:

- Investigate if callbacks are the only method of XPT and driver notification of events.
- Mailboxes
- Messaging - Operating System Annex's. Suggestions to allow: operating system to define CCB structure offsets and example compiler generated structure offsets.

Define named fields only:

- Instead of bit field defines allow operating system to define bit, byte, word, etc.

Action Items for CAM-2 editor (Bill Dallas)

- Get mailing lists of from Dal Allen of previous CAM interested parties. - Done.
- Take survey of previous CAM interested parties of how the above proposals will effect there efforts. Both hardware and software vendors. The above proposals will have a dramatic effect on compatibility. - pending.
- Post results of survey to scsi-reflector.

SCSI-3:

- To allow CAM to follow the developing SCSI-3 model New busses Fibre Channel etc.

New functionality:

- Path id's etc.

New queuing models:

- Tags etc.

Tighten up CAM specification:

- Refine wording of gray area's of CAM.
- Correction of oversights in CAM

Please direct all comments/concerns to the scsi-reflector.