WHERE IS YOUR ALLEGIANCE

Several times in recent months there have been discussions about Contingent Allegiance, Auto Contingent Allegiance, and AutoSense. While most of these exchanges have originated from IPS (Internet Protocol Storage) folks trying to learn the SCSI ropes, the level of confusion indicates that a review might be helpful to our readers.

History

In the beginning there was CA (Contingent Allegiance) and though everybody did not like it, there was no doubt that CA was a fact of SCSI-2 life. The event that forced CA into existence was the decision to separate telling the initiator an error had occurred from telling the initiator what kind of error had occurred.

- First, tell the initiator that an error occurred (Check Condition status)
- Second, if the initiator asks, tell the initiator what the error was (the Request Sense command and returned Request Sense data)

Since the earliest days of SCSI there were those who thought it would be best to send both Check Condition status and the Request Sense data in the same Status phase. There was opposition though, primarily from those who believed that by including the controller in the device there would be no errors and providing sense data would be so exceptional it should be done as a separate action.

And as for those who believed so sincerely. Why list names, when we can be politically incorrect and stamp a stereotype? Disk drive vendors dominated the SCSI committee then, as they do now, and as a group there is little or no appreciation of the complexities involved in error recovery of different device types.

History repeated itself when Fibre Channel development fell into the same trap, and designed around disks in the PLDA (Private Loop Direct Attach) Technical Report. PLDA is why FCP-2 (Fibre Channel Protocol) was needed, to add a whole new way of doing error recovery in order to handle tape drives.

There was one memorable convert from the side of separate actions by targets and initiators. It was nowhere near as dramatic a conversion as the road to Damascus, but when Paul Nitza (then with Emulex) declared war on Request Sense during the development of SCSI-2, he shocked the members.

Paul had always been a target kind of guy, but when he was assigned to write initiator drivers he discovered just how the lack of AutoSense made life miserable for the host. Charged with zeal, Paul came armed with enough firepower to convince the committee to incorporate his ideas into at least one of the draft revisions.

ENDL was there when it happened, so join us now for a glimpse into the past.

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Bundled into Paul Nitza's command queueing proposal was AutoSense; a method which allows the target to automatically return Sense Data upon a Check Condition. If an error occurs during execution the target follows the procedure of:

Status Phase	*Check Condition*
Data In Phase	*Sense Data*
Message In Phase	*Command Complete Message*

Harlan Andrews (Apple) had serious reservations about this sequence because a Data In phase could mislead initiators (host bus adapters) into transferring the Sense Data into the host system memory behind the completed data transfer.

Paul's justification for including AutoSense as part of command queueing is that he does not want the target forced to retain all the status associated with queued commands. At present, SCSI requires that sense be retained until the next command but in a command queued environment, sense would have to be retained until a tag was re-used. Bob Snively (then Adaptec now Brocade) felt retaining one byte of sense per tag was a minor burden as it does not require much buffer storage.

Unfortunately for SCSI users, Paul decided to leave Southern California and head East to Ohio to set up his shingle as a consultant. No client came along to support/subsidize his continued participation in the committee, and without Paul as champion, the initiative faltered and died.

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Jim McGrath (Quantum) nominated himself as leader of the AEN (Asynchronous Event Notification) expunge task force by declaring similar distaste for AutoSense, and adding that to his campaign. His rationale is that the AutoSense justification is based on performance, yet the number of errors in a disk system are so low it cannot possibly make any difference.

> *"AutoSense adds one more mechanism to an already over-burdened, complex structure to handle an event that might happen only once a week."*

If you did not believe what we said about the influence of disk vendors, take a look at what happened the following month. This was not a coincidence.

X3T9.2 SCSI MEETING FEBRUARY 22-23, 1988

AutoSense died, and is to be removed from SCSI-2. There were no protests from anyone in the tape area.