

**IT/02-0828**

Accredited Standards Committee, INCITS, Information Technology  
INCITS Secretariat, Information Technology Industry Council (ITI)  
1250 Eye St. NW, Suite 200, Washington, DC 20005

Telephone 202-737-8888; Fax 202-638-4922; Email: [incits@itic.org](mailto:incits@itic.org)

Date: July 30, 2002

Project: None

Ref. Doc: ITLB 4490, ITLB 4450

Reply to: Deborah J. Donovan, INCITS Secretariat

Phone: 202/626-5746

Email: [ddonovan@itic.org](mailto:ddonovan@itic.org)

---

To: INCITS/T10- **FOR ACTION**

cc: INCITS Executive Board

Subject: Transmittal of Negatives Votes and all Comments received for ITLB 4490, "Follow-up and Ten-Day Reconsideration of ITLB 4450, Approval to Forward INCITS 350, Information Technology - Fibre Channel Protocol for SCSI, Second Version (FCP-2) for final approval as an American National Standard"

---

Attached are the negative votes and all comments received for ITLB 4450, "Follow-up and Ten-Day Reconsideration of ITLB 4450, Approval to Forward INCITS 350, Information Technology - Fibre Channel Protocol for SCSI, Second Version (FCP-2) for final approval as an American National Standard". The final tally for ITLB 4490 was 11-4-1-0=16 total membership. Although this tally is sufficient for approval we are asking T10 to respond to the comments before the Secretariat takes further action.

Please add this action item to the next INCITS/T10 agenda for review and discussion, and provide a TC recommendation on one of the following:

- 1) publish the draft as is; and possibly
  - 1a) process an amendment;
- 2) revision of this draft followed by a public review and INCITS ballot; and
- 3) withdrawal of the draft

Please respond to the INCITS negatives as soon as possible, copying the INCITS Secretariat on all correspondence. Also, please reference the ITLB 4490 and the subject matter.

---

**Vote for ITLB4490 by Hewlett Packard Co**

Below is the response of Hewlett Packard Co to Letter Ballot ITLB4490.

Response: No

Comments:

IBM's initial NO vote in INCITS letter ballot 4450 on FCP-2 provides the opportunity to correct a number of issues have come to our attention since the T10 letter ballot and INCITS public review. Since these seem to reflect errors in the proposed standard, it would be prudent to fix them now rather than introduce an FCP-2 amendment. Since they are errors, not new features, it does not seem appropriate to defer them until FCP-3. HP Issue #1 1. Veritas' FCP-2 public review comment about

backup application/tape drive problems unearthed problems with the clearing effects of protocol events that affect more SCSI standards than FCP-2. Since that time, T10 has worked to address the issues for all SCSI protocols, not just FCP-2. As IBM's INCITS no vote indicates, the suggested solution for FCP-2 and

SSC-2 developed by T10 was incomplete. Rather than the mode page correction proposed by IBM, we suggest that all SCSI clearing effects be removed from FCP-2 and the issue be left to other T10 standards: a) In section 4.9 "Clearing effects of task management, FCP, FC-FS, and FC-AL-2 actions", delete these rows and associated notes from Table 4

"Clearing effects of link related functions" and Table 5 "Clearing effects of initiator actions": - Open Tasks (FCP Exchanges) Aborted - Target mode page parameters restored from saved pages - Pre-existing ACA, Unit Attention, and Deferred error conditions cleared - Device reservations - Persistent device reservations - Prevent Allow Medium Removal state cleared to allow removal - Buffered data for XOR, EXTENDED COPY, COPY - Access controls data - AccessID enrollment state to pending enrolled All the other rows are FCP-2 specific and should remain. b) Delete

Table 6 "Management of mode pages during PRLI and PRLO." c) Define "I\_T nexus loss" to provide linkage to the SCSI architecture and command set changes being made. HP Issue #2 The Time to wait for a response to Read Exchange Concise (REC) is specified as one Resource Allocation Timeout(Extended Link Service) (R\_A\_TOV(ELS)). All other extended link services (ELSeS) use 2\*R\_A\_TOV. T10 needs to affirm that R\_A\_TOV is intended or change it to 2\*R\_A\_TOV. HP Issue #3 There is the possibility of a data corruption when using FCP-2 sequence error recovery under the following conditions: - The Read Exchange Concise Timeout Value (REC\_TOV) timer expires - REC is issued and it times out after R\_A\_TOV (or 2\*R\_A\_TOV, depending on how issue #2 is resolved). - REC is aborted and retried. By this time, the Resource Recovery Timeout Value (RR\_TOV) has expired at target and it has discarded state. - The REC retry receives an FCP FC-4 Link Service Reject (FCP\_RJT) response due to the target having discarded state. The initiator cannot distinguish between a REC FCP\_RJT due to FCP\_CMD loss and target discard of exchange state. Under these conditions, the initiator will either always have to abort the exchange (rendering FCP-2 no better than FCP in error resilience in FCP\_CMD loss scenarios), or attempt command retry and run the risk of data corruption, due to the command already having completed previously. The root cause of the problem is that FCP-2 allows the targets to discard exchange state information RR\_TOV after sending the response (in the case FCP\_CONF is not in use), whereas initiators are permitted to continue to attempt FCP-2 SLER on a REC timeout by retrying the REC.

The REC timeout value is R\_A\_TOV which can be greater than RR\_TOV. HP issue #4 FCP-2 task retry identification and FCP\_CONF features are optional to implement per the standard. When FCP\_CONF is not in use and task retry identification is not enabled, there is a potential for data corruption under the following conditions: - An exchange completes and its originator ID (OX\_ID) is re-used for the next exchange, issued within RR\_TOV after the previous use of that OX\_ID. - In the new exchange, the FCP\_CMD is lost and the initiator issues REC. Since the target never saw

the new exchange, the REC response is sent with information about the previous exchange. The initiator commences sequence recovery based on incorrect REC response data. There is an exposure to the risk of data corruption when this condition occurs. HP issue #5 Per Section 9.4.1, the target is allowed to terminate an exchange for which it has detected an error and send a FCP\_RSP with an appropriate CHECK CONDITION status and sense data that describes the error. Since the initiator is not aware of the possible sense key and additional sense code that the target can return in the above scenarios, it cannot commence FCP-2 SLER when the target resorts to behavior as described above. This causes FCP-2 SLER usage to be non-dependable in scenarios such as "Lost Write Data, not last frame of sequence." HP issue #6 Per Section 12.5.2, the initiator shall abort (send ABTS + RRQ) a REC that does not complete within R\_A\_TOV(ELS) and

retry the REC. This error recovery scenarios are rendered useless since the target is allowed to discard exchange state within RR\_TOV after sending a FCP\_RSP and RR\_TOV can be < R\_A\_TOV(ELS). The RR\_TOV timer value needs to be re-defined for the purpose of FCP-2 SLER, or a new timer value needs to be used in its place which allows targets to discard exchange state.

### **Vote for ITLB4490 by IBM Corp**

Below is the response of IBM Corp to Letter Ballot ITLB4490.

Response: No

Comments:

In reviewing the response to Veritas's FCP-2 Public Review comments concerning the clearing actions of link related functions, I do not believe that the proposed solution fully addresses the issues. 1) The solutions presented to the T10 only address the case of error recovery and reauthentication. It fails to address the issue of device discovery. During FCP-2 recommended device discovery process, any new initiator on the SAN issues INQUIRY commands to all visible targets of interest. Issuing this command requires a PLOGI,

because it will be the first time that the new initiator port has communicated with the target. Many devices implement shared mode pages, so it is not possible to reset only the mode pages for the specific initiator. The result is that mode pages get reset for all initiators; thereby, crashing any backup application that is currently executing. Given that PLOGI is below the SCSI command layer, device reservations do not provide any protection against this problem.

2) It is also debatable as to whether saved mode pages would retain adequate information to restore the device. Specifically, the "Block Length" directly affects both the recording format and the SCSI command semantics on tape drives. "Block Length" is part of the Mode Parameter Header and does not appear in any mode pages. The "Save Pages" bit in the mode select CDB is only specified to save mode "pages" which are reported as "savable". Therefore, parameters appearing outside of the mode pages won't be saved, except through some vendor-specific extension.

Suggested solution: The problem of shared mode pages was already addressed for PRLI/PRLO through FCP-2 Rev 7, Table 4 footnote 12 and Table 6. If this same solution were applied to the columns for "Failed Discovery after LIP", "Failed Discovery after OLS" and "LOGO/PLOGI" the problem should be essentially solved without any need for treating sequential devices differently than non-sequential devices.

Ronald F. Silletti IBM Corporation

---

Vote for ITLB4490 by ICCP

Below is the response of ICCP to Letter Ballot ITLB4490.

Response: No

Comments:

Our change is based on the technical arguments provided by IBM. We note that the SD-2 requires that the TC respond to the consensus body's negative votes before the dpANS can be forwarded to ANSI, regardless of the numerical results of the vote.

---

**Vote for ITLB4490 by Oracle**

Below is the response of Oracle to Letter Ballot ITLB4490.

Response: Abstain

Abstain Reason:

Issues raised in IBM comment are beyond my personal expertise and organizational interest; Oracle abstains in deference to those with more knowledge and stake in the outcome.

---

**Vote for ITLB4490 by Panasonic Technologies Inc**

Below is the response of Panasonic Technologies Inc to Letter Ballot ITLB4490.

Response: No

Comments:

Panasonic Technologies believes T10 should try to resolve the IBM comment.

