FCP-3 Work Items

David Peterson, SBS
(T10/03-313r1)

1) Normative text for bi-directional SCSI command support
- dap: approved for inclusion.

2) Updated clearing effects table
- dap: no changes pending or proposals at this time

3) Normative text for class 2 error detection and recovery
- dap: approved for inclusion

4) - clause 9.3
... The target shall never request or deliver data outside the buffer length defined by FCP_DL. If the command requested that data beyond FCP_DL be transferred, the FC_RSP IU shall contain the FCP_RESID_OVER bit set to one. The command is completed normally except that data beyond the FCP_DL count shall not be transferred and that the appropriate overrun condition is presented. See 9.4.4.

How can the command ever request that data beyond FCP_DL be transferred? Maybe this would be for example, when a variable length read type command is issued to a tape device that results in data larger than the provided FCP_DL?

- dap: more discussion of this issue is needed. It should be noted that FCP_DL is a transport level entity and will remain so. FCP-2 clause 9.1.2.10 states “The FCP_DL field is the data buffer size defined by SAM-2”.

5) - clause 9.4.8
If a condition of FCP_RESID_OVER is detected, the termination state of the FCP I/O operation is not certain. Data may or may not have been transferred and the SCSI status byte may or may not provide correct command completion information.

Not sure what the recovery process is after this condition?
Is the reason why the SCSI status byte may or may not provide correct information because the data may or may not have been transferred?

Also this text appears to be in conflict with clause 9.3.

- dap: provide clarifying text.

6) - Obsolete Asynchronous Event Reporting
- dap: approved

7) - Implement FCP changes per FC-AE (see clause 4.6)
- FC-AE-RDMA uses Word 5 bits 31-24 as a code field:
    0xA6 RDMA with Target Notification
    0xA7 RDMA without Target Notification
    FCP_XFER_RDY is not used
    CDB is not used
  - dap: RDMA specifics approved for inclusion

8) - Implement T10/02-419 - Device Identifiers and VPD Data
  - dap: this proposal still pending

9) - Review T10/02-267- FCP-2: Issues To Resolve

#5 - Task Retry Identification functionality
> We have a question regarding the Task Retry Identification functionality
> described in Section 4.6.
>
> The re-use of OX_IDs within RR_TOV of their last use exposes the
> initiator to this condition described in Section 4.6.
>
> Since it is the initiator's OX_ID generation model which can determine
> the exposure to this problem, the Task Retry Identification
> functionality must be a "mandatory to implement, optional to use"
> feature and it should be left to the initiator's discretion on whether
> this should be enabled.
>
> Can someone clarify why this is not a mandatory feature of FCP-2 ?
> Without this feature, there is a risk of exposure to data corruption and
> FCP-2 sequence level error recovery (SLER) cannot be used in a reliable
> manner.
>
> Can the FCP-2 target implementors on this list comment on whether they
> support Task Retry Identification ? What is the extent of support for
> this feature among FCP-2 target implementations ?

Resolution: defer to FCP-3.

  dap: needs further discussion

#6 - 3rd party device identifier

5.2 SCSI third-party device identifier for the Fibre Channel protocol
The SCSI RESERVE commands that use the 64-bit THIRD-PARTY DEVICE ID defined by SPC-2 shall use the FCP third-party device id format defined in table 7 to identify the specified third-party target.

FCP_PORT IDENTIFIER:
The FCP_PORT IDENTIFIER field defines the address identifier of the target that shall be used by the target for third-party addressing.

Table 7 - FCP third-party device id format
Byte
0 RESERVED
1-3 (MSB) FCP_PORT IDENTIFIER (LSB)
4-7 RESERVED

Resolution: defer to FCP-3.

- dap: group agreed remove this text.
- dap: should use the worldwide port name as the identifier.

10) - Review T10/02-440 - Response to HP INCITS No Vote on FCP-2

#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.

Resolution: Defer to FCP-3. This issue is discussed in clause 4.6 and is well understood.

- dap: related to 9) item #5, needs further discussion

#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.

Resolution: See issue #3 resolution. The dual use of this timer has become a problem (e.g., certainly donít need to wait an extended period of time for authentication to occur following loop initialization). Need to resolve this issue in FCP-3.

- dap: general agreement, needs further discussion.

11) - Device Names

- require that FCP-3 devices use the name string format (see T10/02-419)

    - dap: needs further discussion

12) - Obsolete First_Burst functionality
- PLDA prohibits setting Write Xfer_RDY = 1

    - dap: IBM is opposed to removing this functionality. No change at this time.

13) Editorial: Rob E. to send email regarding SENSE valid and RSP VALID fields.

    - dap: received email for Rob and digesting the content.

14) Mandate use of CRN

    - dap: this issue to be discussed further:

15) QUERY TASK functionality

    - dap: approved for inclusion

14) Obsolete UNTAGGED TASKs

    - dap: approved provided UNTAGGED TASKs are obsoleted.

17) Update SAM mapping annex

    - dap: approved