Minutes of SAS Protocol Teleconference - May 14, 2002

The teleconference was held from 10:00 am to 12:50 pm CDT. At least
the following people were present on the call:

John Lohmeyer
Dana Hall
Brian Day
Bill Galloway
Kyle Sterling
Ron Roberts
Arie Krantz
Don Allingham
Tim Hoglund
Rob Elliott
Alvin Cox
Dave Noeldner
Aaron Olbrich
Matt Otto
Ting Chan
Scott Younger
Steve Byan

The agenda was:

    Scrambler bit order [Coomes]
    CRC code sample [Coomes]
    SAS OOB Timing [Elliott]
    SAS Wide Link Rules (02-170) [Galloway]
    SAS XFER_RDY Rules (02-169) [Galloway]
    Review of SAS document (02-157) [Elliott]
    SAS PHY MARGIN CONTROL request (02-179) [Roberts]

Items added at the meeting:
    BREAK impact to transport layer [Hall]
    Define behavior if extra ACK or NACK received [Hall]
    Primitive to say all credit has been sent [Galloway]
    Error cases in AEN [Galloway]
    Hash in or out? [Galloway]
    Fairness timing issue? [Hoglund]
    What does it mean to ignore or discard a frame? [Galloway]

**** SAS XFER_RDY Rules (02-169) [Galloway]**

Bill Galloway reviewed 02-169r1, SAS XFER_RDY Rules. He included a
Relative Offset definition in the transfer ready frame anticipating
adding it in a future version of SAS. The group agreed to leave this
field reserved. Bill will prepare rev 2, backing out this change.

In absence of objection, the group agreed to recommend that 02-169r2
be accepted for inclusion in the SAS working draft.

** SAS Wide Link Rules (02-170) [Galloway]

Bill Galloway reviewed 02-170r0, SAS Wide Link Rules. He received suggested changes.

In absence of objection, the group agreed to recommend that 02-170r1 be accepted for inclusion in the SAS working draft.

** BREAK impact to transport layer [Hall]

Dana Hall asked about the impact of receiving a BREAK primitive on the transport layer. Receiving a BREAK while the protocol-specific state machine is not idle should cause the associated I/O to be aborted. We need to work out exactly how this is accomplished between the various state machines. Dana Hall will write a proposal.

** Define behavior if extra ACK or NACK received [Hall]

Dana Hall requested that we define the behavior to be taken when a device detects that an extra ACK or NACK was received. There was a discussion of how to handle this situation.

Rob suggested that the target should report this error as a unit attention condition with a new ASC/ASCQ. The initiator should send BREAK.

Tim Hoglund suggested that the link layer should send BREAK and notify the higher layers of the error so it can be reported.

Dana Hall agreed to write a more detailed proposal.

** Primitive to say all credit has been sent [Galloway]

Bill Galloway noted that this topic had originated at LSI with a suggestion that another reason code be created for the DONE primitive. Bill suggested that DONE would probably have already been sent, so he suggested that some new primitive would be a better approach.

Bill said there are two cases, 1) there will never be more credit for this connection no matter how long the other device waits, and 2) there won't be more credit for at least a millisecond. The group agreed that we could merge these two cases.

Bill Galloway agreed to write a more detailed proposal.

** Error cases in AEN [Galloway]

Bill Galloway noted that we need to remember to document the AEN error cases. He agreed to send George an email to this effect.

** Hash in or out? [Galloway]

In Nashua, the question came up of do we really need the hashed 24-bit SID and DID addresses in frames? The CRC protection on the open frames renders this feature largely unnecessary. Should the hash values be checked at the link layer or the transport layer? No decision was made. We need to close on this question at the June meeting.

Bill Galloway agreed to write up two proposals, one proposing that hashing be eliminated and the other that hashing be checked at the transport layer.

** Fairness timing issue? [Hoglund]

Tim Hoglund said there is a potential ambiguity problem with the AWT timers in that the values may be different from expander to expander. Bill said that if you compare what you sent to what you received, then there should not be ambiguity. Tim was concerned that the actual wording in the working draft might not be clear. Tim will review the SAS working draft wording and propose changes, if necessary.

** What does it mean to ignore or discard a frame? [Galloway]

Bill Galloway wanted to explicitly say for each error case whether a frame is ACK'd or NACK'd, is RRDY sent, and is the command aborted.

Bill Galloway agreed to write a proposal.

** Recommendations to T10:

  that 02-169r2 be accepted for inclusion in the SAS working draft
  that 02-170r1 be accepted for inclusion in the SAS working draft

** Meeting Schedule

A SAS Protocol teleconference is scheduled for May 21, 2002:

Call information:
   Tuesday May 21, 2002
   11:00 am -- 2:00 pm EDT
   10:00 am -- 1:00 pm CDT
    9:00 am -- noon   MDT
    8:00 am -- 11:00 am PDT

   USA Toll Free Number: 877-417-9828
          Toll Number: +1-706-679-9028
        Conference Code: 719 533 7560   (same as my phone number)

WebEx Session: http://seagate.webex.com/
 Meeting Name: SAS Protocol teleconference
     Password: to be announced on T10 reflector

Face-to-face SAS Protocol meetings are scheduled for:

June 5-7, 2002 in Minneapolis, MN. See
http://www.t10.org/ftp/t10/sas0605.txt for meeting information.
There will also be a concurrent SAS Physical meeting.

June 24-26, 2002 in Denver, CO. See
http://www.t10.org/ftp/t10/sas0624.txt for meeting information. (No
concurrent Physical meeting.)

July 15-16, 2002 in Colorado Springs, CO with T10. See
http://www.t10.org/ftp/t10/announce/ann-m050.pdf for meeting
information and http://www.t10.org/ftp/t10/mtg_map.txt for meeting
times. There will also be a concurrent SAS Physical meeting.