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SAM Revision 12 Review Comments for Working Group Discussion
January 19, 1994 X3T10/94-029R0

From: Charles Monia
SAM Technical Editor

To: Members of X3T10

Subject: SAM Revision 12 Review Comments for Working Group Consideration

This document contains all proposed responses referred for working group consideration during the January 1994 meeting of X3T10.

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The following issues for working group discussion are extracted from the review comments on SAM, revision 12 submitted by Jeff Williams of Hewlett-Packard.

Begin working group issues:
===
#010 (E) Page 20, Section 3.5, Para 2

Shouldn't the "[input-1,input-2,...]" be "{input}" indicating
zero or more input parameters. This is consistent with the
notation in the previous section.

>
> The suggested notation ("{...}") is used to defined a composite
> object. I acknowlege the potential for confusion and will consider
> modifying the notation accordingly. I am reluctant, however, to extend
> object annotation to procedure calls.
>

#014 (T) Page 31, Section 4.6, Para 1

You cannot require that the order be preserved in all cases for
a given pair of devices. For example, if I run in fibre channel
over a fabric and send two command frames, the order is only
guaranteed if I request in-order transmission over the fabric.
I may not want to do this for performance reasons. I think that
you need to say that order may be "imposable" in the cases
where ordered tasks are sent or some other ordering is required,
but you cannot require it in all cases.

>
> I believe that, although some physical transports, such as Fibre
> Channel, may reorder data in transit, the ordering specified by the
> sender is restored before the transaction is presented to the consumer.
>
> In any event, ordering is implicit in SCSI-2 today. Therefore
> placing a new ordering burden on the application client (e.g., the
> device driver) may lead to implementations that break existing
> code that would otherwise be portable.
>
> I suggest this issue be left open for discussion
> at the next working group.
>

#031 (E) Page 45, Section 6.3, Para 2

TASK SET FULL states that it is required if tagged tasks are
supported. Tagged tasks support is required, therefore remove
the statement about it being optional (the first sentence).

>
> As I understand it, device support for tagged tasks is still optional.
> If it is not optional, then devices such as tape drives will have to be
> modified for SCSI-3 compliance. ie. As a minimum, even if such devices
> are limited to one task per logical unit, they will have to understand
> queue tag messages and the like.
>
> I recommend discussing the matter at the next working group.
>

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The following issues for working group discussion were extracted from the comments submitted by John Lohmeyer of NCR

Begin comments

===

6. In 3.5, Notation for Procedures and Functions, the usage of
    () and [] differ from their usage in 3.4.1, Object
    Notation. Readers could become confused. I suggest
    aligning these two notations by always using [] for
    optional items and always using () for item lists.

>
> While I agree there's potential for confusion, I don't see
> an easy way around this problem since both notations are
> based on well-established conventions.
>

From: US3RMC::"John.Lohmeyer@FtCollinsCO.NCR.COM" "John Lohmeyer"
4-JAN-1994 03:55:29.14
To: Charles Monia <starch::monia>
CC:
Subj: Re: Proposed responses to your review comments on SAM Rev 12.

> 6. In 3.5, Notation for Procedures and Functions, the usage of
>   () and [] differ from their usage in 3.4.1, Object
>   Notation. Readers could become confused. I suggest
>   aligning these two notations by always using [] for
>   optional items and always using () for item lists.
>
> >
> > While I agree there's potential for confusion, I don't see
> > an easy way around this problem since both notations are
> > based on well-established conventions.
> >

I would agree that both notations have been used, but I don't think both
are commonly used in the SAME document. That is the point of my comment.
Why does SAM have to use BOTH conventions? Are we being compatible with
the notation that exists in two external documents? If so, we should
reference these documents and state why our notations are consistent
with the external documents rather than being self-consistent.

>>
>> In my opinion, the way around the problem is to ensure that the context in which
each

>> is used is clear to the reader so that it is possible to distinguish which notation is in effect.
>> In that light, I'd apprciate specific instances where such confusion has been encountered.

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The following are comments received from Steve Heil of Panasonic for consideration by the X3T10 Working Group during the January 1994 meeting.

Begin summary of Panasonic Working Group issues
===>>
FR1. Though the SAM document has been through several major revisions there is
    still significant work needed for the document valuable to the industry.
This is
    particularly the case with Annexes A and C which represent a significant
    amount of committee effort but are not consistent with the remainder of the
    document. Concepts like queuing and terminology such as "execute", "task",
    "response", "confirmation" are not consistent. The document will confuse
    readers in its present state.

> SAM must, of course, be in full technical agreement with the queuing
> model passed by the commitee. Any discrepancies or inconsistencies betweem
> the body of the document and the queuing model will be corrected. In that
> regard, please cite specific instances where the draft is either
> unclear or at variance with the queuing model.
>
> It is my understanding that once such corrections are made annex C will be
> deleted. The commitees' intent regarding the alternate task set descriptions
> in annex A, however, is not clear to me. I propose that the issue of
> whether or not to retain annex A be resolved in the working group."

R2. The document requires the use of "Per Logical Unit Task Set Boundaries" but
discusses and provides for other implementations. This is very confusing. My
experience is that these options in a standard will become requirements in the
marketplace and therefore should be better documented in the standard. If the intent is
to provide extensibility through these options it should be clearly stated.
>
> I believe the discussion of other alternatives in annex A was in accordance
> with the commitees' wishes. Please see the previous response.
>
R3. I am confused by the requirement in clause 4.6 that all transactions be
received
    in the order they were sent. My understanding was that some of the SCSI-3
    transports do not maintain order (i.e. P 1394, Fibre Channel and possibly SSA).

>
> I believe that, although some physical transports, such as Fibre
> Channel, may reorder data in transit, the ordering specified by the
> sender is restored before the transaction is presented to the consumer.
>

> In any event, ordering is implicit in SCSI-2 today. Therefore
> placing a new ordering burden on the application client (e.g., the
> device driver) may lead to implementations that break existing
> code that would otherwise be portable.
>
> I suggest this issue be left open for discussion
> at the next working group.
>

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The following are comments received from Gene Milligan of Seagate for consideration
by the X3T10 Working Group during the January 1994 meeting.

===

3) I think CAM should be added to Figure Anonymous in the scope. In listing
(10) the description should be updated and the (?) deleted. In listing (12) it
should be corrected to "Common" rather than "Command".

```
>
> It has been suggested to me that this matter should be discussed with
> the folks in the CAM Working Group. I recommend raising this issue
> during the upcoming working group.
>
```

52) Should the Group 6 and 7 vendor specific commands now be limited to 16 or
less bytes?

```
>
> I believe that issue should be discussed in the working group. Assuming
> the commitee concurs with removing the CDB format defintions from SAM,
> I assume this would then become an issue to be addressed by the command
> standards.
>
```

55) I remain concerned that there may be a conflict with the installed base
which had a presumption of bit significance and the use of the BUSY bit in the
Task Set Full Status code.

```
>
> Please feel free to raise the issue in the working group.
>
```

65) Why should a protocol standard not require overlapped commands (in the SCSI
sense) to be detected? (6.5.3).

```
>
> The rationale is that, in some protocol implementations, checking for
> command overlap has too much overhead due to the large tag address
> space.
>
> I suggest discussing this matter during the working group.
>
```

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The following are comments received from Bob Snively of Sun for consideration by the X3T10 Working Group during the January 1994 meeting.

Begin Sun Comments

===

T 007 Page 31, Section 4.6

The last paragraph of section 4.6 indicates that the service delivery transactions are received in the order in which they are sent for a given pair of source and destination devices. Fibre Channel and some other channels allow the proper operation of SCSI with out of order delivery of command information. This restriction should be modified to allow the out of order delivery of commands if operating system or channel conventions can guarantee the proper behavior of the scsi targets. As an example, ordering of groups of commands can be enforced by the host adapter function or by management of individual commands with respect to the acknowledgment processing of commands requiring ordering.

>
> I had assumed that, while data may arrive out of order, the receiver
> would restore ordering before presenting the data to the consumer.
>
> I am concerned that relaxing the ordering requirement in the manner
> suggested will lead to implementations that break existing host code which
> depends on the implicit ordering provided by SIP/SPI.
>
> I would like to reopen this issue at the next working group.
>

E 008 Page 33, Section 4.7.1

Shouldn't the Initiator equation be:

Initiator = 0{Application Client} + 1{Initiator Identifier}1

If not, a considerable amount of additional information is required to indicate what the rules are for the execution of tasks across multiple independent ports.

>
> Multiple identifiers should be considered as nothing more than
> an alias for the same physical entity.
>
> I would like input from the working group on this issue. According

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> to past feedback, multiple identifiers for the same entity were
> considered acceptable.
>

E 009 Page 34, Section 4.7.2

Shouldn't the Target equation be:

Target = 1{Logical Unit} + 1{Target Identifier}1

If not, a considerable amount of additional information is
required to indicate what the rulse are for execution of
tasks to a LUN having multiple target ports within a single task.

>
> See reply to comment 008.
>

T 014 Page 39, Section 6 and page 74, Section 9.1

The Autosense Data, as an output arguement, is not defined
elsewhere. In particular, it is missing from the definition
of section 9.1, the Confirmation returned to the Application
Client. The referenced clause should be defined.

>
> The autosense return flag indicates whether or not sense data was
> returned to the autosense buffer. Input from the working group is
> is needed to determine the conditions under which autosense data
> is to be returned. ie. Can autosense data be returned for any command
> or only those which complete with a status of CHECK CONDITION or
> COMMAND TERMINATED?
>
> If the latter, then this flag is unneccesary.
>

T 027 Page 52, Section 6.5.7

In the last paragraph of the page, the text indicates that
AEN should be reported only once per occurrence of the causing
event. In fact, for errors that are generic and may influence
the operation of any attached initiators, the AEN should be
presented to all attached initiators. The text should
be modified to clearly indicate that AEN should be offered only

once to the initiator related to the command causing the
failure, but is allowed to be offered to every initiator if
it is unclear to the target which initiator will be affected by
the failure.
>
> I believe this requires discussion by the working group at large.
>

T 040 Page 59, Section 7.3

The second sentence of the last paragraph may be overly general.
The CLEAR ACA should only abort tasks if the QErr bit is set to
one.

>
> This should be discussed at the next working group. The description
> in the specification reflects inputs from others in the
> working group.
>

TT 046   Page 70, sections 8.2 - 8.7
(Modification required to change vote to affirmative).

It is clear from the document that each protocol shall
be required to provide a mechanism to perform each of
the task management functions. In addition to this,
it must be made absolutely clear which of the task
management functions are optional for a SCSI device
to implement and which ones are required. Some task
management functions may only be required if certain
other optional capabilities are allowed.

Terminate Task is an example of a function that is always optional.

Clear Task Set is an example of a function that is only required if
the task set elects the definition:

Task Set = {0(Tagged Task) + 0(Untagged Task)}

Clear Auto Contingent Allegiance is an example of a function
that is only required if the ACA bit is allowed to be set to one.

These are probably best placed in a new paragraph under each
Task Management Function entitled "Service Response"

Page 11

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A typical case would be for Terminate Task:

Service Response:

Function Complete: Indicates Terminate Task Function was accepted and will be attempted by Device Server

Function Rejected: Indicates Terminate Task Function not implemented by Device Server

Failure: Indicates Terminate Task Function could not be delivered to Device Server

A contrasting case would be for Clear Task Set:

Service Response:

Function Complete: Indicates Clear Task Set Function was accepted and will be attempted by Device Server.

Function Rejected: This response is only allowed for Device Servers that reject all Tagged Tasks.

Failure: Indicates Clear Task Set Function could not be delivered to Device Server.

Table of desired optionality:

Task Management Function	Opt/Rqrd	Conditions
Abort Task	Rqrd	
Abort Task Set	Opt	Rqrd if Tagged Tasks supported
Clear ACA	Opt	Rqrd if ACA bit = 1 supported
Clear Task Set	Opt	Rqrd if Tagged Tasks supported
Target Reset	Rqrd	
Terminate Task	Opt	

>
> This issue needs to be discussed at the next working group.
> Others are of the impression that support for tagged queuing
> is mandatory for all devices.

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The following are comments received from Jeff Stai of Western Digital for consideration
by the X3T10 Working Group during the January 1994 meeting.

Begin Western Digital Comments

===>
.......Also (more importantly) all of the tools and services provided by SAM
seem to allow for multiple Initiator and Target Identifiers only on the
most simplified level: you can have more than one, but you can't relate
one to the another within the same device. Given this, why don't we
say:

Initiator = 1{Appl Client} + 1{Initiator Identifier}1

Likewise for target... The alternative is adding considerable
complexity to make multiple IDs fully functional.

>
> Multiple I/D's are supposed to be aliases representing the same physical
> device.
>
> Since this was added by request, I'd like some feedback from the
> working group before I modify the definition. In my opinion, the
> issue of multiple target identifiers is irrelevant to SAM.
> Although the behavioral model requires one unique identifier,
> a system could implement more than one without violating any
> architectural requirements.
>
>

pg 35, 4.7.3.1: "should" should be "shall", shouldn't it?

>
> The present wording was added by request to eliminate what was thought
> to be an unnecessary behavioral restriction.
>
> I suggest reopening the issue at the upcoming meeting of X3T10.

===
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pg 50, 6.5.3, 2nd pgf.: I don't understand the first sentence. Why not
always detect overlaps? Give a reason in a note or delete the protocol
specific provision and make it global.

>
> The reason for making it a protocol-specified requirement is due to

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> the large tag space for protocols like FCP [I should have
> added "and hence the large perceived overhead to search for duplicate
> identifiers". In any event, I believe this is another item for further
> discussion].
>
>

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