To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
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Subject: 04-310r0 SAM-3 SPC-3 SBC-2 Implicit HEAD OF QUEUE and ORDERED task attributes

Revision history
Revision 0 (14 September 2004) First revision

Related documents
sam3r15 - SCSI Architecture Model - 3 revision 15
spc3r16 - SCSI Primary Commands - 3 revision 16
sbc2r15 - SCSI Block Commands - 2 revision 15

Overview
Tasks with the ACA task attribute cannot be upgraded to an implicit HEAD OF QUEUE task attribute, as that would make them non-ACA tasks which would thus be blocked (even though there is only one at a time).

Tasks with the ORDERED task attribute should not be upgraded to an implicit HEAD OF QUEUE task attribute, as that destroys any ordering assumption the application client has made (which caused it to choose to use an ORDERED task attribute). There is no way for the application client to tell what order the tasks would be processed with the implicit rule.

Option A: Don't let ORDERED tasks be upgraded.

Option B: Let them be upgraded, but note that it is dangerous to send these commands with ORDERED task attributes.

Option C (details not presented): Define a way to report which commands are treated by a device server as implicit HEAD OF QUEUE, so the application knows what the behavior will be.

Suggested changes to SAM-3: option A

3.1.57 implicit head of queue: An optional processing model for specified commands wherein the specified commands may be treated as if they had been received with a HEAD OF QUEUE task attribute. See 8.2.

8.2 Implicit head of queue

A command standard (see 3.1.16) may define tasks that may <u>each </u>be processed by the task manager as if the task's task attribute is HEAD OF QUEUE ~~without regard to the actual task attribute received with the task~~<u>if it is received with a SIMPLE task attribute or no task attribute</u>.

Suggested changes to SPC-3: option A

3.1.50 implicit head of queue: An optional processing model for specified commands wherein the specified commands may be treated as if they had been received with a HEAD OF QUEUE task attribute (see SAM-3 and 5.3).

5.3 Implicit head of queue

The following commands may be processed by the task manager as if ~~they have~~<u>each of the commmands has </u> a task attribute of HEAD OF QUEUE (see SAM-3) if ~~they are~~<u>it is </u>received with a SIMPLE task attribute~~, an ORDERED task attribute,~~ or no task attribute:

  a)   INQUIRY; and
  b)   REPORT LUNS.

Suggested changes to SBC-2: option A

4.7 Implicit HEAD OF QUEUE command processing

The following commands specific to this command set may be processed by the task manager as if ~~they have each of commmands has~~ a task attribute of HEAD OF QUEUE (see SAM-3) if ~~they are~~it is received with a SIMPLE task attribute~~, an ORDERED task attribute,~~ or no task attribute:

a) READ CAPACITY (10); and
b) READ CAPACITY (16).

See SPC-3 for additional commands subject to implicit HEAD OF QUEUE command processing.

Suggested changes to SAM-3: option B

3.1.57 implicit head of queue: An optional processing model for specified commands wherein the specified commands may be treated as if they had been received with a HEAD OF QUEUE task attribute. See 8.2.

8.2 Implicit head of queue

A command standard (see 3.1.16) may define ~~tasks~~commands that may each be processed by the task manager as if the task's task attribute is HEAD OF QUEUE ~~without regard to the actual task attribute received with the task~~if it is received with a SIMPLE task attribute, an ORDERED task attribute, or no task attribute.

Application clients should not send a command with the ORDERED task attribute if it may be processed as if it has a task attribute of HEAD OF QUEUE, because whether the ORDERED task attribute is honored is vendor-specific.

Suggested changes to SPC-3: option B

3.1.50 implicit head of queue: An optional processing model for specified commands wherein the specified commands may be treated as if they had been received with a HEAD OF QUEUE task attribute (see SAM-3 and 5.3).

5.3 Implicit head of queue

The following commands may be processed by the task manager as if ~~they have~~each of the commmands has a task attribute of HEAD OF QUEUE (see SAM-3) if ~~they are~~it is received with a SIMPLE task attribute, an ORDERED task attribute, or no task attribute:

a) INQUIRY; and
b) REPORT LUNS.

Application clients should not send a command with the ORDERED task attribute if it may be processed as if it has a task attribute of HEAD OF QUEUE, because whether the ORDERED task attribute is honored is vendor-specific.

Suggested changes to SBC-2: option B

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The following commands specific to this command set may be processed by the task manager as if ~~they have each of commmands has~~ a task attribute of HEAD OF QUEUE (see SAM-3) if ~~they are~~it is received with a SIMPLE task attribute, an ORDERED task attribute, or no task attribute:

a) READ CAPACITY (10); and
b) READ CAPACITY (16).

See SPC-3 for additional commands subject to implicit HEAD OF QUEUE command processing.

Application clients should not send a command with the ORDERED task attribute if it may be processed as if it has a task attribute of HEAD OF QUEUE, because whether the ORDERED task attribute is honored is vendor-specific.