To: T10

From: Roger Cummings, VERITAS Software

Subject: 01-204r1 204r2 - Proposal for an additional persistent Reservations type in SPC-3

VERITAS would like to proposed the definition of an additional type of Persistent Reservation for inclusion in SPC-3. Four changes are required to define this new type:

This change proposal resulted from a rejected VERITAS Public Review comment against SPC-2. In addition, this version of the proposal incorporates the direction received from the November 2001 SCSI Commands, Architecture and Protocols Working Group.

Six changes are required to define this new type:

1) Two new Persistent reservation type codes (7h and 8h) need to be defined for inclusion in the equivalent of Table 72 of SPC-23 Revision 02, as shown in Table 1 below;. An additional column has also been added to Table 72 to identify the holder of each type of reservation.

2) The paragraph of subclause 5.5.3.6.1 at the top of page 50 34 (PDF page 56) in spc2r19.pdf SPC-3 Revision 02 needs to be rewritten as follows:

When a reservation key has been removed, no information shall be reported for that unregistered initiator in subsequent READ KEYS service action(s) until the initiator is registered again (see 5.5.3.4). Any persistent reservation associated with that unregistered initiator shall be released, except for Write Exclusive – All Registrants or Exclusive Access – All Registrants types, where the reservation is only released if no other registrations remain. If that released persistent reservation was of the type Write Exclusive – Registrants Only or Exclusive Access – Registrants Only the device server shall establish a unit attention condition for all registered initiators other than the initiator that issued the PERSISTENT RESERVE OUT command with PREEMPT or PREEMPT AND ABORT service action. The sense key shall be set to UNIT ATTENTION and the additional sense data shall be set to RESERVATIONS RELEASED.

3) The first paragraph of subclause 5.5.3.6.2 needs to be rewritten as follows:

Only the initiator that creates the persistent reservation is allowed to release that persistent reservation, except for Write Exclusive – All Registrants or Exclusive Access – All Registrants types, where any registered Initiator is allowed to release the reservation.

Only the reservation holder (see Table72) is allowed to release that persistent reservation.

4) The fourth paragraph of subclause 5.5.3.6.2 needs to be rewritten as follows:

In response to a persistent reservation release request from an "allowed" initiator the reservation holder (see aboveTable 72) the device server shall perform a release by doing the following as an uninterrupted series of actions:

5) The seventh paragraph of subclause 5.5.3.6.2 needs to be rewritten as follows:

If there is no persistent reservation or in response to a persistent reservation release request from a registered initiator other than the reservation holder (see Table 72), the device server shall do the following:

6) The key in Table 10 on page 27 (PDF page 49) of SPC-3 needs to be updated as follows:

Key: LU=Logical Unit, Excl=Exclusive, RO=Registrants Only or All Registrants, <> Not Equal

Regards,

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Table 1 — Persistent reservation type codes

Code	Name	Description	Reservation Holder
0h		Obsolete	n/a
1h	Write Exclusive	**Reads Shared**: Any application client on any initiator may initiate tasks that request transfers from the storage medium or cache of the logical unit to the initiator. **Writes Exclusive**: Any task from any initiator other than the initiator holding the persistent reservation that requests a transfer from the initiator to the storage medium or cache of the logical unit shall be terminated with RESERVATION CONFLICT status.	The initiator that established the reservation, represented by the registered reservation key of that initiator.
2h		Obsolete	n/a
3h	Exclusive Access	**Reads Exclusive**: Any task from any initiator other than the initiator holding the persistent reservation that requests a transfer from the storage medium or cache of the logical unit to the initiator shall be terminated with RESERVATION CONFLICT status. **Writes Exclusive**: Any task from any initiator other than the initiator holding the persistent reservation that requests a transfer from the initiator to the storage medium or cache of the logical unit shall be terminated with RESERVATION CONFLICT status.	As for 1h above
4h		Obsolete	n/a
5h	Write Exclusive – Registrants Only	**Reads Shared**: Any application client on any initiator may initiate tasks that request transfers from the storage medium or cache of the logical unit to the initiator. **Writes Exclusive:** A task that requests a transfer to the storage medium or cache of the logical unit from an initiator that is not currently registered with the device server shall be terminated with RESERVATION CONFLICT status.	As for 1h above
6h	Exclusive Access – Registrants Only	**Reads Exclusive**: A task that requests a transfer from the storage medium or cache of the logical unit to an initiator that is not currently registered with the device server shall be terminated with RESERVATION CONFLICT status. **Writes Exclusive:** A task that requests a transfer to the storage medium or cache of the logical unit from an initiator that is not currently registered with the device server shall be terminated with RESERVATION CONFLICT status.	As for 1h above
7h	Write Exclusive – All Registrants	as in 5h above, with the exception that when the Initiator that created the reservation deregisters, the reservation is not released unless no other registrations remain (see 5.5.3.6.1)	Any registered initiator, represented by the registered reservation key of zero.
8h	Exclusive Access – All Registrants	as in 6h above, with the exception that when the Initiator that created the reservation deregisters, the reservation is not released unless no other registrations remain (see 5.5.3.6.1)	
9h - Fh		Reserved	