



# BROCADE

September 12, 2001

T10/01-197 Revision 1

To: John Lohmeyer, Chair, T10 Standards Committee, NCITS  
From: Robert Snively  
Date: September 12, 2001  
Subject: Resolution of FCP-2 public review comment, revision 1

## 1 Introduction

A public review comment was received from Roger Cummings of Veritas Software. The public review comment resulted from studies of the recovery properties of certain tape backup environments. The public review comment addressed these properties by proposing possible alternative requirements for clearing current MODE SELECT pages and reservations for tape drives. The comment is contained in document T10/01-176r0.

## 2 Summary of the public review comment

The public review comment proposes three changes.

Two changes are proposed to FCP-2 table 4, "Clearing effects of link related functions".

### 2.1 Requested change to MODE SELECT / MODE SENSE behaviors.

The first change is intended to maintain current mode page settings of tape drives over link failure conditions that may be recoverable by some drivers.

The change proposes separating the consideration of LOGO/PLOGI into two classes of behavior:

Explicit Logout

Implicit Logout and PLOGI

All rows remain unchanged for both cases except for the row concerning MODE SELECT/MODE SENSE page behaviors. For this row, the row is subdivided into two rows, as follows:

Only for initiator port associated with the action (random)

Only for initiator port associated with the action (serial)

It is assumed in this analysis that the words "serial" and "random" were meant to apply to devices compliant with the SCSI Stream Commands (SSC-2) document and the SCSI Block Commands (SBC-2) document respectively. Either type of device may have optional serial or random behavior that is not known at the SCSI level.

The change makes no modification to the behavior of block command devices. The change requires stream command devices (typically tape drives) to retain the current mode pages instead of modifying their behavior to the saved or default mode pages for the following conditions:

Failed Discovery after LIP

Failed Discovery after OLS

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## Implicit Logout & PLOGI

### 2.2 Requested description of stream command model in FCP-2

The second change is intended to prevent link recovery operations from modifying the state of tape drives.

A specific note is requested to indicate that stream command devices shall not lose or alter media positioning information or perform a rewind for any link related function except an explicit logout (LOGO). The note would be included in the footnotes of Table 4.

### 2.3 Requested change to behavior of reservation operations

The third change is intended to maintain legacy reservations of tape drives unmodified by any link operation except explicit LOGO.

The change proposes separating the consideration of LOGO/PLOGI into two classes of behavior as described in 2.1:

Explicit Logout

Implicit Logout and PLOGI

All rows remain unchanged for both cases except for the row concerning Device Reservation behaviors. For this row, the row is subdivided into two rows, as follows:

Only for initiator port associated with the action (random)

Only for initiator port associated with the action (serial)

It is again assumed in this analysis that the words “serial” and “random” were probably meant to apply to devices compliant with the SCSI Stream Commands (SSC-2) document and the SCSI Block Commands (SBC-2) document respectively.

The change makes no modification to the behavior of block command devices. The change requires stream command devices (typically tape drives) to retain their reservations unchanged under the following conditions:

Failed Discovery after LIP

Failed Discovery after OLS

Implicit Logout & PLOGI

## 3 Investigation of undesirable behavior identified by Veritas

After considerable study, Veritas has determined that the problem they identified is associated with the recovery processing performed by some nodes when fabric configurations are modified while tape backups are being performed. As part of the recovery a PLOGI operation is performed to tape drives. The PLOGI causes the tape drives to reset part of their internal state information, especially MODE SELECT mode page parameters, that is required for the drives to resume the backup process.

## 4 Some architectural background associated with the comment

### 4.1 Architectural layering

The PLOGI function applies to a Fibre Channel N\_Port or NL\_Port. As part of its standard behavior, it forces a Process Logout, which resets all process functions including the Target behavior of a Fibre Channel N\_Port or NL\_Port. This behavior is performed below the FCP-2 ULP layer and cannot be modified by FCP-2.

## **4.2 Authentication**

All the standards defining the proper re-authentication of devices attached to loops or to fabrics clearly indicate that PLOGI should only be performed if the authentication performed after the repair of a link indicates that the configuration is modified. The cases that Veritas has studied do not modify the configuration. FCP-2 documents discovery and authentication in a manner consistent with other standards and clearly supports the same behavior.

## **4.3 Differing management of logical units within a single target**

The proposal requests that a target respond to PLOGI based on the type of logical unit included within the target. Since multiple logical units and multiple types of logical units can be defined behind a target, conflicting behavior is required within the target.

## **5 Resolution of comment**

### **5.1 Rejection of changes to FCP-2 to resolve public review comment**

After considerable study, experimentation, and discussion, the committee has elected not to accept the proposed changes into the FCP-2 standard. FCP-2 treats recovery and re-authentication of connections in a manner consistent with all other standards.

### **5.2 Recognition of required changes to other standards**

As a result of the same study, the committee has requested changes to the following standards. These changes will be requested in separate proposals to the appropriate committees.

#### **FC-FS**

The document will recommend that PLOGI not be used unless re-authentication after the temporary loss of a link is unsuccessful.

#### **FC-MI**

The document will require that PLOGI not be used unless re-authentication after the temporary loss of a link is unsuccessful.

#### **FC-DA**

The document will require that PLOGI not be used unless re-authentication after the temporary loss of a link is unsuccessful.

#### **SSC-2**

The document will require that values in block descriptor, type specific parameters, and mode pages shall be restored after a reset so that a write operation can continue in a manner consistent with the interrupted operation.