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FCP-2 PR Comment
Resets & Serial Access Devices

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Topics

- **Background**

- **How we found the problem**

- **Testing Status**

- **Existing Standards**

- **Future Standards**

Background

- **VERITAS is an cross-platform APPLICATION vendor**
  - With a strong interest in NOT having interface specific code……
  - And two SAN Integration Labs….

- **To quote one of our lab engineers:**

  "All this Login and Logout stuff happens at a level way below us"

- **Backup applications are now time critical**
  - Data transfer process fills the available window
  - No time for even one rewind/reposition cycle

How we found the problem

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- **Backup application on server copying from disk to compressed tape on a SAN switch**

- **Plug another disk drive into a vacant port – Backup dies!!! Why?**
  - HBA registered for state change notification
  - New fabric f/w sent unexpected code to HBA
  - Part of Recovery Process was for HBA to re PLOGI with all devices
  - Tape had FCP-2 firmware, PLOGI reset mode pages, cleared reservations as well as killing tasks
    - Commands retried, but write to media could not continue because block size, & compression mode change requires rewind to load point

How we found the problem

- **HBA behavior is probably ONLY option using FCP definitions!**
  - Therefore significant issue in mixed FCP & FCP-2 systems

- **And its even worse if the tape drive lets the write continue……..**
  - Backup may work if the HBA can relogin and reissue commands inside the app retry window…
  - but Restore will almost certainly fail!

And then we tried.....

- **Our standard unplug/replug test on this FCP-2 tape drive**
  - Didn't work – replug reset mode pages, reservations as per FCP-2
  - Backup app couldn't recover
- **Testing a new FCP-2 compliant FC-SCSI bridge**
  - Unplug and Replug meant that the drive seen as a new device
  - OS could not find the tape drive again without a Server reboot

Testing Status

- **See web page:**
  - http://support.veritas.com/menu_ddProduct_BEWNT.htm
  - Follow compatibility lists, Shared Storage Option for Win2000

- **10 vendors, with 15 loop & 22 fabric configurations for each vendor**
  - All work with Backup app after unplug & replug
  - Can even change ports & Backup app & OS find drive and operation continues without rewind

- **Above testing performed on 3 different OS – NT, Win2K, Netware. Same results**

Testing Status

5 new FCP-2 compliant devices (2 HBAs, 1 bridge, 2 libraries) break our backup apps

- And fail about once every 100 hours for a reason we cannot determine @ the moment

Existing Standards

- **One table in an existing document defines all FC-level port logouts and logins (Implicit Port, Explicit Port & Process), as forms of Target Reset**
  - Document is T11 FC-PLDA TR
  - Definition not changed in T11 FC-FLA TR
  - T11 FC-TAPE TR makes "forward reference" to FCP-2
  - FCP-2 Table essentially same as PLDA Table
- **FC-PH defines loss of light as Implicit Logout, and PLOGI as Implicit Logout before Login**
  - Therefore FCP-2 devices cannot be hot plugged in same way as FCP devices (or all other SCSI devices)

Postulates

- **That the current FCP-2 definition is a "hair trigger"**
  - Almost impossible to certify that configurations will not run into problems
  - 3rd party devices can be the trigger
- **That an anti-layering approach of physical interface definitions having such a major impact on the operation of the SCSI command layer is no longer acceptable**
  - Or will not be in the near future!!
  - Command reissue is not a problem – done by the same code as handles the Login/Logouts – it's the "state" information change (reserve/release, mode pages etc.)

Future Standards

- **Will iSCSI & SRP have physical layer actions with equivalent impact on SCSI tasks?**
  - If so the IS Manager is going to be most unhappy!!!!
    - Unplug & Replug in a different place is a way of life in LANs

- **Trend to more "state" information held by Targets:**
  - Bridge command set?
  - Disk Arrays (do vendor unique pages get reset too???)

Summary

- **Cannot fix the past……**

- **But cannot carry PLDA approach forward either**

- **Immediate issue is tapes….**

- **Sensible to fix @ this point in FCP-2**
  - As a change more compatible with future directions
  - Target reset still exists (with explicit actions)
  - Implicit actions have no impact on command layer

- **Therefore VERITAS asks T10 to not accept the recommendation of the Technical Editor to reject our PR Comment**