IBM System Storage TS7700

TS7700 Release Notes - 8.32.3.8 (R3.2 PGA 3)

EC: M13531 - released 12/21/2015

New Function Supported:

Hydra	**8.32.3.8 (EC M13531, PN 17R7290, 17R7291 and 17R7292 (DVD 1, 2 & 3))**
DB2	10.5.0.3, (Included under EC M13273) Informational tokens: "DB2 v10.5.0.3", "s140203", "IP23544", and Fix Pack "3"
AIX Base Level	6.1.9.0 (Included under EC M13273)
AIX Fixpack	6100-09-01-1341+05 (Included under EC M13273)
HV32 Firmware	AL730_117 (Included under EC M13273)
TS3500 (Anaconda) Firmware	8980 Non HD frame/HD frames 9720 R9A/RoHS frame B540 R11a frames C460 R12a E220 R14A FP1
3592 J1A Tape Drive 3592 E05 Tape Drive 3592 E06 Tape Drive 3592 E07 Tape Drive	D3I0_C90 (Included under EC M13273) or D3I0_C90 (PN 45E6140) D3I1_F1F (Included under EC M13273) or D3I1_F1F (PN 95P9200) D3I2_883 (Included under EC M13273) or D3I2_883 (PN 13X4428) D3I3_829 (Included under EC M13273) or D3I3_98B (PN 38L7277)
TSSC	8.0.14 (EC M13370, PN 38L7490 and PN 38L7491 (CD-ROM 1 & 2))
TSSC Documentation	(EC M13370 PN 38L7492)
3956-CC8/CS8 Firmware Storage Manager GUI	07.84.54.00 (Included under EC M13273) 11.10.0G05.0023
3956-CC9/CS9 Firmware Storage Manager GUI	08.10.16.00 11.10.0G05.0023
SKLM	V 2.0.1 FP5
ISKLM	ISKLM wrapper V2.1 for ISKLM1.1 245
Atape	12.8.3.0 (Included under EC M13273)
GPFS	Release 3.5 PTF 15 code (Included under EC M13273)
SSPC	1.3.1, 1.3.2, 1.5
ITDT	8.0.0.066 (Included under EC M13273)
AIX Diagnostics CD	V7.1.1.0 (EC M13273, PN 95P7969)
4Gbit Emulex Switch Firmware	3.55 (Included under EC M13273)
8Gbit Emulex Switch Firmware	1.7 (Included under EC M13273)
4Gbit Host FICON Firmware	BJ273X15
8Gbit Host FICON Firmware	BJ112X5
VTD_EXEC's (applied during testing)	
vtd_exec.188v1.3	Title : Call Home fixes
vtd_exec.202v1.8	Title : Security enhancement - PSIRT Advisories

PROBLEM FIXES:
Problems fixed in this level are described below. There are 118 defects fixed in this release; 65 of those occurred or were related to problems in client installations. The 54 are described below with the following designations:

HIPER = High Impact / Pervasive (3 or more occurrences)

High Impact = Loss of access or loss of data (less than 3 occurrences)

Acute = A unrecoverable error with potential loss of data

Serious = A unrecoverable error with potential loss of access to data

Moderate = A system path is not operational and performance might be degraded

Service = A recoverable error, Service Improvements

Improvement = Improvement for better usability

Acute: Potential loss of data

Pervasive: no

(also published in 'http://www.ibm.com/support/docview.wss?uid=ssg1S1005480'):

Info Letter: TS7700 potential data loss issue with backend disk cache 3956-Cx9

Problem:
A problem has been found that could result in a potential data loss issue with backend disk cache controllers 3956-CS9/CC9 and disk cache expansions 3956-XS9/CX9.

Background:
Certain model disk drives within 3956-CS9/CC9 model controllers and 3956-XS9/CX9 model enclosures are exposed to a rare issue that can result in data loss. The problem is related to an internal integrity checking mechanism contained within certain model disk drives. There is a rare condition in which an underlying disk drive scanning routine can corrupt a disk sector some time after content has been previously written.
In the event such corrupted data is accessed, the TS7700 will detect the condition prior to surfacing any data to the attached system z host in the form of a CRC mismatch. There is no known risk for data integrity, however potential data loss can occur due to this corruption. In the event such a loss occurs, the detection through a read CRC mismatch or through a background RAID6 parity scanning routine will flag the corruption. The background parity scanning routine is designed to complete once every 30 days. In the event a loss is detected, there is a high probability that the RAID6 protection can be leveraged to recover the corrupted data, but this recovery process does require IBM support's involvement. There is a disk drive firmware fix for this issue contained within the TS7700 code levels:
R3.3 (8.33.0.45 or greater)
R3.2 PGA 3 (8,32.3.8 or greater)
vtd_exec 154 (v1.41 or greater).

IBM recommends applying the fix through one of these three methods to prevent any potential exposure to this issue. Once the fix is installed, any potential loss which would have occurred prior to the fix being applied should be flagged within 30 days due to the always running background disk cache RAID6 parity scanning routine. If flagged, the TS7700 will initiate a call home which will notify IBM support that a recovery process should be scheduled.
Drive Model and Firmware Details:
For 3956-CS9/XS9 configurations, 3TB drives with model ST3000NM0043 are exposed to this issue when down level firmware is present. Firmware level EC5C or greater contains a fix for this issue.
For 3956-CC9/CX9 configurations, 600GB drives with model ST600MM026 are exposed to this issue when down level firmware is present. Firmware level E56F or greater contains a fix for this issue.

Solution (Procedure):
It must be ensured that vtd_exec.154 v1.41 or above gets installed on all affected systems.
Alternatively upgrade the TS7700 to latest released code level R3.3 (8.33.0.45) or R3.2 PGA3 (8.32.3.8)

Reference:
CMVC – 78991 (R3.2 PGA3) / 78235 (8.33.0.45)

Serious: FICON adapter error caused host job abends (loss of access)
Dev problem description: FICON adapter microcode logic error caused host job abends after adapter reboot
Dev fix description: corrected logic to avoid internal error MDE 5F0C & 55E0
Pervasive: yes
Ref: 76522

Serious: unexpected cluster restart (loss of access)
Dev problem description: a monitoring script kills processes inappropriately, causing the Hydra to restart unexpectedly
Dev fix description: correct the logic to stop only correct processes
Pervasive: yes
Ref: 79156 (also fixed in vtd_exec.234)

Serious: unexpected cluster restart (loss of access)
Dev problem description: DB2 command syntax incorrect; reorg hangs and causes restart of cluster.
Dev fix description: Correct the command syntax
Pervasive: yes
Ref: 79104 (also fixed in vtd_exec.234)

Serious: DB2 file systems full (loss of access)
Dev problem description: The db2 system container grows across upgrades
Dev fix description: Revise DB2 migration process on code upgrades
Pervasive: yes
Ref: 71698 (also fixed in vtd_exec.211)

Serious: unexpected cluster restart (loss of access)
Dev problem description: stop of mounts to 3584 library causes cluster to restart; fix in previous code levels included in this level
Dev fix description: Correct logic to keep recovery loop from occurring
Pervasive: no
Ref: 78931

Serious: unexpected cluster restart (loss of access)
Dev problem description: cluster restart from internal loop on AIX resource conflict
Dev fix description: cluster communication manager initialization change
Pervasive: no
Ref: 78869 (also fixed in vtd_exec.227)

Serious: DB2 unable to complete reorgs as required if host demand high & sustained (loss of access – service window required to complete offline)
Dev problem description: DB2 online reorgs not correctly configured
Dev fix description: Improve online reorg algorithm so more efficient
Pervasive: no
Ref: 78540 (also fixed in vtd_exec.234)

Serious: communication manager hung; restart required (loss of access)
Dev problem description: Internal communication manager hung
Dev fix description: Code logic monitoring required process; forces
cluster restart to prevent the hang from creating an outage.
Pervasive: no
Ref: 78446 (also fixed in vtd_exec.103)

Serious: after code load grid failed to merge; restart required (loss of
access)
Dev problem description: conflict in grid token merge code
Dev fix description: corrected code logic to handle error condition
Pervasive: no
Ref: 78370

Serious: FICON adapter error caused host job abends (loss of access)
Dev problem description: FICON Adapter microcode logic error
Dev fix description: Logic corrected to remove cause of internal error
MDE 5F0C 0012
Pervasive: no
Ref: 77005

Serious: FICON adapter error caused host job abend (loss of access)
Dev problem description: FICON adapter microcode logic error
Dev fix description: logic corrected to remove cause of internal error
MDE 5F0C 00C0 & 5F0C 0010
Pervasive: no
Ref: 76712

Serious: FICON adapter error caused cluster reboot (loss of access)
Dev problem description: FICON error locked up adapter; cluster rebooted
Dev fix description: correction in handling Selective Resets to
eliminate a timeout condition
Pervasive: no
Ref: 77007

Serious: cluster restarted due to internal cache error (loss of access)
Dev problem description: Cache access lost; grid code restarted cluster
Dev fix description: Improved monitoring and logging of conditions for
diagnosis
Pervasive: no
Ref: 77763

Serious: unexpected restart of cluster (loss of access)
Dev problem description: Microcode logic error caused reboot (CHECK2
C095)
Dev fix description: code added to validate paths for gridmgr
Pervasive: no
Ref: 75065

Serious: unexpected cluster reboot (loss of access)
Dev problem description: DB2 log files exceeded
Dev fix description: Added an hourly check for this condition
Pervasive: no
Ref: 78542 (also fixed in vtd_exec.233)

Moderate: extended window for join
Dev problem description: token merge failed on join of new cluster
Dev fix description: change code logic
Pervasive: yes
Ref: 78324

Moderate: cluster merge stalled (extended window)
Dev problem description: DB restore process slow
Dev fix description: improve logic when DB restore is slow
Pervasive: yes
Ref: 74627

Moderate: slow mounts / online process extended after code upgrade
Dev problem description: DB migration process in mixed code level grid
joins has incorrect logic
Dev fix description: Correct DB migration process in join
Pervasive: yes
Ref: 78172 (also fixed in vtd_exec.230)

Moderate: DB backup fails in copy export
Dev problem description: DB backup fails for SQLl2079
Dev fix description: retry for this specific error
Pervasive: yes
Ref: 79248

Moderate: vtd_check lost hdisk test from internal error
Dev problem description: file systems check terminated from timeout
Dev fix description: Increase timeout value
Pervasive: no
Ref: 78004

Moderate: Fast Ready mounts delayed more than 1 minute
Dev problem description: Under heavy IO, scratch mounts wer slow due to
an initialization parameter controlling communication
Dev fix description: increased number of communication threads between
HDB and HSM to 75 from 50
Pervasive: no
Ref: 77070

Moderate: DR test failed when grid links forced off at switch port
Dev problem description: Ownership takeover fails in simulated DR test of
down cluster
Dev fix description: logic changed to serialize calls to 2 functions that
had caused deadlock)
Pervasive: no
Ref: 76692

Moderate: hot tokens built up against removed cluster (required restart)
Dev problem description: Grid communications hung
Dev fix description: Improved logic in communication manager
Pervasive: no
Ref: 76856

Moderate: copy export recovery test failed
Dev problem description: DB2 failure in copy export recovery test
Dev fix description: path corrected to load correct DB file
Pervasive: no
Ref: 78910 (also fixed in vtd_exec.220)

Moderate: communication manager failure had insufficient data captured
Dev problem description: insufficient logs captured by error condition
Dev fix description: change design of logging for communication manager
Pervasive: no
Ref: 78354 (also fixed in vtd_exec.227)

Moderate: Internal communication manager stopped (loss of access)
Dev problem description: AMQ6184: An internal WebSphere MQ error has
occurred on queue manager VMQM00
Dev fix description: monitor of required process added; reboot
automatically if process lost
Pervasive: no
Ref: 77933 (also fixed in vtd_exec.227)

Moderate: Mounts delayed from internal DB2 process conflict
Dev problem description: Correct HDB code leading to logical volume error
"IOS070E 9D4E, MOUNT PENDING"
Dev fix description: DB2 logic changed to prevent conflict
Pervasive: no
Ref: 77314 (also fixed in vtd_exec.218)

Moderate: DDM drive code causes early failure of R/W head
Dev problem description: Cache ddm firmware lower than EC5C contain a
reliability problem which can cause the drive to fail prematurely
Dev fix description: Update ddm firmware
Pervasive: no
Ref: 78991 (fix also contained in vtd_exec.154)

Moderate: Incorrect logical volume status on Management Interface
Dev problem description: MI shows logical volume status as pinned
Dev fix description: Correct logic to display status correctly
Pervasive: no
Ref: 78724

Moderate: pre-migrate delay setting not honored
Dev problem description: cache walk process for a delayed premig lvol did
not manage state correctly
Dev fix description: change logic to honor premig delay setting
Pervasive: no
Ref: 78162

Moderate: FICON adapter error created EEH in controller (FICON abends)
Dev problem description: Data pattern timing error caused FICON reset
Dev fix description: corrected FICON adapter logic
Pervasive: no
Ref: 77831

Moderate: copy export merge failed
Dev problem description: DB internal pointer incorrect
Dev fix description: Correct logic for DB code
Pervasive: no
Ref: 77703 c 3 field 1 000

Service: Cache code load failed (extended window)
Dev problem description: Logic error in firmware update
Dev fix description: Improved firmware update process for cache expansion drawer
Pervasive: yes
Ref: 76928

Service: DS6k GUI stopped
Dev problem description: Java update in vtd_exec stopped DS6k GUI
Dev fix description: Revise logic for Java updates
Pervasive: no
Ref: 77830 (fix also in vtd_exec 213)

Service: extended code upgrade window
Dev problem description: unexpected error when starting the database
Dev fix description: change logic to allow error and not fail start
Pervasive: no
Ref: 77574

Service: code upgrade failed (extended window)
Dev problem description: improved checking of cluster surfaced previous issue introduced in cluster by improper cluster number
Dev fix description: correct logic to surface errors introduced at earlier configuration
Pervasive: no
Ref: 78797

Service: Incorrect message on Management Interface
Dev problem description: File system error message presented from timing error with script (no file system error existed)
Dev fix description: correct the logic in file system code
Pervasive: no
Ref: 78291

Service: Grid merge failed (extended window)
Dev problem description: Joining grid failed to come online because DB file merge failed.
Dev fix description: Improve logic for file transfer so merge completes
Pervasive: no
Ref: 77424

Service: feature key with lower case letter fails (extended window)
Dev problem description: cache key with lower case letter fails install
Dev fix description: change logic to correct case
Pervasive: no
Ref: 77340

Service: dual router failure; replacement failed (extended window)
Dev problem description: Service procedure unable to complete when both routers needed to be replaced
Dev fix description: modified logic to allow replacement to be completed
Pervasive: no
Ref: 77156

Service: upgrade to 8.32 code halted (extended window)
Dev problem description: Two DB operations caused problem, one from background processes and one from update process.
Dev fix description: Allow background process to complete before proceeding
Pervasive: no
Ref: 77146

Service: vtd_exec.211 install failed
Dev problem description: Incorrect DB code logic used
Dev fix description: Improvements to vtd_exec.211 and code
Pervasive: no
Ref: 78448 (also fixed in vtd_exec.211)

Service: could not close SIM
Dev problem description: parsing of the SIM ID was incorrect
Dev fix description: correct logic of SIM table
Pervasive: no
Ref: 78653

Service: FICON adapter replacement extended
Dev problem description: adapter status field incorrect after swap
Dev fix description: logic changed to correct value used - swap completes
Pervasive: no
Ref: 77275

Service: improve cluster join operation
Dev problem description: Failed join operation
Dev fix description: Modified the update command that locks DB token to avoid any potential race conditions
Pervasive: no
Ref: 77573

Improvement: Incorrect message posted on Management Interface
Dev problem description: inappropriate message presented
Dev fix description: Change "loss of redundancy" message on MI to
"degraded"
Pervasive: yes
Ref: 77600

Improvement: same event posted multiple times
Dev problem description: Event OP0763 is posted several times
Dev fix description: fix logic so event won't be posted repeatedly
Pervasive: yes
Ref: 77337 (also fixed in vtd_exec.188)

Improvement: Callhome process terminated incorrectly
Dev problem description: timeout in background process manager caused
callhome process to fail
Dev fix description: Improve logic to prevent process failure
Pervasive: no
Ref: 77498

Improvement: copy of logical volume stuck in grid queue
Dev problem description: Internal logic error caused copy to be cancelled
Dev fix description: correct logic for copy to complete
Pervasive: no
Ref: 77522

Improvement: Toggle auto-removal disabled on TS7720T when Flash Copy
enabled
Dev problem description: On 7720T, enabling Flash Copy left auto-removal
enabled.
Dev fix description: Change logic to disable auto-removal when Flash Copy
is enabled on 7720T.
Pervasive: no
Ref: 78061

Improvement: Events cause cluster health to show as 'failed'
inappropriately
Dev problem description: Any event with "Error" or "Warning" makes the
cluster overall health as Failed
Dev fix description: Change the cluster overall health to Degraded for
Error or Warning events
Pervasive: no
Ref: 77999 (fix in vtd_exec.228 also)

Improvement: Sync-deferred state inappropriately set
Dev problem description: Sync-Deferred state posted after copy mode
changed and mount occurs
Dev fix description: Change code logic to not set sync-deferred in this
case
Pervasive: no
Ref: 77887

Improvement: grid links marked failed incorrectly
Dev problem description: code logic error when same subnet used on grid
Dev fix description: correct logic for grid link error reporting
Pervasive: no
Ref: 76829

Improvement: MI displaying disk status incorrectly
Dev problem description: Logic error in code that displays 'write cache disabled' status
Dev fix description: correct pointer to not display old status
Pervasive: no
Ref: 77456