IBM TotalStorage® DS8700 Disk Storage
Microcode Bundle 76.31.92.0 Release Note Information v2

Release Date: March 28, 2014

VRMF Level Data Results:

VRMF level From:	76.31.79.0
VRMF Level To:	76.31.92.0
Report for:	All DS8700

Code Bundle Contents

DS8000 Code Bundle Level	SEA or LMC Version: Used with dscli *ver* command.	CLI Client Level	Storage Manager Code Level
76.31.92.0	6.6.31.850	6.6.31.850	5.6.31.1181

No new features and functions supported by Microcode Release 76.31.82.0 for DS8700, 242x model 941.

General:
• Problem fixes
• Serviceability enhancements
• Improvements

This is a new microcode release only supports the DS8700.

Select Modifications Included in this Release Note:
This is a list of some modifications contained across one or more LIC (License Internal Code) or microcode release(s). The potential impact is variable. Specific environments may aggravate or degrade the potential impact. Problem(s) fixed and reported in this release note may not be in higher levels of code bundles.

Definition of Problem Severity:
1 High Impact   - Acute: An irrecoverable error with potential loss of data.
                    - Serious: An irrecoverable error with potential loss of access to data.
2 Moderate   - A function not operational and/or performance might be degraded.
3 Service   - A recoverable error (no impact) and service improvements.
4 Improvements - Improvement changes for better Usability and Serviceability.

HIPER: High Impact problem that is Pervasive: 3 or more occurrences

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Acute: An irrecoverable error with potential loss of data.

Automated smart rebuild runs on RAID-5 only

1. Problem Description: By default, proactive SMRB scan for disk media errors does not run on RAID-6 or RAID-10 arrays

2. **Potential Impact of Problem:** loss of data

3. **Problem Severity:** High Impact

4. **Pervasive Problem:** No

ID#: 290291

Serious: An irrecoverable error with potential loss of access to data.

FLC relationship stuck revertible

1. **Problem Description:** If an inband Establish Revertible command aborts because of a communication timeout, the command is redriven on another path. But the original command may still be in flight, and the two commands can collide.

2. **Potential Impact of Problem:** GM fatal error, or repeated suspends.

3. **Problem Severity:** HIPER

4. **Pervasive Problem:** Yes

ID#: 285004

Flashcopy target volume fenced

1. **Problem Description:** Fix a small time window during two destages to the same track, where CS may mark both as "allocation destage".

2. **Potential Impact of Problem:** loss of access to target volume

3. **Problem Severity:** Serious

4. **Pervasive Problem:** No

ID#: 282611

Extended warmstart time if sync PPRC frequently updates same track

1. **Problem Description:** If the same metadata track is frequently updated the track is not destaged and the copy services journal entries are not cleaned up resulting in no free journal blocks.

2. **Potential Impact of Problem:** loss of access, elongated warmstart

3. **Problem Severity:** HIPER

4. **Pervasive Problem:** Yes

ID#: 269146

Fabric login to a Brocade switch with VVL bit set causes reboot

1. **Problem Description:** If the Vendor Version Level (VVL) field has non-zero values then the Brocade switch will reboot. These bits will be set to all zeros when the DS8000 initiates fabric login to the switch.

2. **Potential Impact of Problem:** loss of access

3. **Problem Severity:** High Impact

4. **Pervasive Problem:** No

ID#: 294098

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RPC error handling of memory parity errors improved

1. **Problem Description:** RPC error handling of memory parity errors has been improved to reset the RPC on the first parity error and fence the RPC if the error continues.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 288784

Host Adapter MLE x60CA with heavy read workloads

1. **Problem Description:** During periods of heavy read activity, a Host Adapter may run out of Sequence Buffer Memory blocks, resulting in a microcode logic error.
2. **Potential Impact of Problem:** Fenced Host Adapter(s)
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 292581

zHPF with TCAX can expose a microcode logic error

1. **Problem Description:** When zHPF with TCAX a microcode logic error can result in multiple warmstarts and fenced host adapters. This could fence all host adapters in the DS8000.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 290365

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

Slow DDM response time can cause a transaction timeout

1. **Problem Description:** When a DDM is slow to respond to commands from a DA adapter the DDM and FC-AL loop are both possible causes. There is one specific error from a DDM that is always caused by the DDM, this change will reject any DDM logging that error.
2. **Potential Impact of Problem:** Transaction time-out
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 282467

SFP failure on a host adapter is not reported

1. **Problem Description:** When the SFP (transceiver connector) on the host adapter is failing the host adapter is not fenced and no error is reported for the SFP failure.
2. **Potential Impact of Problem:** loss of path not reported
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 284276

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Internal fabric error does not identify host adapter with the error
1. **Problem Description:** A host adapter error results in an internal fabric error but the host adapter is not identified as source of the error
2. **Potential Impact of Problem:** Warmstart and host adapter delayed reset
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 291275

Global Mirror stuck in first pass due to a microcode logic error
1. **Problem Description:** Global Copy pairs are stuck in first pass and do not form consistency groups.
2. **Potential Impact of Problem:** Global Mirror not forming consistency groups
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** Yes
ID#: 283328

PPRC link in High Failure Rate mode
1. **Problem Description:** Initial PPRC I/O operation on an adapter port is rejected, causing link to go into High Failure Rate mode. Subsequent I/O operations are not affected.
2. **Potential Impact of Problem:** Degraded PPRC performance
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 293529

Out of sequence packets can cause PPRC path establish to fail
1. **Problem Description:** Under heavy traffic loads a switch can send out of sequence packets. This can result in port login ACK being received after the PRLI causing the PPRC path establish to fail.
2. **Potential Impact of Problem:** loss of path
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 280600

Background FlashCopy does not complete
1. **Problem Description:** FlashCopy with background copy can start the copy operation before validation completes. This cause the copy pair to hang at 99% complete
2. **Potential Impact of Problem:** FlashCopy failure
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 291468

Erroneous suspend of PPRC volume pair
1. **Problem Description:** After receiving long busy response when writing to the secondary volume, the primary volume also returned long busy for the write operation, as it should. The host did not re-drive the write operation, and code failed to reset the out-of-sync condition on the affected track(s).
2. **Potential Impact of Problem:** PPRC suspend
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** Yes
ID#: 291892

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SE FlashCopy appears to never complete copy
1. Problem Description: Space Efficient FlashCopy can have a relationship that does not appear to complete the copy due to a microcode logic error that does not decrement the out of sync track counter under certain conditions.
2. Potential Impact of Problem: SE FlashCopy does not complete
3. Problem Severity: Moderate
4. Pervasive Problem: Yes
ID#: 281406

Service: A recoverable error, Service improvements.

Serviceable events previously repaired are reopened after code load
1. **Problem Description:** When CDA Preload distributes microcode a clone of the drive is made in preparation of later code activation. Any serviceable that is repaired after CDA Preload and before microcode installation will not update the clone partition, only the operating partition. After microcode activation the serviceable events will be reopened.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 286961

CEC DDM repair fails if multiple ODM objects exist for the CEC DDM
1. **Problem Description:** CEC DDM repair will fail if two or more ODM objects exist, the old and new CEC DDMs, for the same drive
2. **Potential Impact of Problem:** extended maintenance
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 279340

CEC to RPC communication error incorrectly fenced CEC
1. **Problem Description:** SRC BE190011 is logged for CEC to RPC communication errors. This failure should not fence the LPAR that is failing to communicate with the RPC, the RPC should be fenced
2. **Potential Impact of Problem:** extended maintenance
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 289026

CEC SCSI adapter failure with CEC DDM unavailable calls CEC DDM
1. **Problem Description:** When a CEC SCSI adapter fails and one CEC DDM is unavailable the CEC DDM is identified as the failing part.
2. **Potential Impact of Problem:** extended maintenance
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 279716

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SRC BE320227 identifies FCIC card as primary failing part
1. **Problem Description:** SRC BE320227 should identify the storage enclosure power supply as the primary failing part. Currently the Fiber Channel Interface Card (FCIC) is identified as the primary failing part.
2. **Potential Impact of Problem:** extended maintenance
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 290721

Warmstart caused by microcode logic error with PPRC
1. **Problem Description:** When a device receives a update secondary command with option failback, if the device is reserved by a host a microcode logic error will result in a warmstart
2. **Potential Impact of Problem:** warmstart
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 278969

DDM firmware was updated successfully but shows old firmware
1. **Problem Description:** After updating DDM firmware the HMC showed the old firmware. The DDM was updated but the ODM objects for each DDM were not updated, causing the display to show the old firmware level.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 277002

HMC does not call home some automated healthcheck failures
1. **Problem Description:** Automated healthchecks run periodically. The HMC does not call home certain failures if the first healthcheck was by remote support.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 263566

Serviceable events previously repaired are reopened after code load
1. **Problem Description:** When CDA Preload distributes microcode a clone of the drive is made in preparation of later code activation. Any serviceable that is repaired after CDA Preload and before microcode installation will not update the clone partition, only the operating partition. After microcode activation the serviceable events will be reopened.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 286961

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Unisolated internal fabric error does not identify CEC PCIe card
1. **Problem Description:** For an unisolated internal fabric error on an I/O Bay the CEC PCIe card is not identified as a possible failing part.
2. **Potential Impact of Problem:** extended maintenance
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 292549

Warmstart caused by host adapter DMA counter
1. **Problem Description:** A warmstart can occur due a microcode logic error that fails to decrement the active request counter.
2. **Potential Impact of Problem:** warmstart
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 283368

Improved fault isolation for Lost Data Frame errors
1. **Problem Description:** FCIC cable is at the top of the FRU list, even
though it is the least likely to fail. This change re-orders the list to put the FCIC cable at the bottom.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 289351

Smart rebuild can cause unneeded call home for a failed DDM
1. **Problem Description:** There is a condition that causes smart rebuild to call home a DDM that was failed. This results in an unnecessary call home.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 270109

HMC reboot after after CDA Preload will stop automated CDA Preverify
1. **Problem Description:** When CDA Preload is used several automated tasks are launched. If the HMC is rebooted after CDA Preload and before install the LPAR code then the automated CDA Preverify check will not run
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 273704

Multiple volume selection on the DSGUI can select one less volume
1. **Problem Description:** When selecting multiple volumes for an action on the DSGUI it is possible one of the selected volumes will not be included for the action. The volume would need to be selected again for the change.
2. **Potential Impact of Problem:** One volume not changed
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 282173

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DA adapter is fenced if a FC-AL loop is ISP Disabled and DA is reset
1. **Problem Description:** If a FC-AL loop problems causes a DA adapter to disable an ISP and the error counters are reset on the DA a microcode logic error will fence the DA adapter
2. **Potential Impact of Problem:** extened maintenance
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 278488

HMC reboot causes MRPD data off-load failure
1. **Problem Description:** After a reboot of the HMC a microcode logic error causes a MRPD data off-load failure. The only way to correct the MRPD data off-load failure is for the SSR to reconfigure the MRPD off-load.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 290710

Device area health check routine fails to run
1. **Problem Description:** On large systems, a prerequisite health check script may take over an hour to complete, causing the device area health check to never launch.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 290119

CUIR failed to vary off paths during host bay repair
1. **Problem Description:** During a host bay repair, a microcode logic error caused CUIR to skip vary off of one of the host adapters
2. **Potential Impact of Problem:** Had to manually vary off the paths
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 292745

zHPF command chain fails to stage 1 required track to cache
1. **Problem Description:** zHPF command chains with an intent count of 0xff can fail to stage all tracks to cache due to a microcode logic error.
2. **Potential Impact of Problem:** warmstart, unit check sent to host
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 286845

Unit Exception is returned when Unit Check Status should be
1. **Problem Description:** With zHPF enabled when the domain count is X'01', if the DCW count is inconsistent with TLF count a Unit Exception is reported to the channel when Unit Check Status should have been reported.
2. **Potential Impact of Problem:** Interface control check reported
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 288166

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DS8000 returns the incorrect status flags 1 value for CRC errors

1. **Problem Description:** With zHPF enabled the DS8000 returns the wrong value in the status flags 1 field when invalid CRC is detected.
2. **Potential Impact of Problem:** incorrect status returned to host
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 288169

Warmstart caused by microcode logic error with PPRC

1. **Problem Description:** When a device receives a update secondary command with option failback, if the device is reserved by a host a microcode logic error will result in a warmstart
2. **Potential Impact of Problem:** warmstart
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 278969

Multiple volume selection on the DSGUI can select one less volume

1. **Problem Description:** When selecting multiple volumes for an action on the DSGUI it is possible one of the selected volumes will not be included for the action. The volume would need to be selected again for the change.
2. **Potential Impact of Problem:** One volume not changed
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 282173

Device Adapter firmware error causes adapter reset

1. **Problem Description:** A microcode logic error when updating I/O statstics for raid 6 arrays causes DA firmware error and adapter reset.
2. **Potential Impact of Problem:** temporary degraded redundancy
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 279653

Repeated recovered faults on internal I/O fabric does not call home

1. **Problem Description:** Repeated unisolated fabric faults on an I/O bay are recovered by warmstart but no serviceable event is opened. This change will call home if previous fabric faults have occurred on the same I/O bay.
2. **Potential Impact of Problem:** additional recovered fabric faults
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 259669

Improved handling of Lost Data Frame errors

1. **Problem Description:** When a serviceable event is generated for Lost Data Frame errors on a Device Adapter loop, the affected loop will be placed in service mode.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 289221

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SRC BE30CEB7 Loop Error is reported when DDMs are idle

1. **Problem Description:** SRC BE30CEB7 indicating an error on loops from DA adapters to storage enclosures. Due to a microcode error idle DDMs can be reported as causing loop errors. This problem is most common on machines without logical configuration.
2. **Potential Impact of Problem:** Invalid error reported
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes

ID#: 292102

Failed login count not sync'd on dual HMCs

1. **Problem Description:** After successful login on one HMC, the failed login counts on the partner HMC may not be reset.
2. **Potential Impact of Problem:** User account locked
3. **Problem Severity:** Service
4. **Pervasive Problem:** No

ID#: 289485

Improvements: Improvement for better usability

Eliminate an SSL vulnerability

1. **Problem Description:** Closes an HMC SSL vulnerability for UDP port 1701
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** No

ID#: 285107

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