IBM System Storage - DS8880 Disk Storage
Microcode Bundle 88.31.46.0 Release Note Information v1.1

Release Date: January 12, 2018

VRMF Level Data Results:

VRMF level From:	**88.30.141.0**
VRMF Level To:	**88.31.46.0**
Report for:	**All DS8880**

Code Bundle Contents

DS8880 Code Bundle Level	SEA or LMC Version:	DSCLI Client	Heat Map Transfer Utility	Storage Manager	Copy Services Manager
88.31.46.0	**7.8.31.126**	**7.8.31.126**	**7.8.31.126**	**5.8.31.1052**	**6.2.1**

Overview of new features and functions supported by this release

At a glance:

- Code fixes and enhancements

This new microcode release supports DS8880 systems only.

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.

HIPER I/O errors and potential data loss on IBM i systems running Global Mirror

1. **Problem Description:** http://www-01.ibm.com/support/docview.wss?uid=ssg1S1010815
2. **Potential Impact of Problem:** loss of data, degraded performance
3. **Problem Severity:** HIPER
4. **Pervasive Problem:** Yes

ID#: 331863

Potential data loss with ESE CKD volumes

1. **Problem Description:** An exposure has been identified in DS888x systems running Metro Mirror or Global Copy, with ESE CKD volumes. The exposure exists in a specific usage case where the copy pair is suspended, and the DFSMSdss SPACEREL function is run against the non-production member.
2. **Potential Impact of Problem:** loss of data
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID#: 332859

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

Temporary loss of access during DA error recovery

1. **Problem Description:** A Device Adapter was reset while the partner adapter was also being reset.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID#: 326608

0x7DEA MLE running MT-PPRC with preserve mirror

1. **Problem Description:** Clients running Multi-Target PPRC with preserve mirror are exposed to a microcode logic error caused by an incorrect Out-of-Sync bitmap.
2. **Potential Impact of Problem:** loss of data on target volume
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID#: 328458

HPFE Gen2 cross-card communication failure

1. **Problem Description:** Cross-card communication failed during firmware update because of a buffer overrun.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID#: 328988

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LPAR IML hang
1. **Problem Description:** Force destage to a volume with missing extents caused a microcode logic error during LPAR IML.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 329288

Loss of Access during CDA
1. **Problem Description:** Multiple Problem Analysis issues led to an out-of-resource condition.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 329704

HIPER Potential Loss of Access for z Systems running Dataset Level FlashCopy
1. Problem Description: http://www.ibm.com/support/docview.wss?uid=ssg1S1012155
2. Potential Impact of Problem: loss of access
3. Problem Severity: HIPER
4. Pervasive Problem: Yes
ID#: 330013

Repeated 0x7003 MLE
1. **Problem Description:** During CS metadata track recovery, an unexpected reason code triggered a microcode logic error.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 330348

HIPER Cache segment demote scan stalled
1. **Problem Description:** Accelerated LRU queue was stalled, but was not marked as stalled, so segments were not demoted out of cache
2. **Potential Impact of Problem:** Repeated warmstarts, loss of access
3. **Problem Severity:** HIPER
4. **Pervasive Problem:** Yes
ID#: 330499

Production impact during incremental Flash Copy
1. **Problem Description:** When managed out-of-band by CSM, the primary volume was being quiesced during PPRC failback.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 331945

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V-RAID adapter timeouts during array rebuild
1. **Problem Description:** SAS T10 errors on rebuild target drive caused repeated resets of both V-RAID adapters.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 332374

HPFE Gen2 enclosure powered off
1. **Problem Description:** False thermal sensor indications caused enclosure to power off.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
ID#: 332414

Moderate: A system path is not operational and/or performance may be degraded.

IEA498I PPRC paths removed
1. **Problem Description:** PPRC paths failed after being moved to a different SAN
2. **Potential Impact of Problem:** loss of path
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 331722

Poor cache hit ratios
1. **Problem Description:** This defect addresses multiple issues:
   a.) SARC algorithm is not properly differentiating between random and sequential tracks on flash arrays.
   b.) Error in LRU scan list management
   c.) Error in scan stall management
2. **Potential Impact of Problem:** degraded performance
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** Yes
ID#: 327091

SRC=BE11D004 FHD heartbeat timeout
1. **Problem Description:** Firehose Dump heartbeat timed out, triggering a warmstart.
2. **Potential Impact of Problem:** Warmstart
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** Yes
ID#: 327201

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0x23AC MLE
1. **Problem Description:** Cache Track Request status indicator was overwritten, causing a Microcode Logic Error
2. **Potential Impact of Problem:** Warmstart
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 329646

0x235B MLE with ESE primary and secondary volumes
1. **Problem Description:** With Extent Space-Efficient volume pairs, a timing window exists where the track Out-of-Sync bitmap may be incorrectly changed.
2. **Potential Impact of Problem:** Warmstart
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 329712

Modified tracks not on correct LRU list
1. **Problem Description:** Modified tracks in HPFE Gen2 were being added to the incorrect LRU list.
2. **Potential Impact of Problem:** degraded performance
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 330074

Inconsistent sequential read hit ratio
1. **Problem Description:** Cache not always choosing to demote where it will do the most good.
2. **Potential Impact of Problem:** degraded performance
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 330372

Incorrect cache metadata recovery
1. **Problem Description:** Cache metadata was not correctly invalidated
2. **Potential Impact of Problem:** Warmstart
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 330607

LRC error incorrectly fenced a Host Adapter
1. **Problem Description:** Sector LRC was good across the 524-byte IBM i sector, but was not good across the 512-byte data portion. When the sector was subsequently read, the data area LRC was not checked until it got to the host adapter.
2. **Potential Impact of Problem:** loss of path
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 330688

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SRC=BE3526FC Host Adapter MLE
1. **Problem Description:** Host adapter firmware microcode logic error handling recovery for sequence timeouts.
2. **Potential Impact of Problem:** Warmstart
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 331663

Increased IOSQ, CONN Times on R8.3 and/or RPO increase with R8.3 on Secondary
1. **Problem Description:** zHyperLink enablement in R8.3 causing higher system overhead even though zHyperLink is not in use.
2. **Potential Impact of Problem:** degraded performance
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 331722, 332022

0x9702 MLE
1. **Problem Description:** Error Recovery code collision during OnDemandDump processing
2. **Potential Impact of Problem:** Warmstart
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
ID#: 331763

Service: A recoverable error, Service improvements.

DSCLI lsarraysite, lsextpool, and lsioport fail with CMUN00015E
1. **Problem Description:** Command hang when failing internal query of fibre channel ports caused an out-of-memory condition.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 323754

Rank depopulate stalled
1. **Problem Description:** Unable to remove ranks because extents were stuck in 'Dynamic Segment Relocation Target' state.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 327058

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SRC=BE14CFEA key server heartbeat error
1. **Problem Description:** Key retrieval timeout value is smaller than necessary
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 327078

DS GUI page formatting issue
1. **Problem Description:** "Drive class" column format in "Arrays by pool" table is not formatted properly.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 327390

DSCLI error CMUN00018E
1. **Problem Description:** Current versions of DSCLI require TLSv1.2 authentication, which is not supported in Java Runtime Environments below 1.7. The system requirements have been updated in the DSCLI README file.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 329417

No access to DS GUI or DSCLI
1. **Problem Description:** ESSNI server fails to start if the password minimum length is set to 16 characters.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 329715

Key group critical status
1. **Problem Description:** DSCLI incorrectly shows key group status as 'Critical' when there is a gap in the key server list.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 330067

Missing HMC critical data backup files
1. **Problem Description:** HMC was not able to perform a backup for an extended period, and all existing backups were pruned.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 330073

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SRC=BE14EAF1 does not auto-close
1. **Problem Description:** Key server communication should auto-close when communication has been re-established.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 330237

PE package missing collectedCodeLevels file
1. **Problem Description:** PE package collection does not consistently offload the collectedCodeLevels.all file
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 330815

Key Server communication timeouts
1. **Problem Description:** Encryption key retrieval may time out when DS8000 HMC, Key Server, and HSM are all geographically dispersed across long distances.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 330847, 330848

Incomplete FRU lists
1. **Problem Description:** Device Adapter and Storage Enclosure loop error FRU lists did not include the fiber cables.
2. **Potential Impact of Problem:** Multiple repair actions
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
ID#: 330980

Storage Enclosure firmware download failure
1. **Problem Description:** Preload precheck routines for HPFE Gen2 cause preload failures in systems that contain HPFE Gen1 enclosures.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** Yes
ID#: 331129

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Improvements: Improvements for better usability

Rank Scan Utility
1. **Problem Description:** Add utility to scan ranks for specific conditions under direction from development
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** No

ID#: 331336

Allow ESE/STD PPRC volume intermix for DS8870 secondary systems
1. **Problem Description:** Support PPRC intermix when secondary system is DS8870, to facilitate migration testing scenarios.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** No

ID#: 331712

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