

IBM System Storage DS8700 Disk Storage

76.31.x.x Release Notes Cumulative Summary v17.1

Date: July 31, 2016

VRMF Level Data Results:

VRMF level From:	76.30.43.0
VRMF Level To:	76.31.190.0
Report for:	DS8700

Code Bundle Contents

DS8000 Code Bundle	SEA or LMC Version: Display with <code>dscli ver</code> command	CLI Client Level	Storage Manager Code Level
76.31.190.0	6.6.31.2090	7.8.23.87	5.6.31.1408
76.31.189.0	6.6.31.2080	7.8.23.87	5.6.31.1404
76.31.177.0	6.6.31.1900	6.6.31.1900	5.6.31.1378
76.31.169.0	6.6.31.1790	6.6.31.1790	5.6.31.1358
76.31.159.0	6.6.31.1650	6.6.31.1650	5.6.31.1339
76.31.150.0	6.6.31.1550	6.6.31.1550	5.6.31.1323
76.31.143.0	6.6.31.1460	6.6.31.1460	5.6.31.1308
76.31.131.0	6.6.31.1340	6.6.31.1340	5.6.31.1285
76.31.121.0	6.6.31.1210	6.6.31.1210	5.6.31.1265
76.31.105.0	6.6.31.1000	6.6.31.1000	5.6.31.1230
76.31.92.0	6.6.31.850	6.6.31.850	5.6.31.1181
76.31.79.0	6.6.31.670	6.6.31.670	5.6.31.1152
76.31.70.0	6.6.31.560	6.6.31.470	5.6.31.1136
76.31.55.0	6.6.31.390	6.6.31.390	5.6.31.1113
76.31.42.0	6.6.31.170	6.6.31.150	5.6.31.1085
76.31.32.0	6.6.31.45	6.6.31.45	5.6.31.1073
76.31.17.0	6.6.31.25	6.6.31.18	5.6.31.1043
76.30.43.0	6.6.30.62	6.6.30.61	5.6.30.1105

Select Modifications Included in this Release Note:

This is a list of some modifications contained across one or more LIC levels (License Internal Code) or microcode release(s). The potential impact is variable. Specific environments may aggravate or degrade the potential impact.

Problem(s) 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 When running Global Mirror on DS8000, if the host requests an update to a track that is in transit via the background copy process, the data for that track may be sent incorrectly to the secondary

1. **Problem Description:** <http://www.ibm.com/support/docview.wss?uid=ssg1S1010217>
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.189.0
- ID#: 326551

Device Adapter showstop error after DDM failure

1. **Problem Description:** A microcode logic error while processing a DDM failure caused data loss
 2. **Potential Impact of Problem:** loss of data,
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 301292

HIPER XRC suspend, abend 9C4-10, No Record Found

1. **Problem Description:** Write command with Bypass Extent Checking set, needs to still check for extent conflicts if prior I/Os did not also specify BEC.
 2. **Potential Impact of Problem:** Loss of Data on secondary
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 313493

HIPER Device adapter showstop during SMRB abort

1. **Problem Description:** Media error on Smart Rebuild source disk triggered a scrub of the logical block. During the scrub, the source disk deconfigured. A microcode logic error in the subsequent recovery action caused a DA showstop.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.159.0
- ID#: 308956

Error in GM collision handling

1. **Problem Description:** A microcode logic error handling a GM collision may result in 0x7618 MLE, or incomplete data sent to secondary, depending on timing.
 2. **Potential Impact of Problem:** Warmstart, or corrupted consistency group
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 303510

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0x7178 MLE, SEFLC target volume in failed state

1. **Problem Description:** Track-Space-Efficient secondary volumes in failed state because of a microcode logic error
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 303700

Provide new warning when replacing DDMs in an offline array

1. **Problem Description:** SSR may replace a DDM that is needed to recover an offline array.
 2. **Potential Impact of Problem:** Extended loss of access, or loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 305037

Data check after PCIe error recovery

1. **Problem Description:** PCIe error was not properly handled, resulting in LRC errors.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 300931

Inconsistencies on PPRC 'D' copy

1. **Problem Description:** When PPRC pairs are cascaded, an indicator is lost that the 'C' volume is also a PPRC primary. This allows flashcopy establish, without ensuring the copy is being mirrored.
Failure scenario:
 - 4 way cascaded (A-B-C-D) migration is used to migrate from a MM pair to a new MM pair, using Global Copy, AND
 - Incremental Resync is active on the MM primary, AND
 - Hyperswap is used to swap from the old MM primary to the new MM (GC) primary, AND
 - FlashCopy is being used on new MM (GC) primary**NOTE:** There is no exposure if the migration is a single cascaded Global Copy relationship to migrate from a MM pair to a new volume that will become a MM primary after the Hyperswap
 2. **Potential Impact of Problem:** Undetected data corruption
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 300273

Battery test fails to run with no serviceable event

1. **Problem Description:** An error condition can prevent periodic battery tests from running, but no serviceable event is created to call attention to the problem. If multiple failed batteries go undetected, data may fail to be preserved during a power outage.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 300422

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HIPER During drive rejection a microcode logic error does not set status

1. **Problem Description:** During drive rejection a microcode logic error can cause the incorrect status to be set in an internal control block. This can result in data loss for all tracks queued on the adapter.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 292362

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
 5. **Release Bundle:** 76.31.92.0
- ID#: 290291

DDM error analysis failed to reject DDM

1. **Problem Description:** During DDM error analysis, a microcode logic error prevented the analysis routines from proactively rejecting a failing DDM.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 288717

HIPER 0x7178 MLE, SEFLC target volume in FC08 state

1. **Problem Description:** After recovery from 0x7178 microcode logic error a Track-Space-Efficient Flash Copy target volume can be left in FC08 (unable to destage) state
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** Hiper
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 286857

Device Adapter loop hang

1. **Problem Description:** During Device Adapter loop recovery, a command is sent that is no longer supported by firmware. While normally harmless, in this scenario, the command was not properly handled, causing the loop to hang, which interfered with the recovery process.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 283044

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Host adapter sends invalid data to cache and NVS

1. **Problem Description:** Host adapter hardware failure caused corrupted tracks in cache and NVS. Ending status had been sent to the host before the corrupted tracks were detected. Warmstart occurred for each bad track that was detected.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 280675

HIPER Smart Rebuild scan changed to once and hour from once a day

1. **Problem Description:** The smart rebuild scan has been changed to run once an hour instead of once a day.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 284782

HIPER FlashCopy target volumes have stale R0 data

1. **Problem Description:** In a CKD environment FlashCopy target volumes can have stale R0 data due to a microcode logic error.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 264749

BE504940 multiple sector LRC is detected

1. **Problem Description:** Parity checking does not check the entire sector due to a microcode logic error. Parity should check the entire sector and correct any parity error.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 276086

Background media scan causes incorrect LBA calculation

1. **Problem Description:** Background media scan will calculate incorrect Logical Block Address (LBA) when converting the component LBA to an array LBA if the address is greater than 32 bits on a RAID6 array. This affects LUNs that are greater than 2TB in size.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 283506

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HIPER Drive stuck in loop initialization on both loops can cause empty loops

1. **Problem Description:** If a disk drive become stuck in fiber channel loop initialization on both ports, it is possible both loops of a dual loop will be empty. This failure will cause a loss of access and could result in data loss.
 2. **Potential Impact of Problem:** loss of data, loss of access
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 274106

HIPER Spare drive causing loop FC-AL errors can lead to medium errors

1. **Problem Description:** When a bad drive is brought into the system one DA adapter can have an initialization degraded status before the peer DA started initialization. A microcode logic error can lead to medium errors on the rank that is rebuilding.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 274139

Primary Power Supply repair results in emergency shutdown

1. **Problem Description:** During repair of a Primary Power Supply there are RPC to CEC communication errors, such that one CEC can communicate with only one RPC and the other CEC can communicate with only the other RPC resulting in a loss of master power control and emergency shutdown.
 2. **Potential Impact of Problem:** loss of access, loss of data is possible
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 274129

Host adapter write to NVS is dropped without error

1. **Problem Description:** A host adapter write to NVS can be dropped without error due to a hardware failure. The problem is ending status can be sent to the host when the write to NVS is dropped.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 272459

HIPER Transient error on PCIe bus results in host adapters with LRC errors

1. **Problem Description:** A transient error on the PCIe bus results in multiple host adapters with LRC errors. This can result in multiple tracks to be pinned non-retryable in cache due to a microcode logic error. The error handling for specific transient errors on the PCIe bus is being changed.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.32.0
- ID#: 273640

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HIPER Track format mismatch detected by cache

1. **Problem Description:** At the end of a format write cache can detect a format mismatch between the end of track sector and the data track. The track will be restored from NVS, but it is the track format descriptor that is in error.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.32.0
- ID#: 270611

Emergency power off signal was sent to both clusters

1. **Problem Description:** The emergency power off signal was sent to both CECs without a loss of input AC. This causes fire hose dump and power off when the system has full AC input power
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.30.43.0
- ID#: 260809

RAID 10 read error caused by DA adapter

1. **Problem Description:** When a read causes an error staging the data to cache the DA adapter can be the cause but the DA adapter is not fenced due to a microcode logic error.
 2. **Potential Impact of Problem:** loss of data
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.30.43.0
- ID#: 265786

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

Call Home on first instance of a Host Adapter MLE

1. **Problem Description:** Original design of DS8K was not to call home for HA Microcode Logic Errors until the third occurrence. These are normally recoverable by warmstart, but in some cases, temporary loss of access can occur.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 310655

Failed path not removed from path group

1. **Problem Description:** During host adapter fastload, a path failed to resume, but was left in the path group
 2. **Potential Impact of Problem:** Hyperswap fail
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 304350

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Loss of Access to RAID-6 arrays caused by DA NVRAM failure

1. **Problem Description:** RAID-6 arrays may go offline for ~90 seconds after a Device Adapter NVRAM failure.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 313179

Ranks created without spares

1. **Problem Description:** Ranks that should have been created with spares (6+P+S) were created without (7+P). If this happens with only two ranks on a DA Pair, no spares will be available.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 315128

Loss of access during Device Adapter replacement

1. **Problem Description:** Temporary loss of access may occur during DA replacement in a large configuration, because of a microcode logic error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 315732

Adapter showstop errors on both Device Adapters

1. **Problem Description:** A microcode logic error triggered repeated showstop errors on both DAs in the pair.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 315843

0x60CA timeout MLE

1. **Problem Description:** Multiple microcode logic timeout errors were triggered by a specific CCW chain:
CCW RC/RCMT with ccwByteCount=8, followed by
Data Chain CCW RC/RCMT with any ccwByteCount
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 320238

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Array offline, pinned data

1. **Problem Description:** During device adapter recovery, function to disable adapter ports can take > 2 minutes to complete, causing temporary loss of access to arrays.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 320850

Host timeout during DDM deconfigure

1. **Problem Description:** A specific set of conditions led to an 8-second delay while deconfiguring a failed DDM
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 283642

PCIe fabric error recovery caused loss of access

1. **Problem Description:** During PCIe fabric error recovery, if there is no communication path to Device Adapters or V-RAID adapters, the time to recover can be extended, causing a temporary loss of access.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 290283

Device adapter hang during PCIe error recovery

1. **Problem Description:** Device adapter performing a DMA operation couldn't release it's lock during PCIe fabric recovery. Partner adapter had to wait for timeout and warmstarts to release the locks.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 309129

HIPER Device Adapter showstop

1. **Problem Description:** After smart rebuild abort, the disk deconfigure process hangs, causing DDM replacement failures. If a second DDM fails in the same adapter pair, the prior deconfigure hang can lead to showstop of both DAs, and temporary loss of access.
 2. **Potential Impact of Problem:** Loss of Access
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.169.0
- ID#: 309226

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DA Takeover failed

1. **Problem Description:** Rank state changes were not processed because periodic DATO path test processes were queued in the partner LPAR
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 311068

Port LOGIn failures

1. **Problem Description:** Delays processing PLOGIs can lead to multiple collisions when the remote port retries, while the host adapter is still processing the last PLOGI. In extreme cases, this could lead to depletion of Task Control Blocks
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 312998

HIPER Track Format Descriptor mismatch on PPRC secondary volume

1. **Problem Description:** A format write command encountered a TFD mismatch on the secondary volume, because out-of-sync bitmap was incorrect.
 2. **Potential Impact of Problem:** PPRC suspend, can also trigger GDPS to Hyperswap.
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.159.0
- ID#: 275313

LPAR timezone incorrectly set to 'null'

1. **Problem Description:** null timezone can cause a failure in some error log analysis routines, resulting in problems going unreported.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.159.0
- ID#: 307696

HIPER Host adapter 0x4B0E MLE

1. **Problem Description:** zHPF workload was transferring a long chain of small records. The DS8K split the transfer into two DMAs, exposing a problem with the calculation for notAlignedBytes.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.159.0
- ID#: 308467

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Loss of access during CDA when repository size > 50TiB

1. **Problem Description:** Insufficient metadata table space for repositories > 50TiB, but this limit was not enforced.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 295123

HIPER I/O timeout during failed DDM deconfigure

1. **Problem Description:** Operation in process hangs because the DDM is unresponsive, thus preventing quiesce of the DDM.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.150.0
- ID#: 298041

Repeated 0xE716 MLE after failover

1. **Problem Description:** NVS data for the failed CEC was being processed, which should have been cleared.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 301554

0x14E MLE and loss of access

1. **Problem Description:** System deadlocked because no cache segments are free, and cache SMP segment scan is stalled.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 301701

HIPER Loop errors caused multiple DDM rejections

1. **Problem Description:** Degraded loop led to array members being marked 'Security Degraded', which then caused them to be rejected from the array.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.150.0
- ID#: 303527

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iSeries system hang after array went read-only

1. **Problem Description:** Inquiry page C0h is not reported to iSeries hosts, preventing the host from detecting a write inhibit condition
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 298671

HIPER Repeated warmstarts triggered by VMWare REPORT_LUNs command

1. **Problem Description:** VMWare r6 VVOL function has implemented a new variation of the REPORT_LUNS command with SELECT_REPORT field set to a value that was previously not tolerated by DS8000. This results in repeated warmstarts.
 2. **Potential Impact of Problem:** Warmstarts, potential loss of access
 3. **Problem Severity:** High Impact
 1. **Pervasive Problem:** Yes
 6. **Release Bundle:** 76.31.131.0
- ID#: 298050

Notification of metadata LRC error

1. **Problem Description:** Open serviceable event SRC BE33CEE1 when daily LRC scan finds bad metadata.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 284786

I/O delay during DDM deconfigure

1. **Problem Description:** Timeout during command sent to deconfig a not-ready DDM, because Device Adapter is waiting for drive to recover.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 296096

PCIe last path recovery enhancement

1. **Problem Description:** During error recovery for a PCIe error to a host bay, access can be lost if we have latent PCIe errors on the alternate host bay. This change implements additional recovery strategies when a secondary error occurs on the last path.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 298574

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Long warmstart after PCIe error

1. **Problem Description:** Extended warmstart after a PCIe fabric CRC error caused ~3 second loss of access
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 293412

Errors on Fiber Channel Arbitrated Loop can result in offline ranks

1. **Problem Description:** An error condition on the Fiber Channel Arbitrated Loops can result in offline arrays. A microcode logic error in the handling of large payloads can cause both DA adapters to become fenced.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 293821

HIPER Slow DDM rejected by one DA is not rejected by partner DA

1. **Problem Description:** When a DDM is rejected by DAHP for being slow the partner adapter may not reject the drive the DDM does not respond to commands. The microcode logic should reject the DDM on both adapters without waiting for the DDM to respond.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** HIPER
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 294172

DA Takeover failure during cluster failure causes loss of access

1. **Problem Description:** When a cluster and DA adapter fail the operational cluster can takeover a DA adapter owned by the failing cluster. A microcode logic error can prevent the DA Takeover when an unexpected adapter state is detected.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 294527

HIPER Loss of access during Smart Rebuild

1. **Problem Description:** Smart rebuild abort because of errors on source drive caused Device Adapter showstop errors
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.105.0
- ID#: 266319

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HIPER I/O timeout caused by Smart Rebuild source drive failure

1. **Problem Description:** During Smart Rebuild, source drive failed, and disappeared from the loop, causing array offline for ~90 seconds
 2. **Potential Impact of Problem:** I/O timeout, loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.105.0
- ID#: 283070

HIPER Internal communication error causes enclosure power off

1. **Problem Description:** Communication failure between the enclosure controller cards can result in both cards taking control of the internal serial bus which can result in the storage enclosure powering off.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.105.0
- ID#: 292022

Track Space Efficient repository greater than 19GB exposure

1. **Problem Description:** Track Space Efficient (TSE) repositories greater than 19TB (19456 GB) are exposed to corruption of the data contained in the repository that can result in a loss of access.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 293344

Multiple 0x0632 MLE when set or reset soft fence

1. **Problem Description:** Command chain containing 0x2A order to set/ reset soft fence is prohibited, triggering a warmstart. The warmstart then returns redrive sense to the host.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 294701

Dual host bay PCIe recovery

1. **Problem Description:** During PCIe error recovery, arrays attempt to fail over to the alternate adapter, but a latent fabric error in the alternate host bay triggered PCIe error recovery in that bay as well.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 294812

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HIPER 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:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- ID#: 294098

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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- ID#: 290365

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Host timeouts after mkpprc completion

1. **Problem Description:** After PPRC pairs were established, commands that were received during long busy were not properly handled at the conclusion of the long busy period.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 290927

HIPER Microcode logic Error on multiple Host Adapters

1. **Problem Description:** Microcode Logic Error caused by incorrect taskLogicalPathNumber.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 288952

Setting 'E' bit masks channel protect check

1. **Problem Description:** When processing a SIDE command that did not provide any data (bytesTransferred= 0), the CU erroneously sets the 'E' bit in the status response to the channel. This causes the channel to not report a protection exception that prevented it from transferring the 5 bytes for the SIDE command.
 2. **Potential Impact of Problem:** Loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 288582

Host bay fabric error recovery caused LoA

1. **Problem Description:** During fabric error recovery, a microcode logic error caused reset of last Device Adapter path to data.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 279049

DDM power shutdown during RPC replacement

1. **Problem Description:** During replacement of a failed RPC card, a microcode logic error caused register corruption in the good RPC card, which led to DDM power shutdown and firehose dump.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 273928

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Emergency power off signal was sent to both clusters

1. **Problem Description:** The emergency power off signal was sent to both CECs when no loss of system input AC had occurred. This caused firehose dump and power off even though the system still had full AC input power
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 260809

HIPER IOS071I Start Pending with zHPF active

1. **Problem Description:** Under very high channel utilization rates, during an I/O operation, a microcode logic error can cause the operation to time-out. If this error is encountered on many command strings, the host adapter resources can be over utilized.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 284393

HIPER Repeated warmstarts and host adapters fenced

1. **Problem Description:** Due to a microcode logic error a specific CCW chain can cause repeated host adapter microcode errors leading to the host adapters being fenced.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 273006

HIPER While single cluster operational the good cluster crashed

1. **Problem Description:** After a CEC hardware failure, the other CEC error recovery for FSP controlled resources results in a CEC crash due to an FSP firmware error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 281343

HIPER Rank remains inaccessible after rebuild started

1. **Problem Description:** During rank error handling the non-owning cluster rank status can keep the rank inaccessible after the rank transitions from offline to rebuilding.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 284291

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HIPER Device Adapter unavailable for a second takeover after service

1. **Problem Description:** DA takeover maintains access to ranks during a dual failure of a cluster and a DA controlled by the running cluster. If the repair of the DA adapter fails during rank failback then loss of access to the ranks will occur, because the DA Takeover fails the second time.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 275266

HIPER Two failing power supply fans in one CEC causes fire hose dump

1. **Problem Description:** If both power supply fans in one CEC have faults the system will fire hose dump. The correct action would be to shutdown the CEC with the failing fans.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 268868

HIPER Global Mirror resume failure due to PPRC sequence numbers

1. **Problem Description:** Problem exists when secondary device does not support PPRC sequence numbers (ESS800/DS6K/DS8K prior to R4.2). A microcode logic error sets an internal flag incorrectly.
 2. **Potential Impact of Problem:** loss of GM function
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 278815

CEC to RPC communication failure causes cluster failover failure

1. **Problem Description:** CEC to RPC communication failure can result in a failover to the CEC that can not communicate to either RPC card. This will result in both clusters being down due to no CEC to RPC communication.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 284777

Rank left in long busy during cluster failover and failback

1. **Problem Description:** Rank status is long busy during cluster failover and failback due to a microcode logic error
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 282185

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Large sequential writes can over utilize NVS preventing destage

1. **Problem Description:** Host doing a large number of 64K sequential writes can trigger a microcode logic error that causes excessive NVS utilization. This failure will prevent destage of the busiest tracks.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 280613

Fiber Channel Loop errors causes DAHP to reject DDMs

1. **Problem Description:** When DAHP is enabled some Fiber Channel loop error recovery scenarios will result in DDMs being slow to respond. This can lead to DAHP rejecting DDMs for being slow which and can result in degraded ranks.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 279289

Improve spare availability check during loop recovery

1. **Problem Description:** Improved spare checking for intermix drives types on the loop having spares that are not usable by arrays with the other drive drive type.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 284013

Device Adapter FC ports not disabled on internal processor failure

1. **Problem Description:** Adapter ports on failed DA card did not drop light, resulting in communication error on partner DA and loss of access to ranks for ~20 seconds.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 284786

HIPER Internal I/O fabric error leaves host adapter link light on

1. **Problem Description:** During a recursive fabric error recovery the host adapter link light is left on but the adapter will not respond to I/O requests.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 276605

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HIPER DA adapter fenced by repeated showstop errors

1. **Problem Description:** If BGMS attempts to repair an LBA that is beyond the useable area of the drive the DA adapter will have repeated showstop errors until the adapter is fenced, only RAID 6 arrays are exposed.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 275724

HIPER Direct attached iSeries host port login is not processed correctly

1. **Problem Description:** Direct attached iSeries host has successful fabric login but port login fails, preventing remote IPL of the new host.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 279507

PPRC resume can cause copy relationship ID to incorrect

1. **Problem Description:** After some PPRC suspends, loss of all paths for example, the PPRC resume can result in new copy relationship IDs. This could potentially prevent hyperswap.
 2. **Potential Impact of Problem:** loss of hyperswap capability
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 279746

Cache deadlock during destage cause host reboot

1. **Problem Description:** Cache destage selects strides with no busy tracks first. If the first track in a stride is busy the other tracks are ignored. This can lead to a deadlock condition and result in the host rebooting.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 275846

Fiber Channel Loop errors causes DAHP to reject DDMs

1. **Problem Description:** When DAHP is enabled some Fiber Channel loop error recovery scenarios will result is DDMs being slow to respond. This can result in DAHP rejecting DDMs for being slow, and can result in degraded ranks.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 279289

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HIPER Emergency power off warning detected during PPS repair

1. **Problem Description:** During PPS repair emergency power off warning is detected on one power supply. A microcode logic error in the recovery code caused a dual cluster reboot.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 272332

HIPER Loss of input AC to one PPS results in Fire Hose Dump

1. **Problem Description:** Loss of AC input to one Primary Power Supply can result in the partner Primary Power Supply incorrectly setting an internal fence condition.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 275568

HIPER Wrong RPC card fenced for 208 VDC error

1. **Problem Description:** The wrong RPC card can be fenced for a 208 VDC error due to a microcode error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 253041

HIPER DDM rejection results in RAID commands being blocked

1. **Problem Description:** A data scrub read command is submitted to a DDM. After the command is submitted the DDM is deconfigured, before the read was processed. The DA is "hung" and RAID commands are being queued until the DA is reset by a showstop error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 272095

DA to DA communication error causes logical disk failure

1. **Problem Description:** When a specific DA to DA communication error is detected, the error handling can disable all FC-AL loops due to a microcode logic error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 275633

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DA memory error can cause a rank to become write protected

1. **Problem Description:** A DA adapter with a double bit memory error can result in a rank becoming write protected due to microcode logic error during the memory error handling. The rank will be online and there will volumes with pinned retryable data.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 278505

Unstable FC-AL loop can cause both Device Adapters to disable ports

1. **Problem Description:** Noise caused by a device on the fiber channel arbitrated loops can cause both ports on both DAs in the pair to be disabled, causing a dual loop to be unavailable, resulting in offline ranks
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 273755

Temporary loss of access to rank during drive error handling

1. **Problem Description:** When a drive is not responding to commands there is a timing window where a logical disk failure can occur during the error recovery due to a microcode logic error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 277328

Microcode returning equipment check for invalid zHPF command string

1. **Problem Description:** An invalid command string is sent by an application with zHPF. Equipment check sense is returned in response to the invalid command string. This can result in a permanent I/O error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 273834

XRC sidefile fills up if multi-reader XRC sessions are suspended

1. **Problem Description:** During write intercept a sidefile entry is allocated. If cache is 60% full, the new entry can not allocate space. Only the session the write was addressed to will be suspended. This can result in active an session to suspended device.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 268329

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Dual HMC service failures and call home failure

1. **Problem Description:** Repair on dual HMC will fail if the HMC is not the PA Primary. Additionally, call home failures occurred due to microcode logic errors. New HMC base code has fixed both the repair failures and the call home failures. Call home failures can lead to multiple failures if the first failures are not reported to IBM.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.42.0
ID#: 277090

HIPER 8GB Host Adapter on R6.1 exposed to processor checkstop

1. **Problem Description:**
<http://www-01.ibm.com/support/docview.wss?uid=ssg1S1003931>
2. **Potential Impact of Problem:** Loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** Yes
5. **Release Bundle:** 76.31.32.0
ID#: 258339

During microcode update a microcode logic error causes loss of access

1. **Problem Description:** During the time the LPAR is quiesced for update the ownership of the I/O Bays is transferred to the other LPAR. A microcode logic error can cause the transfer to be retried repeatedly, and the operational LPAR to encounter a Data Storage Interrupt which will reboot the LPAR.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.32.0
ID#: 270884

HIPER Easy Tier staging tracks that are beyond the end of the extent

1. **Problem Description:** Easy Tier migration can stage tracks that are beyond the end of the extent. A microcode logic error can repeatedly attempt stage of tracks that are beyond the end of the extent until loss of access occurs.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** Yes
5. **Release Bundle:** 76.31.32.0
ID#: 270887

HIPER Start Pending when SIM is offloaded on a zHPF Start I/O

1. **Problem Description:** When there is a SIM or PPRC UCNSIO that is not in multihost mode is offloaded to zHPF SIO there will be a start pending to the volume. A PPRC path state change can cause this condition.
2. **Potential Impact of Problem:** host I/O timeout, loss of access to volume
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** Yes
5. **Release Bundle:** 76.31.32.0
ID#: 275265

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HIPER Selective reset surfaces a microcode logic error with FlashCopy

1. **Problem Description:** When the channel issues a selective reset there can be a microcode logic error that causes a warmstart and possible job failures.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.32.0
- ID#: 260441

HIPER Cache and NVS out of sync condition error handling causes loss of access

1. **Problem Description:** When cache and NVS have an out of sync condition the error recovery can lead to multiple microcode detected errors. This will result in multiple warmstarts and can lead to loss of access
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.17.0
- ID#: 266011

HIPER Loss of input AC can result in incorrect Primary Power Supply status

1. **Problem Description:** Loss of input AC power can cause the PPS to be fenced internally. Loss of input AC or failure of the other PPS can result in an emergency power off and fire hose dump.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.17.0
- ID#: 271459

Unit abort when zOS writing to a FlashCopy target with link errors

1. **Problem Description:** When many link errors are causing large number of abort errors, and zOS volumes are also FlashCopy target volumes, a dual cluster reboot will occur due to a microcode logic error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 270451

HIPER Loss of access possible for VMware® hosts using VAAI

1. **Problem Description:** <http://www-01.ibm.com/support/docview.wss?uid=ssg1S1004112&myns=s028&mynp=OCSTXN8P&mynp=OCSTUVMB&mynp=OCHW2C2&mynp=OCHW2B2&mync=E>
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.17.0
- ID#: 266162

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Loss of access for iSeries adding 63 volumes to PPRC secondary

1. **Problem Description:** When an iSeries host adds 63 or more volumes at one time to a PPRC secondary, all buffers can be allocated while unit format is running, PPRC primary and non-PPRC volumes are not affected.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.30.43.0
- ID#: 267116

CCW chain with NOP and non-zero data length causes warmstart

1. **Problem Description:** When a CCW chain has NOP data and a data length that is non-zero, a microcode detected error results. If the CCW chain is received on multiple host adapters, repeated warmstart will result.
 2. **Potential Impact of Problem:** warmstart, loss of access possible
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.30.43.0
- ID#: 265037

Primary Power Supply service caused Fire Hose Dump

1. **Problem Description:** When a Primary Power Supply has Fence Internal set, and service is performed, a Fire Hose Dump is issued due to a microcode logic error.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** High Impact
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.30.43.0
- ID#: 262551

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

DDM media errors caused performance impact

1. **Problem Description:** Fix lowers correctable media error thresholds
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 321413

0x7D10 MLE

1. **Problem Description:** Microcode Logic Error caused by a race condition between checkpoint process and volume create
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 321631

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Performance degraded on workloads dependent on hw reserves

1. **Problem Description:** Hardware device reserve processing may delay allowing a disconnected device to reconnect
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 324961

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Long I/O and transaction purge during XRC Resync

1. **Problem Description:** Merge of XRC metadata N and N-1 bitmaps can cause performance impact with large volumes
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 326652

0x5168 MLE with 145 ranks configured

1. **Problem Description:** When 145 total ranks are configured, incorrect data transfer on Log sense 34h command can trigger a microcode logic error.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 310447

I/O timeouts, transaction purge

1. **Problem Description:** A failing DDM in a RAID-5 array may impact write performance, until it is rejected from the array.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 311955

Performance impact during host adapter update

1. **Problem Description:** PPRC was continuing to use a path that was experiencing errors. Host adapter update recycled the good path, exposing the problem.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 312808

TPF host reports sense F019 and stalled TPF modules

1. **Problem Description:** Under certain conditions, a smart rebuild abort on a RAID-10 array may pause I/O to the array for 5 seconds.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 315393

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0x4159 MLE

1. **Problem Description:** When async PPRC performs a CKD track prestage of requested sectors only, an exposure exists where the entire track may need to stage, but it does not.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 317939

IEA494I pair suspended, extended long busy state

1. **Problem Description:** When Easy Tier migrates data to a different adapter pair, a timing window exists where the migration can hang, while holding all the task control blocks.
 2. **Potential Impact of Problem:** PPRC suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 321894

0x9F1B MLE

1. **Problem Description:** An RPC communication error was not handled gracefully.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.169.0
- ID#: 262354

LPAR 'out of memory' crashdump

1. **Problem Description:** On large systems, processes that monitor I/O Priority Manager can fill up user memory, causing crashdump and reboot of a single LPAR.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 267958

CS Task Timeout caused Global Mirror Suspend

1. **Problem Description:** A microcode logic error caused a deadlock condition between cache and copy services functions.
 2. **Potential Impact of Problem:** Global Mirror Suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 303225

0x01B7 MLE

1. **Problem Description:** Host bay fabric healthcheck tasks exceeded their runtime limit
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 306997

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PPRC full copy when Brocade fast write is enabled

1. **Problem Description:** A PPRC incremental operation performed a full copy, because Brocade fast write was not handled properly.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 307648

PPRC bad path caused suspend

1. **Problem Description:** Link errors on one PPRC path caused suspend, when other good paths were available
 2. **Potential Impact of Problem:** PPRC Suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 307668

Global Mirror long response time

1. **Problem Description:** Path errors while processing global copy collisions can result in long response times
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 308049

Virtual Command Ring full

1. **Problem Description:** Size of VCR is not large enough for very large FICON read I/O chains
 2. **Potential Impact of Problem:** Interface Control Checks
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 311893

Battery End-of-Life detection

1. **Problem Description:** Weekly proactive check for battery EoL date fails to properly detect battery age
 2. **Potential Impact of Problem:** No early warning of battery EoL
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 312447

Slow failover/failback

1. **Problem Description:** In large configurations, rank and volume state changes can take several seconds to process. Fix moves volume state change processing to separate parallel threads.
 2. **Potential Impact of Problem:** PPRC suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 313143

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0x7475 MLE

1. **Problem Description:** When re-accessing a track after Global Copy collision, a flag had not been reset because of a microcode logic error.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.159.0
- ID#: 306421

XRC Suspended, Reason SILB cache limit

1. **Problem Description:** XRC was not being notified when a CS volume grows.
 2. **Potential Impact of Problem:** XRC Suspended
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.159.0
- ID#: 307060

Long Flash Copy increment-last times with Preserve Mirror

1. **Problem Description:** Establish command is waiting for the change recording bitmap merge to complete. The delay is proportional to volume size.
 2. **Potential Impact of Problem:** Delayed FLC establish
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.159.0
- ID#: 310373

Unbalanced Global Copy path utilization

1. **Problem Description:** Path selection algorithm behaves incorrectly if the SMP bandwidth counters are higher than the host adapter bandwidth counters. This leads to unbalanced path usage, and degraded copy rates.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.150.0
- ID#: 271451

I/O timeout during DDM deconfig

1. **Problem Description:** Microcode logic error caused a Device Adapter showstop during deconfig of a failed array member.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 286016

MLE during background copy

1. **Problem Description:** The same in-memory relation entry was queued on two different background copy rank queues, causing a microcode logic error.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.150.0
- ID#: 291579

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0x904A MLE during PCIe fabric recovery

1. **Problem Description:** Corrects a microcode logic error during PCIe fabric recovery.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.150.0
- ID#: 303359

Easy Tier warm demote after DB2 reorg

1. **Problem Description:** Reorg can trigger demote of active DB2 data to nearline tier
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 305524

Global Mirror performance problem

1. **Problem Description:** The High Failure Rate (HFR) algorithm avoids performing I/O on PPRC links where timeouts have occurred. But the algorithm depends on I/O traffic to determine whether the path is still having problems. This change implements functionality to test the viability of PPRC links, at the host adapter port level.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.143.0
- ID#: 253239

Copy Services-Cache deadlock

1. **Problem Description:** Copy Services component deadlocks while waiting for access to metadata track that is in the Cache prestage task queue.
 2. **Potential Impact of Problem:** I/O timeout, PPRC suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.143.0
- ID#: 265169

Incorrect logical path state reporting

1. **Problem Description:** PPRC links that are in High Failure Rate (HFR) status may incorrectly transition to Failed status when coming out of HFR.
 2. **Potential Impact of Problem:** loss of path
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 299525

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Cascaded PPRC suspend

1. **Problem Description:** Cascaded PPRC primary/secondary box was using the same host adapter port for both primary and secondary links, causing Task Control Block depletion
 2. **Potential Impact of Problem:** PPRC Suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 303343

0x5527 MLE

1. **Problem Description:** Requests for data mover TCBs can be starved by newer requests which use a different set of paths, when one PPRC path has low available bandwidth and the other is in high failure rate.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.131.0
- ID#: 237573

Excessive warm demotes to Nearline tier

1. **Problem Description:** For some workloads, Easy Tier cannot accurately assess Nearline workload, causing excessive Nearline workloads, and warm demotes to Nearline
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 296134

Slow DDM caused PPRC suspend

1. **Problem Description:** Failing DDM caused I/O hang during deconfig
 2. **Potential Impact of Problem:** PPRC Suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.131.0
- ID#: 296394

Excessive Easy Tier swap plan generation time

1. **Problem Description:** Multiple time-outs and MLEs caused by Easy Tier taking too long to generate swap plans, and missing heartbeats.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.131.0
- ID#: 298152

Customer notification of 'Slow Disk' errors

1. **Problem Description:** Create Customer notification for SRC BE33CEE3 'Slow Disk' errors
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 298851

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IWNR2704E on Global Mirror session pause

1. **Problem Description:** When > 1 control paths are owned by the Master Alternate Controller (MAC), code does not properly iterate through all the external subordinates owned by the MAC.
 2. **Potential Impact of Problem:** Global Mirror pause failure
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299406

0x0F6D unit check on zHPF read/write to last (non-full) track

1. **Problem Description:** Transport Mode: Read Track Data is valid as an embedded CCW Operation Code for Read Tracks (0C). If the Blocksize value is not equal to the value of the data length field in the count area of any record being read, the record is not transferred and the operation is terminated with status that includes unit check (Invalid Track Format).

What we should do is take advantage of the behavior that is now allowed for Read domains (16), where we do not rely on the Regular Data Format bit, but instead, check the format of the track, to understand the host expectations for the amount of data to be read.

Fix Description:

Once we get track access, we will enforce the conditions of the chain's parameters for zHPF. As with the Read Domain, we can allow the Read Tracks domain to a track that has an EOF record. We will then make sure that any assumptions we have made based on regular data format (which is required for Read Tracks as it is for the Read domain) make the correct decisions for an End Of File record.

2. **Potential Impact of Problem:** Unit Checks
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 301867

PPRC state change unit attentions may be incorrectly reported to AIX and iSeries hosts

1. **Problem Description:** In some configurations, the rate of unit attentions generated can be high enough to cause performance problems
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 296526

LUNs in hybrid pools reported as SSD

1. **Problem Description:** LUNs in hybrid pools consisting of both solid-state and rotational drives are all being reported as SSD.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 295996

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Global Mirror drain failure recovery

1. **Problem Description:** When the Global Copy Collision code is enabled, if a Global Mirror collision occurs together with a Global Copy collision, the Global Mirror collision may be queued behind the Global Copy transfer.
2. **Potential Impact of Problem:** Elongated consistency group times
3. **Problem Severity:** Moderate
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.105.0
ID#: 296338

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
5. **Release Bundle:** 76.31.92.0
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
5. **Release Bundle:** 76.31.92.0
ID#: 284276

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
5. **Release Bundle:** 76.31.92.0
ID#: 291275

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
5. **Release Bundle:** 76.31.92.0
ID#: 278969

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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
 5. **Release Bundle:** 76.31.92.0
- ID#: 291468

PPRC path utilization imbalance

1. **Problem Description:** A background task that collects path usage statistics, and maintains balanced path usage, is failing to run.
 2. **Potential Impact of Problem:** Degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 291433

PPRC link errors cause host adapter to be fenced

1. **Problem Description:** Host adapter recovery can fence a host adapter that experiences CRC errors on a port used as a PPRC path.
 2. **Potential Impact of Problem:** loss of path
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 286001

Improve DA failover with RAID-6 ranks

1. **Problem Description:** When Device Adapter has a Compact Flash failure, and the adapter has RAID-6 ranks, DA failover of the ranks may post long busy for 90 seconds.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 283088

PPS failure prevents box IML

1. **Problem Description:** During box power up, a failed PPS can prevent the good PPS from configuring the rack batteries.
 2. **Potential Impact of Problem:** Delayed access to data
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 280857

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Global Copy Collisions may impact system performance

1. **Problem Description:** Update writes for data that has not yet been committed to the secondary must wait for global copy commit. Customers with a high frequency of track updates may experience performance impact.
This change implements functionality that will release track access more quickly. This function is disabled by default, and can be enabled as required by CS pokeable setting.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 276618

IO Priority Manager may cause unwarranted throttling

1. **Problem Description:** Elongated read hit data transfer times caused by Host Adapter or SAN congestion may cause IO Priority Manager to throttle system throughput.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 276608

Temporary fence of I/O Bay during internal fabric error recovery

1. **Problem Description:** Error handling for a DMA read time-out can cause the I/O Bay to be fenced by the fabric error. Error recovery will resume the I/O bay several minutes later, up to 15 minutes.
 2. **Potential Impact of Problem:** loss of path
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 281731

Performance issue on SSD drives that slow to respond

1. **Problem Description:** SSD drives are currently rejected after four "Slow Disk" errors in a 24 hour period. To reduce performance impact, the failure threshold has been reduced to two "Slow Disk" errors in 1 hour.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 283545

Drop light during HA error recovery causes performance impact

1. **Problem Description:** During HA error recovery, the adapter drops light on all ports, to assure hosts are notified the ports are not currently available. If a CKD host has dedicated allegiance on a path, this can cause additional recovery delay. This change will send "LOGOUT" to hosts before dropping light.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 270655

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Message ARC1803E fast replication is disabled

1. **Problem Description:** DS8K is incorrectly reporting that fast replication is not allowed because a microcode logic error prevents FlashCopy. TDMF is the only environment where this issue has surfaced.
 2. **Potential Impact of Problem:** Data migration failure
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 280480

CUIR leaves paths offline following an I/O Bay repair

1. **Problem Description:** CUIR successfully varied all paths offline. During the resume of the I/O Bay a fabric error prevented CUIR from varying on all the paths.
 2. **Potential Impact of Problem:** Manual path vary on
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 278603

PPRC suspend due to an error checking the track format on secondary

1. **Problem Description:** False trigger in track checking when record 0 is uninitialized on secondary is due to a microcode error. This will result in a GDPS freeze in that environment.
 2. **Potential Impact of Problem:** GM suspend, GDPS freeze
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 286844

Read I/O on FlashCopy source volumes not being counted by Easy Tier

1. **Problem Description:** On FlashCopy CST operation, Easy Tier records read I/O statistics on FlashCopy source volume against the target volume instead.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 286540

Global Mirror fatal error due to stale commands due to network issues

1. **Problem Description:** Network issues lead to stale revertible commands being received at the GM secondary which leads to a GM fatal condition.
 2. **Potential Impact of Problem:** GM suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 241033

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PPRC Path State Change messages not handled like multi-host SIM

1. **Problem Description:** PPRC Path State Change messages are not handled the same as multi-host SIM messages when multi-host SIM is enabled. This can cause problems with console messages.
 2. **Potential Impact of Problem:** job abends
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 275880

Hyper PAV alias device goes long busy for 2 minutes

1. **Problem Description:** If midway through processing a command chain and a unit check is encountered we will return long busy to the host for 2 minutes due to a microcode logic error.
 2. **Potential Impact of Problem:** 2 minute device long busy
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 282025

Long I/O response time during RAID 6 DDM rejection

1. **Problem Description:** During array metadata update all alpha components in the array are updated. If one of the drives is slow to respond to the metadata update, then I/O is held until the drive responds
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 276112

Host adapter microcode logic error recovery takes longer than time-out

1. **Problem Description:** A host adapter error causes the adapter to request reset causing warmstart to extent to 7 seconds. If host has an I/O time-out of 5 seconds, then an application error will occur.
 2. **Potential Impact of Problem:** loss of path(s)
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 283103

Global mirror fatal error is possible with FlashCopy revertible pairs

1. **Problem Description:** When there are network issues and FlashCopy was established revertible option then Global Mirror can experience a fatal error due to a microcode error
 2. **Potential Impact of Problem:** Global Mirror suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 274483

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zHPF format write can cause XRC suspend with 9C4-08 abend

1. **Problem Description:** zHPF format write command having 55 records, to an XRC device, can cause an XRC suspend. This only occurs with 55 record format write command.
 2. **Potential Impact of Problem:** XRC suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 273490

Synchronous PPRC pair "stalls" in duplex pending state

1. **Problem Description:** When a FlashCopy target is a PPRC primary and a FlashCopy establish incremental command is issued the target will remain in duplex pending state if source is updated. If Preserve Mirror is used with FlashCopy this problem will not occur.
 2. **Potential Impact of Problem:** loss of sync between PPRC pair
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 272514

FlashCopy terminate with ICKDSF does not free space

1. **Problem Description:** When using ICKDSF with "terminate all" and "free space" parameters on Space Efficient source volumes, the space is not released.
 2. **Potential Impact of Problem:** Space Efficient storage not released
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 268936

Easy Tier SSD rank performance degraded when bandwidth exceeded

1. **Problem Description:** Easy Tier does not warm demote extends in an efficient manner with random I/O workload is high and sequential I/O has large sized I/O operations.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 270991

Easy Tier does not calculate rank bandwidth effectively for large I/O sizes

1. **Problem Description:** The rank bandwidth calculation is not efficient for large I/O operations. SSD rank saturation during peak workloads can result.
 2. **Potential Impact of Problem:** performance degraded
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 272377

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LRC error on PPRC host adapter will suspend the pair

1. **Problem Description:** If a host adapter detects an LRC error the track will be restored from NVS. If the track is good in cache after restore then the PPRC pair will not be suspended
 2. **Potential Impact of Problem:** PPRC pair suspended
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 269342

PPRC path with high error rate cause slow host I/O performance

1. **Problem Description:** When a logical path is experiencing a high link level error rate, such as CRC errors, host I/O performance can be significantly degraded.
 2. **Potential Impact of Problem:** degraded performance
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 269408

PPRC suspend caused when microcode logic error detects no buffers

1. **Problem Description:** A microcode logic error incorrectly indicates zero buffers are available on the host adapter. This can occur on direct attached PPRC paths.
 2. **Potential Impact of Problem:** PPRC suspend, PPRC path failures
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.32.0
- ID#: 273044

Volume expansion only notifies hosts when the volume is in a group

1. **Problem Description:** When a volume is expanded the hosts are notified of the new size if the volume is part of a group. If a secondary volume is not part of a volume group TPC-r will not be able to establish a PPRC relationship.
 2. **Potential Impact of Problem:** Can't establish PPRC pair
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 268944

PPRC suspend due to track format mismatch

1. **Problem Description:** PPRC pair suspends when a track format data mismatch is detected due to a microcode logic error.
 2. **Potential Impact of Problem:** PPRC suspend
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 269263

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Global Mirror fails to start after hyperswap

1. **Problem Description:** After a hyperswap from A to B control units and another hyperswap from B to A Global Mirror does not start until all the control units perform a warmstart.
 2. **Potential Impact of Problem:** Global Mirror will not start
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.30.43.0
- ID#: 255388

HMC microcode update can fail when there is heavy TPCr workload

1. **Problem Description:** When TPCr workload is heavy a HMC microcode update can fail in a way that requires HMC rebuild to restore operation.
 2. **Potential Impact of Problem:** No HMC access for copy services
 3. **Problem Severity:** Moderate
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.30.43.0
- ID#: 265882

Service: A recoverable error, Service improvements.

Incomplete lost frame analysis

1. **Problem Description:** Fibre Channel Lost Data Frame counters also include counts for Lost Non-Data Frames. Also there is no summary for lost non-data frame counts
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 298786

DSCLI will not install in Windows 10 environment

1. **Problem Description:** DSCLI installer using an older version of InstallAnywhere that is not compatible with Windows 10
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 314695

Secure Data Overwrite false pre-check failure

1. **Problem Description:** Drives were in a good state for SDO, but failed pre-check because a service state flag was not reset.
 2. **Potential Impact of Problem:** Extended SDO duration
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 322705

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Change Assist OnSite Access Control List group

1. **Problem Description:** Change to allow only the single AOS ACL group IBM/BLUE/GTS/EMEA/STORAGE/DS8000 for EMEA systems.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 324050

DDM Serviceable Event lists wrong DDM serial number

1. **Problem Description:** When multiple DDMs are rejected from an array, the DDM serial number in the FRU callout may be incorrect
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 324181

Security scan flags SLPd service active

1. **Problem Description:** Service Location Protocol service was left active when CIM Agent was not running
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 324342

HMC WUI broken NLS support

1. **Problem Description:** HMC WUI shows garbage characters in IE11 if set for Japanese language.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 324566

Multiple drives rejected in an enclosure during power cycle

1. **Problem Description:** Drive notification of power off was incorrectly treated as an error.
 2. **Potential Impact of Problem:** Extended service action
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 325229

No serviceable event for HMC ethernet adapter failure

1. **Problem Description:** Add detection code for adapter interface errors, and generate callhome
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 325469

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Callhome fails via modem

1. **Problem Description:** After update to R6.3 SP15, call home via modem doesn't generate a PMH
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 325953

Hung Device Adapter health check process

1. **Problem Description:** DA health check process was hung, which then prevented subsequent health checks to run.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 326097

Repaired HPFE SES error reported again after CDA

1. **Problem Description:** LPAR SES log directories were not sync'd to the new CDA preload image.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 326441

Restore ICSs and CS Pokes after LPAR hard drive rebuild

1. **Problem Description:** Add necessary directories to HDR backup restore list.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 326561

Secure Data Overwrite failure

1. **Problem Description:** No completion certificate generated if overwrite process fails on HMC drive.
 2. **Potential Impact of Problem:** Extended SDO process
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 307647

Background media scan false positives

1. **Problem Description:** On certain 300G/15K drive families, log entries created by internal scan routines are being mis-counted as media events.
 2. **Potential Impact of Problem:** Excessive drive replacements
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 309568

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HMC contacting addons.mozilla.org

1. **Problem Description:** Firefox language pack addons periodically check for updates. This is benign, but the traffic appears suspicious. HMC configuration has been changed to block the outbound traffic.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.177.0
ID#: 314354

Security scan missing TLS v1.2

1. **Problem Description:** Legacy port 9660 was open for MSIE applet compatibility. This port was no longer used, so was not updated for TLS v1.2 authentication, causing security scans to flag the vulnerability.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.177.0
ID#: 314401

Dual HMC sync problems

1. **Problem Description:** When dual HMCs both start up together, Problem Analysis primary domain assignment process may never finish.
2. **Potential Impact of Problem:** Serviceable Event callhome failure
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.177.0
ID#: 315282

HMC restore failure

1. **Problem Description:** Dual HMCs backup can transfer the data to the LPARs at the same time, which can cause corrupted backup.
2. **Potential Impact of Problem:** Extended service action
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.177.0
ID#: 315489

LPAR hard drive reload failure

1. **Problem Description:** Ping failures cause abort, even though communication was already established
2. **Potential Impact of Problem:** Extended service action
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.177.0
ID#: 315612

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Storage Enclosure add MES failed

1. **Problem Description:** Failure was caused by Resource Manger out-of-memory condition. Fix adds RM memory usage tracing
 2. **Potential Impact of Problem:** Extended service action
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 316929

Heartbeat callhome failure in 2x2 configurations

1. **Problem Description:** In a 2x2 configuration (two storage facilities sharing two HMCs), the heartbeat data exceeds the internal array size.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 317131

Customer notifications messages malformed

1. **Problem Description:** Notification messages that exceed 70 bytes may have a break in the middle of a word
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 317949

Multiple call-home for a single serviceable event

1. **Problem Description:** HMC problem analysis may not properly determine that a serviceable event was already called in.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 318252

Secure Data Overwrite failure

1. **Problem Description:** CEC hard drive mirroring could not be terminated because a member drive was not in a good state. Fix will perform additional checks prior to beginning SDO.
 2. **Potential Impact of Problem:** Extended SDO process
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 318506

DDM power module install fails with "incompatible FRU"

1. **Problem Description:** Module CCIN was changed, but MES code path was not updated.
 2. **Potential Impact of Problem:** MES failure
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 319353

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NI Client out of memory error

1. **Problem Description:** When a connection failure occurs, server is retrying too quickly
 2. **Potential Impact of Problem:** None
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 319404

Stale data in heartbeat callhome

1. **Problem Description:** Heartbeat snap data was collected from the wrong location
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 320320

lsddm displays incorrect DDM model information

1. **Problem Description:** DSCLI appends capacity after the DDM family info which results in incorrect model info
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 320767

Error in DSCLI readme text

1. **Problem Description:** README file states minimum JRE 1.4.2, minimum is actually JRE 1.6 or above
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.177.0
- ID#: 322194

Improve FRU list for SRC BE3526D8

1. **Problem Description:** Add PCIe switch card, and I/O enclosure backplane to the list of possible FRUs.
 2. **Potential Impact of Problem:** None
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 310446

LPAR network adapters reverted to dynamic IP

1. **Problem Description:** After changing the private IP address range, the static IP mode may not be enforced.
 2. **Potential Impact of Problem:** Repair actions or code updates fail
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 310613

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Secure Data Overwrite failure

1. **Problem Description:** SDO fails on device adapter pairs that have no storage enclosures installed.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 310885

Secure Data Overwrite failure

1. **Problem Description:** SDO fails if too many DDMs on a DA pair are failing, leading to multiple reruns to complete the process.
 2. **Potential Impact of Problem:** Extended SDO duration
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 310914

Unable to configure LCU

1. **Problem Description:** If HMC or LPARs change internal IP addresses, and an address is reused, commands may go to the wrong target.
 2. **Potential Impact of Problem:** Unable to perform config changes
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 311065

Heartbeat callhome failure on 2x2 systems

1. **Problem Description:** Internal callhome array size may not be large enough to contain data from both storage facilities.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 312120

SRC BEB30001 HMC filesystem size check failed

1. **Problem Description:** During PE package collection, the process that collects HMC traces produced corrupted output.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.169.0
- ID#: 312273

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No Customer email notification for SRC=BE310B01

1. **Problem Description:** Email notification did not occur because the SRC flag was not set for email notification. This fix will also clarify the options on the Customer notify configuration setup pane. The first option will change from "Call home problem events only" to "Serviceable Event Notification only"
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.169.0
ID#: 312939

CDA suspends with SRC=BEB10020

1. **Problem Description:** During service processor firmware update, HMC logs a loss of communication with the service processor, as expected. This error should be suppressed during CDA.
2. **Potential Impact of Problem:** Extended service window
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.159.0
ID#: 307871

Callhome failure

1. **Problem Description:** HMC failed to callhome because of an HTML syntax error
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.159.0
ID#: 308718

0x2694 MLE during IML back

1. **Problem Description:** During IML back, with cross-cluster flash copy relations, cross-cluster query triggered a microcode logic error, and cluster failed to resume.
2. **Potential Impact of Problem:** Extended service action
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.159.0
ID#: 309386

Storage enclosure firmware update suspend

1. **Problem Description:** Expected sympathetic errors were not suppressed.
2. **Potential Impact of Problem:** Extended service action
3. **Problem Severity:** Service
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.159.0
ID#: 309842

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0x05E0 MLE during SF IML

1. **Problem Description:** A microcode logic error during Storage Facility IML caused the SF to DSI and perform another dual IML. The exposure only exists during full SF IML.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 302748

Prevent accidental LIC downgrade

1. **Problem Description:** SSR was able to accidentally start a CDA process to a lower level of LIC.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 303230

Increase maximum number of TPC-R server connections allowed

1. **Problem Description:** Environments with multiple TPC-R servers may exceed the maximum client logins to the DS8K. This change increases the default maximum client logins from 10 to 64.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 303459

Remove weak ciphers

1. **Problem Description:** HMC security scan found weak hashing algorithms.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 303586

DS Storage Manager GUI hangs

1. **Problem Description:** The GUI server hit an Out-of-Memory Java error
 2. **Potential Impact of Problem:** Unresponsive GUI
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 304096

CEC DDM failure during CDA

1. **Problem Description:** SSR is unable to perform CEC DDM replacement of drive that fails during CDA mirroring process.
 2. **Potential Impact of Problem:** Extended service window
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 306317

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DDM replacement failure

1. **Problem Description:** Map 4970 enhancement for SRC BE340027 where DDM is bypassed by FCIC firmware.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 307067

DDM power module repair failure

1. **Problem Description:** Selecting DDM power module for repair fails, SSR had to select the whole PPS instead.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 300479

CEC down, but no callhome

1. **Problem Description:** Callhome data contained special symbols in XML text, causing the callhome process to fail. No impact, but a second CEC failure would cause loss of access.
 2. **Potential Impact of Problem:** loss of access
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 300934

Change warmstart notification text

1. **Problem Description:** Warmstart notification SRCs display "no service required", which may or may not be accurate.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 301987

Non-deferred DDM failure did not call home

1. **Problem Description:** After DDM sparing, failed DDM should have been called home for service.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 302829

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Storage enclosure interface card replacement failure

1. **Problem Description:** FCIC repair fails during FRU level identify when enclosure serial number contains the letter 'T'
 2. **Potential Impact of Problem:** Extended repair
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 303200

PCR 7575 - DSGUI AppScan errors/security vulnerabilities

1. **Problem Description:** Corrects multiple vulnerabilities
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 294209

False loss-of-access indication on single LPAR

1. **Problem Description:** LPAR in service mode with a failed Device Adapter indicates a loss of access to data. Operational LPAR was not impacted.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 298487

0x5171 MLE

1. **Problem Description:** Track that was destaged is partially restaged from NVS. Subsequent re-access of track without full restage caused a Microcode Logic Error
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 298533

Unable to update power firmware

1. **Problem Description:** Power firmware update process was blocked by an unrelated DDM failure
 2. **Potential Impact of Problem:** Extended service action
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 298559

Update Apache Tomcat to current versions

1. **Problem Description:** Older versions of web server lack security fixes.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299055

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0x7E4F MLE

1. **Problem Description:** Global Mirror flashcopy establish revertible/withdraw commit issued before deferred bitmap has time to complete, causes a Microcode Logic Error
 2. **Potential Impact of Problem:** Warmstarts
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299634

Battery test failures

1. **Problem Description:** Battery test changes were implemented, but not all of the needed error handling changes were implemented.
 2. **Potential Impact of Problem:** Logical fence of battery units
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299667

0x0103 MLE

1. **Problem Description:** CS tries to map an invalid segment because it's accessing a sidefile entry before the entry is complete. This causes a Microcode Logic Error.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299907

Update PFEDISC11 Process

1. **Problem Description:** Error in the script that verifies all logical data has been removed during system discontinue process.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299953

0x05E0 MLE

1. **Problem Description:** Global Mirror collision and Global Copy collision on the same track triggers a Microcode Logic Error if the volume is removed from the session while Global Copy transfer is still pending.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 300069

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Assist OnSite (AOS) disabled after HMC update

1. **Problem Description:** Default setting after reinstalling AOS filesets is to disable AOS.
 2. **Potential Impact of Problem:** Must re-enable AOS after update
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.131.0
- ID#: 300834

Cannot resume LPAR with failed CEC hard drive

1. **Problem Description:** Microcode fails trying to fence an already fenced drive. This prevents LPAR resume, even though the other drive is good.
 2. **Potential Impact of Problem:** Extended service action
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 300872

End-of-call notification of partner HMC down

1. **Problem Description:** Adds check in End-of-Call process to verify both HMCs are operational
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 301320

Metro Mirror can encounter microcode logic error 0x601

1. **Problem Description:** When metro mirror is active and there is a PPRC agent abort a microcode logic error will cause a warmstart.
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 231681

Microcode logic error 0x7D10 when Global Mirror task chain updated

1. **Problem Description:** PPRC uses chains of commands to move data from primary to secondary devices. If a command is received close to completion of the current chain of commands a microcode logic error can cause a warmstart.
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 267103

Microcode Logic Error 0x01B7 caused by a time-out reading registers

1. **Problem Description:** A microcode logic error will cause a warmstart if reading the PCIe registers in the I/O Bay times-out. The warmstart will recover all resources.
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 280888

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Microcode Logic Error 0x4143 with XRC write pacing enabled

1. **Problem Description:** With XRC write pacing enabled when terminate concurrent copy commands are received a microcode logic error can cause a warmstart
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 291477

Host Adapter link reports wrong link speed after fastload

1. **Problem Description:** After performing HA fastload during CDA, the adapter port erroneously shows 1Gb/S speed.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 297072

Host Adapter harvest hang during CDA

1. **Problem Description:** While performing concurrent code upgrade, the HA harvest process hung, causing CDA to suspend.
 2. **Potential Impact of Problem:** Extended service window
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 297330

PPRC path failure causes 0x7473 MLE

1. **Problem Description:** A permanent PPRC path failure during data transfer can cause a Microcode Logic Error
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 297669

0x7730 MLE caused by failed Consistency Group

1. **Problem Description:** Failure of a consistency group while global copy collisions are pending can cause a Microcode Logic Error
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 298043

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PPRC microcode logic error 0x7D10

1. **Problem Description:** When PPRC sends the last track in the side file the lock is cleared. A microcode logic error can result in the lock being cleared a second time, resulting in the 0x7D10 microcode logic error
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 298737

Cannot connect to DS Storage Manager

1. **Problem Description:** After code upgrade, external browser cannot connect to HMC because of a firewall configuration error
 2. **Potential Impact of Problem:** Unable to manage HMC from remote
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 299946

HMC hang during repair

1. **Problem Description:** In dual HMC configurations, if the HMC object for one HMC is lost or deleted, the partner HMC can enter a retry loop
 2. **Potential Impact of Problem:** Unable to access the 'good' HMC
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 293710

Incomplete secure erase of self-encrypting drives

1. **Problem Description:** Areas of self-encrypting drives that are reserved for metadata and adapter dumps are not being overwritten during secure erase.
 2. **Potential Impact of Problem:** Incomplete erase, and false drive failures
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 294675

Device harvest on large systems causes extended code update time

1. **Problem Description:** During code update, there are normally errors generated that are expected, but must still be handled. On large systems, the handling of these errors consumes resources needed to complete the code update process.
 2. **Potential Impact of Problem:** Extended concurrent update window
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.121.0
- ID#: 294751

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Failed USB ethernet adapter detection

1. **Problem Description:** If one USB ethernet adapter is failing during an HMC reboot, the problem does not generate a serviceable event until healthcheck discovers the problem. This change will generate a serviceable event for the failed adapter once the reboot completes.
 2. **Potential Impact of Problem:** Additional service call
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 280696

SRVE0232E Internal Server Error

1. **Problem Description:** DS GUI fails login with SRVE0232E because of an out-of-memory condition
 2. **Potential Impact of Problem:** Unable to login to HMC
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 284863

RAS FRU isolation improvement for loop errors

1. **Problem Description:** Corrects an issue where a DDM was rejected, and the loop errors caused by that DDM were incorrectly attributed to the device adapter
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 286661

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
 5. **Release Bundle:** 76.31.105.0
- ID#: 289221

0x1638 MLE updating erProduct switch

1. **Problem Description:** While device adapter was updating erProduct switch flag, the operation was swapped out, then resumed on a different processor, resulting in a locking exception.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 291258

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Secure Data Overwrite failure on CEC hard drives

1. **Problem Description:** One CEC completes the SDO process ahead of the other, and attempts to resume before the other completes the mirroring process
 2. **Potential Impact of Problem:** SDO does not complete
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 292548

0x11C MLE offloading multiple correctable PCIe events

1. **Problem Description:** Rather than offload multiple correctable error events one at a time, this change will offload and clear all correctable error status registers in a single operation.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 293023

CDA suspend when updating p6 firmware

1. **Problem Description:** Latent HMC-to-CEC communication problem caused CDA to suspend.
 2. **Potential Impact of Problem:** Extended CDA service window
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 293228

HMC hang during repair

1. **Problem Description:** In dual HMC configurations, if the HMC object for one HMC is lost or deleted, the partner HMC can enter a retry loop
 2. **Potential Impact of Problem:** Unable to access the 'good' HMC
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 293710

Incomplete secure erase of self-encrypting drives

1. **Problem Description:** Areas of self-encrypting drives that are reserved for metadata and adapter dumps are not being overwritten during secure erase.
 2. **Potential Impact of Problem:** Incomplete erase, and false drive failures
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 294675

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Device harvest on large systems causes extended code update time

1. **Problem Description:** During code update, there are normally errors generated that are expected, but must still be handled. On large systems, the handling of these errors consumes resources needed to complete the code update process.
 2. **Potential Impact of Problem:** Extended concurrent update window
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.105.0
- ID#: 294751

Drive failures during Secure Data Overwrite

1. **Problem Description:** Drive failures during SDO cause early termination, and multiple attempts to complete the process.
 2. **Potential Impact of Problem:** Extended SDO runtime
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.105.0
- ID#: 295522

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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- ID#: 290721

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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- ID#: 286961

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
 5. **Release Bundle:** 76.31.92.0
- ID#: 292549

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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
 5. **Release Bundle:** 76.31.92.0
- ID#: 283368

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
 5. **Release Bundle:** 76.31.92.0
- ID#: 273704

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
 5. **Release Bundle:** 76.31.92.0
- ID#: 270109

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
 5. **Release Bundle:** 76.31.92.0
- ID#: 282173

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
 5. **Release Bundle:** 76.31.92.0
- ID#: 278488

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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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- ID#: 286845

Unit Exception is returned when Unit Check Status should be returned

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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- 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
 5. **Release Bundle:** 76.31.92.0
- ID#: 282173

Incorrect FRU callout for empty loop on Megapack

1. **Problem Description:** Left side FCIC card was incorrectly called for an empty loop failure on a left loop. The analysis routines should have called the right side FCIC for this failure.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 287460

CDA process hang

1. **Problem Description:** After cloning the bos image and applying the updates, the CDA process hung while attempting to retrieve data from the active cluster. This phase of the process did not have a timeout value.
 2. **Potential Impact of Problem:** CDA process required manual intervention
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 286925

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BBUs logically fenced during battery test

1. **Problem Description:** During battery test, an incorrectly initialized variable causes a microcode logic error.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 286922

0x4159 MLE on CKD track metadata mismatch

1. **Problem Description:** When performing a CKD track prestage of only requested tracks, a metadata mismatch in the last track requested can cause 0x4159 microcode logic error.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 286692

DDM rejected state=10 when only 1 spare is available

1. **Problem Description:** Spare DDMs rejected by background media scan are not properly counted when determining whether the DDM should be marked for immediate or deferred replacement.
 2. **Potential Impact of Problem:** Reduced redundancy
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 286692

Host Adapter port error causes warmstart

1. **Problem Description:** Intermittent parity errors cause adapter reset, which in turn causes warmstart. For these errors it is not necessary to reset the entire adapter.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 284345

Dual HMC deadlock

1. **Problem Description:** HMC deadlock can occur when -
 - (a) HMCs are rebooted at the same time that IBM.EssStorageFacility detects a need for an attribute update on both HMCs, or,
 - (b) Both HMCs query IBM.EssStoragePlex at the same time
 2. **Potential Impact of Problem:** CDA or GUI hang
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 284056

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Microcode Logic Error 0x0109

1. **Problem Description:** If a reconnection is occurring at the same time as a health status message or Summary event message is being presented on the same volume, there is a possibility for a deadlock situation caused by misuse of the regular pgcb lock.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 283984

Laptop HMC process hang

1. **Problem Description:** Change ACPI setting from 'off' to 'ht'
 2. **Potential Impact of Problem:** Unable to monitor DDM status
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 283246

False SRC B1811111

1. **Problem Description:** During battery test I2C bus communication is temporarily blocked between FSP and CEC operator panel. This SRC should be vetoed if it happens during battery test.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 281334

Host Adapter timeout

1. **Problem Description:** Host Adapter timeouts caused by excessive internal mailbox timeout interval.
 2. **Potential Impact of Problem:** Delayed reset of Host Adapter
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 280474

Microcode Logic Error 0x5302

1. **Problem Description:** Initiator was removed, but wwnn/wwpn were not correctly unregistered from FB initiator table.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 280175

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Unable to replace power component during rack installation

1. **Problem Description:** When installing an expansion rack, if one of the power components fails before it has been configured, the resulting serviceable event cannot be used to drive the repair.
 2. **Potential Impact of Problem:** Manual intervention required to complete the rack installation
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 277212

Reduce power CDA duration

1. **1. Problem Description:** The power firmware update process currently invokes verification routines at various points in the update. These routines verify multiple resources, some of which do not need to be verified every time the process runs. This change will reduce the duration of the power firmware update, by implementing more selective verification methods during the power firmware update process.
 2. **Potential Impact of Problem:** Elongated service window
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 275470

8Gb Host Adapter ECC single-bit error threshold causes HA reset

1. **Problem Description:** When the Host adapter cache soft error log exceeds threshold, the microcode currently resets the adapter, which in turn causes a warmstart. These soft errors are normally benign, and do not require any action. The microcode behavior is changed to treat these soft error threshold events as a 'Class B' recovery, which will no longer reset the adapter.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 275470

Microcode Logic Error 0x4B20

1. **Problem Description:** For Cache to Cache operation, when Data Mover is waiting for DMA Read of the sectors to finish, the task is aborted. When C2C DMA Read completed, DM shutdown code path didn't free the DDs that were allocated, causing resource leakage and MLE.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.79.0
- ID#: 272720

Reduce size of heartbeat data collection

1. **Problem Description:** Currently, heartbeat collects all files that are in /var/esshmc/levels.
This change will select only those files that are actually part of the heartbeat data collection.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 268253

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Reset internal host bay fence bits during bay config

1. **Problem Description:** CDA pre-checks erroneously indicated a host bay internal fence condition that had already been resolved.
 2. **Potential Impact of Problem:** Delay of microcode update
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 262924

SRC BE19DEAD logged after requested power off with dual HMC

1. **Problem Description:** Problem exists only if the zSeries remote power control feature is installed with the dual HMC feature. The power off request is processed by both HMCs. One successfully initiates the power down, while the other HMC cannot because it is already in progress.
 2. **Potential Impact of Problem:** Invalid serviceable event
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 284474

Unable to replace failed Device Adapter

1. **Problem Description:** DA fails Power On Self Test and configuration attempts to collect data but hits an internal fabric error. Error recovery does not fence the DA and the repair fails
 2. **Potential Impact of Problem:** extended maintenance
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 264341

Device Adapter failing Power On Self Test can fence the I/O Bay

1. **Problem Description:** Microcode attempts to collect data and if the adapter is not responding, an internal fabric error can result in the I/O Bay being fenced.
 2. **Potential Impact of Problem:** loss of paths
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 272934

Device Adapter repair fails because ports disabled by partner DA

1. **Problem Description:** When DA ports are disabled during loop error recovery, the error counters on the partner DA are not cleared during repair prior to enabling ports, which can lead to repair failure.
 2. **Potential Impact of Problem:** Failed Device Adapter repair
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 271429

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Internal slot level fabric error due to DMA time-out

1. **Problem Description:** A slot level error on the internal fabric is caused by a DMA time-out to an adapter.
 2. **Potential Impact of Problem:** Warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.70.0
- ID#: 278993

XRC suspend reason code if exceeding the maximum side file entries

1. **Problem Description:** XRC suspended with ANTX5119E, REAS=0054. The suspend was logged as exceeding the maximum number of cache segments in the side file. The correct reason was exceeding the maximum number of side file entries.
 2. **Potential Impact of Problem:** Incorrect reason code
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 277899

Host adapter parity error causes adapter reset and warmstart

1. **Problem Description:** 2Gb and 4Gb host adapter parity error detected during the memory scrub causes a warmstart. 8Gb host adapters are not exposed to this error.
 2. **Potential Impact of Problem:** warmstart reduction
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** N/A
 5. **Release Bundle:** 76.31.70.0
- ID#: 278620

XRC suspend reason code if exceeding the maximum side file entries

1. **Problem Description:** XRC suspended with ANTX5119E, REAS=0054. The suspend was logged as exceeding the maximum number of cache segments in the side file. The correct reason was exceeding the maximum number of side file entries.
 2. **Potential Impact of Problem:** Incorrect reason code
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 277899

FlashCopy control block update conflict

1. **Problem Description:** During control block update the lock does not cover the status field. This microcode logic error causes a warmstart.
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 271715

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PPRC command reject can result in a warmstart

1. **Problem Description:** On a highly utilized PPRC link a command reject results in a warmstart due to a microcode logic error
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 275799

Metro Mirror or Global Mirror control block conflict

1. **Problem Description:** Due to a microcode logic error a warmstart to resolve a control block conflict can occur
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 248217

zHigh Performance FICON microcode logic error causes warmstart

1. **Problem Description:** When running Global Mirror or Global Copy with zHPF it is possible for command processing to result in a microcode detected error and a warmstart.
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 276801

Destage of cache data can encounter a microcode logic error

1. **Problem Description:** Due to a microcode logic error a warmstart can occur during cache destage. This error will result in a warmstart
 2. **Potential Impact of Problem:** warmstart
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 273131

Update the order of part replacement for SRC BED10861

1. **Problem Description:** The primary part is the I/O enclosure power supply. The second and third parts changed order to make the PCIe/SPCN card the secondary part and the mid-plane the last part to repair this failure.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 270217

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CEC hard drive rebuild fails because no matching level found

1. **Problem Description:** CEC hard drive rebuild process checks the VRMF level, searching for a matching level. If an ICS disk was used to install and the fix level is updated and causes hard drive rebuild to fail.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 264701

PE Package is missing LPAR data

1. **Problem Description:** Intermittently the PE Package is missing the LPAR files due to a microcode logic error on the HMC.
 2. **Potential Impact of Problem:** delayed problem analysis
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 277537

After microcode update a storage enclosure reports not in a good state

1. **Problem Description:** After microcode update a storage enclosure will report not in a good state. The enclosure is in a good state.
 2. **Potential Impact of Problem:** False error reported
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.55.0
- ID#: 255938

I/O Priority Manager monitor mode does not work without LIC key

1. **Problem Description:** Due to a microcode logic error DS GUI does not allow the user to access IO Priority Manager to enable monitor mode without the feature key being installed.
 2. **Potential Impact of Problem:** DS GUI will not set IOPM monitor mode
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.55.0
- ID#: 277415

CEC op panel displays B1811404 for recovered error

1. **Problem Description:** After a temporary CEC to RPC communication failure, the CEC operator panel will display B1811404 due to a microcode error
 2. **Potential Impact of Problem:** Unneeded RPC replacement
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 259445

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LPAR file system can fill up due to On-demand Data Dump clean up

1. **Problem Description:** Depending on the rate of errors that generate ODD dumps can be generated by base microcode, XRC and PPRC errors. The file system for /var can become full due to no clean-up of old dumps.
 2. **Potential Impact of Problem:** remote service required to remove dumps
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 274645

Fire Host Dump volume fenced during background scan

1. **Problem Description:** Fire Hose Dump volume is being fenced during the background scan of the CEC hard drives due to a microcode logic error.
 2. **Potential Impact of Problem:** unneeded service action to unfence volume
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.42.0
- ID#: 277357

Failure deleting PAV alias volumes

1. **Problem Description:** Deleting PAV alias volumes in parallel will fail and a warmstart will occur due to a microcode logic error.
 2. **Potential Impact of Problem:** Unable to delete PAV alias volumes
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 269207

TPCr FlashCopy performance slower with TPCr progress monitor

1. **Problem Description:** TPCr progress monitor issues a large number of commands, each command in the CCW will be sent an separate response. Grouping the responses greatly reduces the overhead for each command.
 2. **Potential Impact of Problem:** degraded FlashCopy performance
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 269762

Improved isolation of Host Adapter LRC errors

1. **Problem Description:** When two host adapters in the same I/O Bay log an LRC error, then expand the FRU list to the PCIe card.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 265401

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Unisolated I/O fabric error incorrectly fences host adapter

1. **Problem Description:** An unisolated I/O fabric error can incorrectly identify a host adapter instead of the PCIe/SPCN card in the I/O bay.
 2. **Potential Impact of Problem:** loss of path
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.32.0
- ID#: 268274

Easy tier volume migration delayed if no free extents exist

1. **Problem Description:** Volume migration takes an excessive amount of time if the rank has no free extents. The migration will wait for 5 minutes for extent clean up for each extent migrated off a full rank.
 2. **Potential Impact of Problem:** degraded volume migration performance
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.32.0
- ID#: 270422

Monthly battery test incorrectly fences battery backup units

1. **Problem Description:** Due to a microcode logic error the monthly battery fences the battery backup units.
 2. **Potential Impact of Problem:** fenced batteries
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.32.0
- ID#: 268501

Secure Data Overwrite does not generate BE610030 when complete

1. **Problem Description:** Secure Data Overwrite did not generate a serviceable event BE610030 when SDO completed successfully if the HMC is rebooted during the SDO process.
 2. **Potential Impact of Problem:** No notification that SDO completed
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 271689

Loss of communication between HMC and TKLM does not create event

1. **Problem Description:** When the HMC can not communicate with a TKLM server there is no serviceable event BE14EAF1 or BE14EAF2 created.
 2. **Potential Impact of Problem:** No customer notification generated
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** Yes
 5. **Release Bundle:** 76.31.17.0
- ID#: 270984

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Volume migration takes an excessive amount of time

1. **Problem Description:** Volume migration can take an excessive amount of time because the free segments are not being properly managed when the source rank has too little free space due to a microcode logic error.
 2. **Potential Impact of Problem:** slow volume migration
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 269541

MIH errors during FlashCopy withdraw on extended address volumes

1. **Problem Description:** FlashCopy withdraw can take longer than 30 sec. for extended address volumes because of the time required for meta data update.
 2. **Potential Impact of Problem:** MIH errors during FlashCopy withdraw
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 263377

DSCLI returns unknown error

1. **Problem Description:** FlashCopy is not allowed between T10 DIF LUN and standard LUN. Reason Code Qualifier 03 added to Format 0 Message F Reason Code 92. ESSNI does not handle this new message, which causes an unknown error.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.17.0
- ID#: 269924

Allow concurrent copy to a PPRC secondary with "allow writes" set

1. **Problem Description:** In a PPRC failover the secondary has allow host writes set, but concurrent copy fails because the volume is a secondary.
 2. **Potential Impact of Problem:** Concurrent copy fails during PPRC failover
 3. **Problem Severity:** Service
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.30.43.0
- ID#: 264450

Improvements: Improvement for better usability.

Update AOS to latest 4.0.1

1. **Problem Description:** Assist OnSite maintenance release
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 320543

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Change notification time for HMC network surveillance errors

1. **Problem Description:** Enables function in WUI to change the current 8 hour notification time to a shorter value
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 326007

Remote Support Console

1. **Problem Description:** Add support for RSC method for remote access.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 325539

RSC auto-reconnect after HMC reboot

1. **Problem Description:** After rebooting HMC, Remote Support Console will auto-reconnect to an existing session.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.189.0
- ID#: 325601

Support protocol SSLv3-TLS1.2 for port 1751, not only TLSv1.2

1. **Problem Description:** Port 1751 only supports TLSv1.2, but versions of Oracle JRE below v1.7 and IBM SDK below 1.6 do not support TLSv1.2.
 2. **Potential Impact of Problem:** Unable to connect to HMC
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.159.0
- ID#: 308614

Optional proactive 'Slow Disk' notification

1. **Problem Description:** Creates SRC BE346018 for Customer notification of DDMs that are posting 'slow disk' messages. Notification is enabled by control switch. HMC will not call home for this message.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.150.0
- ID#: 304271

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SSLv3 security vulnerablility

1. **Problem Description:** Corrects CVE-2014-3566 "Poodle" Vulnerability, by disabling SSL v3 access.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.143.0
- ID#: 302536

Remove Apache Struts v1 from GUI

1. **Problem Description:** On April 30, 2014, a critical Apache Struts vulnerability was published at <http://web.nvd.nist.gov/view/vuln/detail?vulnId=CVE-2014-0114>, with a score high enough to require a fix as soon as possible. It is noted that Apache Struts 1.x is now EOL and cannot be simply replaced with a newer version without significant code rework.

It has been decided to simply eliminate all GUI usage of Apache Struts, and use new Java servlets instead.

2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 296806

Easy Tier data collection improvements

1. **Problem Description:** Add sub-tasks to the Easy Tier data collection by area task, and reduce the size of individual sub-packages
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 297112

Permit HMC Customer user ID to generate PE package and statesave

1. **Problem Description:** May significantly reduce problem analysis time.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 298915

Easy Tier data collection improvements

1. **Problem Description:** Provide additional functions to collect Easy Tier logs and Easy Tier traces by date
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299028

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Allow secondary HMC to report powerfail/firehose dump

1. **Problem Description:** If power is lost to the base rack, the integrated HMC is unable to report the event. If a secondary HMC exists, this improvement will allow it to report the event.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 299134

WebSM/AOS callhome change

1. **Problem Description:** Update callhome records with AOS information
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 300132

PCR 7467 - Enable GCP collision sidefile by default

1. **Problem Description:** Changes the default setting to enabled.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 301005

Change IO Priority Manager default

1. **Problem Description:** Currently, IOPM default is 'monitoring'. Fix will set the default to 'disabled', unless enabled by LIC key.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 301261

Allow 240 byte device performance record

1. **Problem Description:** z/OS 1.12 and above now support the 240 byte device performance record.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.131.0
- ID#: 301319

Remap embedded AOS to r6.3

1. **Problem Description:** New HMC base code embedded AssistOnSite function for r6.3 HMC
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.121.0
- ID#: 297883

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Fix bash shellshock security exposure

1. **Problem Description:** The bash (shell shock) security exposure has been fixed on the HMC with this change. This addresses exposures detailed security bulletins CVE-2014-6271, CVE-2014-7169, CVE-2014-7186, CVE-2014-7187, CVE-2014-6277, CVE-2014-6278.
2. **Potential Impact of Problem:** security exposure
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** N/A
5. **Release Bundle:** 76.31.121.0
ID#: 301426

Eliminate Apache Struts v1 vulnerability

1. **Problem Description:** Change implements a new servlet class (ParamFilter) that will filter out injected parameters that can otherwise be used to exploit the vulnerability.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.105.0
ID#: 297176

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
5. **Release Bundle:** 76.31.92.0
ID#: 285107

PER Mode notification

1. **Problem Description:** Implement erProduct switch to send Health Status notification whenever a device is in Pre-Emptive Reconstruct mode
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.79.0
ID#: 289800

New recovery routines for 8Gb Host Adapter cache single-bit errors

1. **Problem Description:** 284774 introduces a new ESC 2837. This implements the error handling changes necessary to support the new ESC.
2. **Potential Impact of Problem:** none
3. **Problem Severity:** Improvement
4. **Pervasive Problem:** No
5. **Release Bundle:** 76.31.79.0
ID#: 288251

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Read Track Data, Write Track Data, and SLI CCW Flag

1. **Problem Description:** Provide z/OS with a method to determine if the Control Unit supports Write Track Data and Read Track Data accurate CCW byte counts. When the Control Unit indicates support, software does not need to set the SLI (Suppression of Possible Incorrect Length Indication CCW Flag).
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 287281

Easytier algorithm improvement

1. **Problem Description:** Improve the calculations to better account for large sequential workloads.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 287117

FICON Dynamic Routing enablement

1. **Problem Description:** Adds Receive Configuration Data flag to indicate support for FICON Dynamic Routing, AKA Exchange-Based Routing (EBR).
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 287077

New error handling for 8Gb Host Adapter cache single-bit errors

1. **Problem Description:** With the changes in 274931, a new error type is added to the error recovery routines to enable reporting new ESC 2837 where appropriate.
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.79.0
- ID#: 284774

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PCR 6910/6972/7109 Support

1. **Problem Description:**

PCR 6910 -

When performing disaster recovery failover, provide the means to detect SCSI reserves on devices, identify the server that holds a reserve, and provide a means to reset the reserve.

PCR 6972 -

Reduce the possibility of erroneously erasing contents of a CKD volume that belongs to another host image.

PCR 7109 -

Prevent accidental loss of data when restoring or initializing CKD volumes, by providing validation whether the volume is online.

2. **Potential Impact of Problem:** None

3. **Problem Severity:** Improvement

4. **Pervasive Problem:** No

5. **Release Bundle:** 76.31.79.0

ID#: 275206

Frequent Easytier rebalance on tiers with low activity

1. **Problem Description:** On rank tiers with low overall activity, Easytier may react to small workload imbalances, and attempt to rebalance the ranks.

2. **Potential Impact of Problem:** none

3. **Problem Severity:** Improvement

4. **Pervasive Problem:** No

5. **Release Bundle:** 76.31.79.0

ID#: 283977

Host Adapter recoverable instruction cache parity error

1. **Problem Description:** Host adapter has a cache parity error and a warmstart is the automated error recovery. Firmware will reset the one HA for the automated error recovery, if successful no warmstart will occur.

2. **Potential Impact of Problem:** warmstart reduction

3. **Problem Severity:** Improvement

4. **Pervasive Problem:** No

5. **Release Bundle:** 76.31.70.0

ID#: 282749

Support for secure connections via https to the DSGUI

1. **Problem Description:** The HMC GUI can be accessed via http which is not encrypted. This change will support https connections to the DSGUI

2. **Potential Impact of Problem:** security exposure

3. **Problem Severity:** Improvement

4. **Pervasive Problem:** No

5. **Release Bundle:** 76.31.70.0

ID#: 282605

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Remove unused weak and medium-strength ciphers from HMC

1. **Problem Description:** HMC fails security audit because the unused ciphers do not meet audit standards.
 2. **Potential Impact of Problem:** Security exposure
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 283105

MRPD scheduled operation interval changed to heartbeat schedule

1. **Problem Description:** Add MRPD enablement and configuration of the schedule interval to send MRPD data via heartbeat.
 2. **Potential Impact of Problem:** N/A
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.70.0
- ID#: 278672

LSS and PPRC path information added to error logging

1. **Problem Description:** LSS and path information added to the error logs for PPRC path problems. Previously a statesave is required to get the LSS path information which is required for problem analysis.
 2. **Potential Impact of Problem:** reduced problem analysis time
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** N/A
 5. **Release Bundle:** 76.31.55.0
- ID#: 283045

HMC responds to ICMP time stamp requests

1. **Problem Description:** The HMC responds to time stamp requests which could be potentially be used to defeat server authentication.
 2. **Potential Impact of Problem:** Security breach
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** N/A
 5. **Release Bundle:** 76.31.42.0
- ID#: 277674

HMC heartbeat does not report failed call home.

1. **Problem Description:** HMC heartbeat does not report a call home that has failed after 12 retries.
 2. **Potential Impact of Problem:** Unreported serviceable event not included in heartbeat information.
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** No
 5. **Release Bundle:** 76.31.42.0
- ID#: 278747

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Allow XRC and Global Mirror to use the same volume

1. **Problem Description:** Previously XRC and Global Mirror could not use the same volume.
This change supports using XRC and GM on the same volume
 2. **Potential Impact of Problem:** none
 3. **Problem Severity:** Improvement
 4. **Pervasive Problem:** N/A
 5. **Release Bundle:** 76.31.32.0
- ID#: 271663

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