

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.40.83.0 Release Note Information

Release Date: 22 December, 2023

VRMF Level Data Results:

VRMF level From:	New version - no previous releases
VRMF Level To:	89.40.83.0
Report for:	DS8900F

Code Bundle Contents

DS8900F Code Bundle Level	SEA or LMC Version:	DSCSI Client	Heat Map Transfer Utility	Storage Manager	Copy Services Manager
89.40.83.0	7.9.40.227	7.9.40.227	7.9.40.227	5.9.40.1087	6.3.8

Overview of new features and functions supported by this release on DS8900F 533x and 5341 models 993/994/996/998

At a glance:

- Multi-Target Global Mirror
- Cascaded Multi-Target Resynchronization
- Support for Transport Layer Security (TLS) 1.3
- License machine code 9.4 is available for machine types 5331, 5332, 5333, 5334, and 5341 models 993, 994, 996, and 998, as an upgrade option.
- Code fixes and improvements

This new microcode release supports DS8900F systems only.

Select Modifications Included in this Release Note:

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

Definition of Problem Severity:

1	High Impact	- Acute: Irrecoverable error with potential loss of data. - Serious: Irrecoverable error with potential loss of access to data, or critical function.
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 Potential DS8900F Data Loss during a power failure event

- 1 Problem Description:** <https://www.ibm.com/support/pages/node/7084247>
- 2 Potential Impact of Problem:** Loss of data
- 3 Environment:** All DS8900F
- 4 Problem Severity:** HIPER
- 5 Pervasive Problem:** Yes

ID# 360405, 363205

Track Format Descriptor mismatch on PPRC secondary

- 1 Problem Description:** Changes made to fix Preserve Mirror FlashCopy failures exposed a timing window that can lead to loss of data on PPRC secondary.
- 2 Potential Impact of Problem:** Loss of data
- 3 Environment:** DS8900F running R9.3 SP3
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 360573

HIPER Loss of Safeguarded backup, using multiple control and monitoring functions

- 1 Problem Description:** <https://www.ibm.com/support/pages/node/7047627>
- 2 Potential Impact of Problem:** Loss of data
- 3 Environment:** All Safeguarded Copy / Logical Corruption Protection
- 4 Problem Severity:** HIPER
- 5 Pervasive Problem:** Yes

ID# 363044

HIPER Inconsistent data on Safeguarded recovery volume

- 1 Problem Description:** <https://www.ibm.com/support/pages/node/7067777>
- 2 Potential Impact of Problem:** Loss of data
- 3 Environment:** Safeguarded recovery on R9.3 SP3.x
- 4 Problem Severity:** HIPER
- 5 Pervasive Problem:** No

ID# 363544

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Serious: An irrecoverable error with potential loss of access to data, or critical function.

Transparent Cloud Tiering migration failure

- 1 Problem Description:** Repeated rmcloudserver and mkcloudserver commands exposed a memory leak in the LPAR Application Framework code. Recovery requires restart of AppFw service.
 - 2 Potential Impact of Problem:** Loss of TCT function
 - 3 Environment:** Systems using TCT
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 358294

Safeguarded Copy caused Global Mirror suspend

- 1 Problem Description:** If a Safeguarded Copy is interrupted by error handling behavior (e.g. warmstart) the source volume can be left in checkin_in_progress state. This will cause a "try later" response to I/O requests.
 - 2 Potential Impact of Problem:** Loss of access
 - 3 Environment:** Systems using Safeguarded Copy
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 359167

Transparent Cloud Tiering failure

- 1 Problem Description:** IBM Java has identified a memory heap size issue. This can lead to TCT processes hanging and needing to be restarted.
 - 2 Potential Impact of Problem:** Loss of TCT function
 - 3 Environment:** Systems running TCT
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 359709

0x4143 MLE End-of-chain task timeout

- 1 Problem Description:** While cleaning up a stale relationship on the Metro Mirror secondary, incorrect handling of task locks led to a deadlock condition.
 - 2 Potential Impact of Problem:** Repeated warmstarts
 - 3 Environment:** R9.3 SP2 running Metro/Global Mirror, and using dataset-level preserve mirror FlashCopy on MM secondary.
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 360285

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PPRC path unusable

- 1 Problem Description:** When a PPRC path is in High Failure Rate status, test I/Os are sent to the secondary to evaluate if the condition still exists. A microcode issue may cause a resource leak during this process, that can cause the Host Adapter port to become unusable.
- 2 Potential Impact of Problem:** PPRC path unusable
- 3 Environment:** All DS8900F using PPRC
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 360287

PPRC volumes stuck in duplex pending

- 1 Problem Description:** When converting a PPRC pair from Global Copy to Metro Mirror, queued zHyperLink write chains that could not be processed, were not cleared.
- 2 Potential Impact of Problem:** PPRC failure
- 3 Environment:** Systems using zHyperLink and PPRC
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 360292

Safeguarded Copy out-of-space, and GM suspend

- 1 Problem Description:** With Safeguarded Copy destage grouping, If a Safeguarded volume is a Global Mirror secondary, GM revertible on consistency formation can interrupt the Safeguarded group copying, causing the group to fail. The tracks allocated for the group are not freed, which can lead to out-of-space conditions.
- 2 Potential Impact of Problem:** Safeguarded pool out of space, GM suspend
- 3 Environment:** SafeGuarded copy on R9.3
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 360302

Drive failure caused a 25 second delay

- 1 Problem Description:** A deadlock condition was encountered when an unlock function needed for device recovery, was queued waiting for a Security Health Check function.
- 2 Potential Impact of Problem:** Temporary loss of access.
- 3 Environment:** All DS8900F
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 360310

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Transparent Cloud Tiering silent failures

- 1 Problem Description:** TCT is not handling some error responses from Amazon Web Services. TCT fails with no feedback when it receives an error response from AWS, even if TCT could recover from that situation.
 - 2 Potential Impact of Problem:** Loss of TCT function
 - 3 Environment:** TCT with AWS cloud
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 360637

HIPER LDAP authentication failure

- 1 Problem Description:** Unable to login after code update, using native LDAP with bind password configured.
 - 2 Potential Impact of Problem:** LDAP failure
 - 3 Environment:** ≥R9.3 SP2 (89.32.37.0) and LDAP with bind PW
 - 4 Problem Severity:** HIPER
 - 5 Pervasive Problem:** Yes
- ID# 360682

Flash Drive failure impacted production

- 1 Problem Description:** A RAID-level recovery action was queued behind another recovery-driven read operation, to a drive that was no longer operational.
 - 2 Potential Impact of Problem:** Permanent I/O error.
 - 3 Environment:** DS8900F running R9.3 GA - 89.30.68.0 or higher.
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 360685

Safeguarded Copy out of space

- 1 Problem Description:** Bitmaps are incorrectly set when Running Fast Reverse Restores on Safeguarded volumes. this leads to unnecessary full copy to the target, and can also lead to premature SC out of space.
 - 2 Potential Impact of Problem:** Loss of access
 - 3 Environment:** Safeguarded Copy and R9.3
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 360749

Volumes stuck in long busy state

- 1 Problem Description:** A Flash drive failed in an unusual way, exposing an issue in a rarely used code path, that failed to send state change notifications, leaving multiple volumes in extended long busy state
 - 2 Potential Impact of Problem:** Loss of access
 - 3 Environment:** All
 - 4 Problem Severity:** High Impact
 - 5 Pervasive Problem:** No
- ID# 360793

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Copy Services Manager query received an empty list

- 1 Problem Description:** When ESSNI is down on an LPAR, copy services queries may return incorrect results to the client, instead of returning an error.
- 2 Potential Impact of Problem:** Unable to manage copy services
- 3 Environment:** All using copy services
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 360865

HIPER Transparent Cloud Tiering Out of Memory

- 1 Problem Description:** Multiple issues in TCT may lead to out-of-memory conditions, requiring support and/or development intervention to resolve.
- 2 Potential Impact of Problem:** Loss of TCT function
- 3 Environment:** All using TCT
- 4 Problem Severity:** HIPER
- 5 Pervasive Problem:** Yes

ID# 361014

Memory DIMM failure caused loss of access

- 1 Problem Description:** Cluster node recovery caused by failed memory DIMM incorrectly fenced the operational LPAR.
- 2 Potential Impact of Problem:** Loss of access
- 3 Environment:** All DS8900F
- 4 Problem Severity:** HIPER
- 5 Pervasive Problem:** Yes

ID# 361176

Space release in wrong GM session

- 1 Problem Description:** When devices in an LSS are in two Global Mirror sessions, a rare window exists when space is released, that it gets released on the wrong volume. This can cause an inconsistent group.
- 2 Potential Impact of Problem:** Incorrect consistency group data
- 3 Environment:** R9.3 and GM multi-session per LSS
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 361450

Global Mirror failed to form consistency groups

- 1 Problem Description:** When we pause GM, remove all volumes from the session, but leave the session open on the LSS (an empty session), then resume GM, GM will fail to form CGs
- 2 Potential Impact of Problem:** Global Mirror failure
- 3 Environment:** Global Mirror on R9.3 code
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 362536

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Repeated 0x7729 MLE and LPAR failover

- 1 Problem Description:** Global Mirror collision thread was acting on a task control block at the same time as a pre-write intercept thread.
- 2 Potential Impact of Problem:** Loss of access
- 3 Environment:**
- 4 Problem Severity:** High Impact
- 5 Pervasive Problem:** No

ID# 363712

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

Enhance PPRC retry behavior related to secondary long busy

- 1 Problem Description:** Provide a copy services poke to drive internal retry when I/O to the secondary exceeds the specified timeout value.
- 2 Potential Impact of Problem:** Degraded performance
- 3 Environment:** Systems using synchronous PPRC
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 315141

0x01B7:50DB MLE

- 1 Problem Description:** Lock contention on sidefile and session locks, while handling many parallel Global Mirror collisions.
- 2 Potential Impact of Problem:** Degraded performance
- 3 Environment:** All running Global Mirror
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** Yes

ID# 346497

DS CLI 'offloadfiles' command hangs

- 1 Problem Description:** Process hang when using DS CLI to offload PE packages and state save or ODD dumps.
- 2 Potential Impact of Problem:** Delayed data offload
- 3 Environment:** DS8900F below R9.2
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** Yes

ID# 356416

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0x7F73 MLE

- 1 Problem Description:** Microcode Logic Error triggered by a Safeguarded Copy check-in task that was allowed to run before the prior check-in for the same LSS had completed it's work.
- 2 Potential Impact of Problem:** Warmstart
- 3 Environment:** Systems running Safeguarded Copy
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 356795

PPRC suspend while updating to R9.3

- 1 Problem Description:** During code update to a Preserve Mirror secondary which is also a Safeguarded Copy volume, if a Preserve Mirror establish command is issued prior to CCL completing, it may result in suspending the Preserve Mirror.
- 2 Potential Impact of Problem:** Preserve Mirror suspend
- 3 Environment:** Systems using Safeguarded Copy
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 359614

Enhance Transparent Cloud Tiering request processing

- 1 Problem Description:** Streamline processing of requests for TS7700 containers having large numbers of objects.
- 2 Potential Impact of Problem:** Degraded performance
- 3 Environment:** TCT connected to TS7700
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 359635

Excessive Global Mirror pause delay

- 1 Problem Description:** In certain scenarios where cache component is required to quiesce a Write Set, code will wait up to 2 minutes for ongoing chains to complete.
- 2 Potential Impact of Problem:** Degraded Safeguarded Copy performance
- 3 Environment:** Systems running \geq R9.1 GA
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 360185

FB timeout waiting on SCSI task

- 1 Problem Description:** A process lock was not being released during warmstart or failover events
- 2 Potential Impact of Problem:** I/O delay, PPRC suspend
- 3 Environment:** All DS8900F
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 360257

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LDAP Remote Role Mapping

- 1 Problem Description:** GUI is sending a wrong role to NI for combined role (Logical and Copy Operator) for a group mapping.
- 2 Potential Impact of Problem:** Cannot complete LDAP configuration
- 3 Environment:** ≥R9.2 and LDAP
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 360738

Multi-Factor Authentication failure

- 1 Problem Description:** When two HMCs are configured in the DS CLI profile file, and the active policy is RSA+LDAP, the login from DS CLI fails with CMUN00018E Unable to connect to the management console server.
- 2 Potential Impact of Problem:** DS CLI login failure
- 3 Environment:** DS CLI and MFA
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 360792

Safeguarded Copy out of space

- 1 Problem Description:** When running on R9.3, which supports FlashCopy onto Safeguarded source, and the Customer is not using this function, a slow leakage of Safeguarded capacity space can occur.
- 2 Potential Impact of Problem:** Safeguarded Copy out of space
- 3 Environment:** Safeguarded Copy on R9.3 bundles
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 360968

DS GUI shows incorrect write latency

- 1 Problem Description:** On the Volume Performance pane, the write latency displayed is inconsistent with what is shown for the LSS, or what the host is seeing.
- 2 Potential Impact of Problem:** Incorrect information
- 3 Environment:** All
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 361105

Transparent Cloud Tiering "500 Internal Server" Error

- 1 Problem Description:** In public and private cloud environments, requests to list objects in a container, or to delete a container, may fail when more than 100K objects exist in the container.
- 2 Potential Impact of Problem:** Unable to list objects, or delete a container.
- 3 Environment:** All Public/Private TCT clouds
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 361486

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DS GUI Create Volume function failure

- 1 Problem Description:** When defining new FB volumes in DS GUI, using only odd or even pool, the "Save" button is enabled, but does not actually work.
- 2 Potential Impact of Problem:** Unable to create FB volumes using DS GUI
- 3 Environment:** All Open Systems and IBMi
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 361744

LDAP binding user login failure after code upgrade

- 1 Problem Description:** Newer crypto library is not compatible with older library format.
- 2 Potential Impact of Problem:** LDAP user login failure
- 3 Environment:** DS8900F using LDAP with Bind password on 89.32.37.0 or higher.
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 362175

Host Adapter 0x07D2 MLE and fence

- 1 Problem Description:** Repeated correctable ECC error handling may lead to HA heartbeat failure.
- 2 Potential Impact of Problem:** Warmstart, loss of paths
- 3 Environment:** DS8900F running 89.33.35.0 or higher
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 362350

Remote Authentication failure after HMC reboot

- 1 Problem Description:** Remote Authentication, (e.g. LDAP, Active Directory), using encrypted bind passwords, may store different crypto keys on each HMC. This can cause Remote Authentication failures, following subsequent HMC reboots,
- 2 Potential Impact of Problem:** HMC login failures
- 3 Environment:** All DS8900F using Remote Authentication
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 362469

0x7410 MLE

- 1 Problem Description:** A zHyperLink Write Intercept flag was left active for a PPRC relation that was no longer eligible for pre-write processing.
- 2 Potential Impact of Problem:** Warmstart
- 3 Environment:** All running zHyperLink with copy services.
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 362660

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Background Copy failed to restart

- 1 Problem Description:** Running FlashCopy if background copy operations are interrupted by a warmstart, they may fail to restart.
- 2 Potential Impact of Problem:** FlashCopy fails to complete.
- 3 Environment:** FlashCopy on 89.32.37 or higher
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 362955

SRC BE34002C - Sparing failed

- 1 Problem Description:** An errant RAID-10 member drive does not get rejected in a timely manner.
- 2 Potential Impact of Problem:** Degraded performance
- 3 Environment:** DS8900F using RAID-10
- 4 Problem Severity:** Moderate
- 5 Pervasive Problem:** No

ID# 362965

Service: A recoverable error, Service improvements

Missing zHyperLinks in DS GUI

- 1 Problem Description:** When connecting zHyperLinks, DS GUI may miss the event notification. Fix provided to periodically harvest the zHyperLinks.
- 2 Potential Impact of Problem:** Unable to monitor or configure zHyperLink
- 3 Environment:** Systems using zHyperLink
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 353671

System Summary lists incorrect CKD capacity

- 1 Problem Description:** DS GUI incorrectly calculates the TiB capacity of volumes configured for System Z.
- 2 Potential Impact of Problem:** None
- 3 Environment:** Systems \geq R9.1 using CKD volumes
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 355837

False BED13xxx Management Enclosure fan errors

- 1 Problem Description:** Fans are being called out for replacement when only one enclosure power supply card detects a transient error.
- 2 Potential Impact of Problem:** Extended service action
- 3 Environment:** All DS8900F systems
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 359440

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DS GUI Dashboard missing "Used Capacity" bar for CKD

- 1 Problem Description:** When HMC is configured for French language, the dashboard shows Used Capacity for FB storage, but the CKD bar is missing.
- 2 Potential Impact of Problem:** Usability
- 3 Environment:** Customers using Firefox browser
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 359528

DS GUI progress bar shows incorrect free space

- 1 Problem Description:** Progress bar is not showing correct free space when more than 1000 TiB free space exists for CKD.
- 2 Potential Impact of Problem:** Incorrect System Summary page
- 3 Environment:** N/A
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 359651

Missing export icon

- 1 Problem Description:** Export button on the DS GUI Dashboard can not be seen by some Customer user roles. This change will provide export capability to all user roles. DS CLI is also affected.
- 2 Potential Impact of Problem:** Unable to export from HMC
- 3 Environment:** All DS8900F
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 361104, 361107

Peer HMC Reload failure

- 1 Problem Description:** Peer HMC reload failed because critical data backups were not found in the expected directory.
- 2 Potential Impact of Problem:** HMC reload failure
- 3 Environment:** DS8900F running R9.1 GA or higher
- 4 Problem Severity:** Service
- 5 Pervasive Problem:** No

ID# 362389

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Improvements: Improvements for better usability

Suppress link down notifications for zHyperLinks

- 1 Problem Description:** Reduce nuisance SRC BE3A290D zHyperLink notifications for external link down events.
 - 2 Potential Impact of Problem:** None
 - 3 Environment:** Systems using zHyperLink
 - 4 Problem Severity:** Improvement
 - 5 Pervasive Problem:** No
- ID# 351153

Throttle PPRC initial copy

- 1 Problem Description:** PPRC initial copy can cause host impact if too much copying is initiated in parallel. This change will limit the number of empty tracks that can be transferred in parallel.
 - 2 Potential Impact of Problem:** Degraded performance
 - 3 Environment:** Systems using PPRC
 - 4 Problem Severity:** Improvement
 - 5 Pervasive Problem:** No
- ID# 359018

Reduction of Host Adapter-triggered warmstarts

- 1 Problem Description:** Design change to handle common recoverable errors without invoking warmstart.
 - 2 Potential Impact of Problem:** None
 - 3 Environment:** Systems with 32Gb Host Adapters
 - 4 Problem Severity:** Improvement
 - 5 Pervasive Problem:** No
- ID# 359819

Disable weak cipher suites

- 1 Problem Description:** Security scans complain about the presence of weak ciphers.
 - 2 Potential Impact of Problem:** None
 - 3 Environment:** All DS8900F
 - 4 Problem Severity:** Improvement
 - 5 Pervasive Problem:** No
- ID# 360399

EasyTier enhancement

- 1 Problem Description:** Additional changes to treat volume unmap activity separately, so as not to appear as a bandwidth spike.
 - 2 Potential Impact of Problem:** Degraded performance
 - 3 Environment:** All DS8900F
 - 4 Problem Severity:** Improvement
 - 5 Pervasive Problem:** No
- ID# 360460

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Safeguarded Recovery performance enhancements

- 1 Problem Description:** None
- 2 Potential Impact of Problem:** None
- 3 Environment:** DS8900F and Safeguarded Copy
- 4 Problem Severity:** Improvement
- 5 Pervasive Problem:** No

ID# 360744

Improve zHyperLink representation in DS GUI

- 1 Problem Description:** zHyperlink port information can be confusing.
- 2 Potential Impact of Problem:** None
- 3 Environment:** All DS8900F using zHyperLink
- 4 Problem Severity:** Improvement
- 5 Pervasive Problem:** No

ID# 362213

Remove Medallia survey function

- 1 Problem Description:** Survey is deprecated.
- 2 Potential Impact of Problem:** None
- 3 Environment:** All DS8900F
- 4 Problem Severity:** Improvement
- 5 Pervasive Problem:** No

ID# 363323

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