

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Release Date: April 15, 2020

VRMF Level Data Results:

VRMF level From:	89.1.24.0
VRMF Level To:	89.2.40.0
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
89.2.40.0	7.9.2.88	7.9.2.88	7.9.2.88	5.9.2.1039	6.2.7

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

At a glance:

- FlashCopy onto Global Mirror primary
- Endpoint Encryption support
- Feature MES support
 - Expansion Rack install
 - Rack Ethernet switch install
 - iPDU install
 - I/O Enclosure install
 - Processor memory upgrade
 - 32Gb Host Adapter install
 - VRAID adapter install
 - Storage Enclosure install
- Code fixes

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

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Acute: An irrecoverable error with potential loss of data.

Incorrect volume LRC

- 1. Problem Description:** During base and alias volume creation, insufficient locking may lead to incorrect LRC calculation.
 - 2. Potential Impact of Problem:** loss of data
 - 3. Problem Severity:** High Impact
 - 4. Pervasive Problem:** No
- ID# 344090

0x10F7 MLE during RAID-5 array rebuild

- 1. Problem Description:** During RAID-5 array rebuild, track recovery was unable to completely restore an unreadable track from the copy in cache.
 - 2. Potential Impact of Problem:** loss of data
 - 3. Problem Severity:** High Impact
 - 4. Pervasive Problem:** No
- ID# 346492

Data Loss exposure with high write activity

- 1. Problem Description:** A timing exposure exists in systems with high write activity. After freeing an NVS track buffer for reuse, a track may be allowed to use the buffer before PHYP has finished cleanup operations. Data loss may then occur during a power loss or Cluster failover event.
 - 2. Potential Impact of Problem:** loss of data
 - 3. Problem Severity:** High Impact
 - 4. Pervasive Problem:** No
- ID# 347200

NVDIMMs deconfigured after power failure

- 1. Problem Description:** After a hard power off, a p9 firmware problem caused NVDIMMs to be deconfigured.
 - 2. Potential Impact of Problem:** loss of access
 - 3. Problem Severity:** High Impact
 - 4. Pervasive Problem:** No
- ID# 347579

Inconsistent data on secondary after error recovery

- 1. Problem Description:** Error recovery while forming FlashCopy Consistency Groups, across multiple LSSs, may result in one or more LSSs coming out of freeze earlier than the others.
Note: Complete fix will require Co-Req APARs OA59936 (SDM) and PH26701 (GDPS)
 - 2. Potential Impact of Problem:** Data inconsistency
 - 3. Problem Severity:** High Impact
 - 4. Pervasive Problem:** No
- ID# 347624

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Potential data inconsistency after failover

1. **Problem Description:** IBM i systems may encounter inconsistent data when skip writes are interrupted by cluster failover.
2. **Potential Impact of Problem:** loss of data
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID# 348193

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

HIPER SRC=BE352662 Host Adapter zHPF Global CRC error

1. **Problem Description:** An unusual zHPF chain led to CRC errors, and fencing of multiple Host Adapters.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** HIPER
4. **Pervasive Problem:** Yes

ID# 345019

0x01B7:801A MLE

1. **Problem Description:** Summary Event Notification processing is using inefficient iterative methods, contributing to thread timeouts.
2. **Potential Impact of Problem:** ODD Dump, Warmstart, Failover, or HyperSwap Failure
3. **Problem Severity:** Varies depending on workload.
4. **Pervasive Problem:** Yes - ODD Dump

ID# 345941

SRC=BE1E218D Fixed block microcode timeout

1. **Problem Description:** SafeGuarded Copy ran into an out-of-space condition, but older backups were not rolled off.
2. **Potential Impact of Problem:** Temporary loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID# 346455

VRAID adapter left in service mode

1. **Problem Description:** After a pseudo-repair of a VRAID adapter, the adapter was left in service mode. Subsequent repair of the partner adapter was allowed to proceed, causing loss of access.
2. **Potential Impact of Problem:** loss of access
3. **Problem Severity:** High Impact
4. **Pervasive Problem:** No

ID# 346737

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

SafeGuarded Copy filling up extent pools

- 1. Problem Description:** SGC was filling up pools faster than older backups were being removed. Fix provides a pokeable setting to fail the SGC relation if the pools are filling up, to avoid failing host I/O.
- 2. Potential Impact of Problem:** loss of access
- 3. Problem Severity:** High Impact
- 4. Pervasive Problem:** No

ID# 347244

Repeated 0x0109 MLEs running Concurrent Copy

- 1. Problem Description:** 0x7D0E ODD Dump failed to clear a lock, leading to multiple 0x0109 MLEs and repeated warmstarts.
- 2. Potential Impact of Problem:** Repeated warmstarts, single cluster reboot
- 3. Problem Severity:** High Impact
- 4. Pervasive Problem:** No

ID# 347490

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

Resource Manager failure

- 1. Problem Description:** Resource Manager runs out of Adapter Platform Object Model file descriptors.
- 2. Potential Impact of Problem:** Copy Service Manager/CS Toolkit communication failure
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** Yes

ID# 320360

MetroMirror suspended

- 1. Problem Description:** Data arrived out of order at the secondary, causing the secondary to send unexpected status to the primary.
- 2. Potential Impact of Problem:** PPRC Suspend
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

0x05E0 MLE

- 1. Problem Description:** Incorrect control structures were found when presenting PPRC path notifications.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** Yes

ID# 341866

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Stale LDAP cache

- 1. Problem Description:** ESSNI does not detect LDAP changes, and continues to use cached tokens.
- 2. Potential Impact of Problem:** Security exposure
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 344326

Host timeout during HyperSwap

- 1. Problem Description:** Add a poke to disable the release space process during PPRC Failback.
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 344999

CMUN02947E error removing SafeGuarded Copy volumes

- 1. Problem Description:** After withdrawing SafeGuarded Copy consistency groups and terminate SGC, reservations remained on the volumes, preventing their removal.
- 2. Potential Impact of Problem:** Unable to remove former SGC volumes
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 345211

Copy Services Manager unable to communicate with HMCs

- 1. Problem Description:** Essni is unable to execute firewall scripts because of a path issue.
- 2. Potential Impact of Problem:** HMC communication failure
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346028

0x1C70 MLE during cluster failback

- 1. Problem Description:** Cluster failback may encounter a microcode logic error if Dynamic Volume Relocation is running.
- 2. Potential Impact of Problem:** Failback failure
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346031

RPO falling behind

- 1. Problem Description:** Large Global Mirror environments may exceed existing resource allocations for FlashCopy per cluster and port.
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346138

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

PPRC path throughput imbalance

- 1. Problem Description:** Path selection algorithms may incorrectly calculate path activity in some environments. Additional options are being provided, that can be enabled by poke.
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346458

0x1D07 MLE

- 1. Problem Description:** During high zHPF write activity, a write operation may encounter a microcode logic error while waiting for a data buffer.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346587

Erratic SafeGuarded Copy consistency group performance

- 1. Problem Description:** SafeGuarded Copy check-in task is not running at a high enough priority.
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346680

ESC=CBB9 during warmstart

- 1. Problem Description:** During warmstart, VRAID adapter reset should have been called in an earlier phase.
- 2. Potential Impact of Problem:** Extended warmstart recovery
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346696

0x0109 MLE

- 1. Problem Description:** Pathing thread attempted to lock a unit address control block that it already held the lock for.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346977

Vary path online failure

- 1. Problem Description:** Host Adapter ports were stuck in "Remove Logical Path in Progress" state.
- 2. Potential Impact of Problem:** loss of path
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 346983

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Warmstart while replacing 32Gb Host Adapter

- 1. Problem Description:** During adapter slot power off, upstream PCIe switch reports an error.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347019

False SRC=BC20E504

- 1. Problem Description:** NVDIMM firmware error resulted in a cluster FENCED_INT_8 condition, and cluster failover.
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** Yes

ID# 347152

EasyTier rebalance halt within the same Device Adapter pair

- 1. Problem Description:** EasyTier does not rebalance when DA pairs are near full bandwidth utilization, even when source and target are within the same DA pair. Fix will allow rebalance within a DA pair, as this does not add to overall DA pair utilization
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347175

0xB10A MLE

- 1. Problem Description:** Host adapter received unexpected PProcess LogOut on a PPRC path. PRLO is specific to FICON, and should not be seen on a Fibre Channel Protocol port.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347305

Global Mirror FlashCopy hang

- 1. Problem Description:** While attempting to quiesce Background QuickInit on a volume, a data structure was zeroed, causing quiesce code to indicate the quiesce was still in progress
- 2. Potential Impact of Problem:** PPRC suspend
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347334

Repeated 0x11B6 MLE

- 1. Problem Description:** Device Adapter error recovery routine encountered duplicate entries in a function stack.
- 2. Potential Impact of Problem:** Multiple warmstarts, and FailOver.
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347392

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

0x526F MLE

- 1. Problem Description:** During a torn-page write to a Metro-Global Mirror intermediate volume, code check for completion occurred before NVS validation was done.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347493

0x05E0 MLE

- 1. Problem Description:** A task freed it's lock before it was completely done processing.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate]
- 4. Pervasive Problem:** No

ID# 347497

Longer warmstart times in larger environments

- 1. Problem Description:** A function to validate Fibre Channel Security Management structures is iterating across all available ports FC ports, when it only needs to run once.
- 2. Potential Impact of Problem:** degraded performance
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347498

REST API communication failure

- 1. Problem Description:** Entitlement validation for Transparent Cloud Tiering to TS7700 is incorrectly acting on public cloud types.
- 2. Potential Impact of Problem:** Unable to control public cloud types
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347524

0x6070 Host Adapter MLE

- 1. Problem Description:** Host Adapter received Link Busy from a FICON channel, when no I/O was in progress.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347540

SafeGuarded Copy sequence number mismatch

- 1. Problem Description:** When performing dataset-level SafeGuarded Copy, where source and target have different sequence numbers, a microcode logic error may cause an incorrect sequence number to be written to the target.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347633

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Host Adapter communication timeout after cluster quiesce

- 1. Problem Description:** Code load process requested ODD collection, but did not wait for data collection to finish, before quiescing the next LPAR.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347685

0xD00F MLE

- 1. Problem Description:** zHyperLink error recovery attempted to recover from a permanent hardware error condition.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347794

LPAR MLE referencing a null pointer

- 1. Problem Description:** A function call to allocate a Task Control Block encountered a NULL pointer.
- 2. Potential Impact of Problem:** Warmstart
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347894

DS GUI and DSCLI login fails with CMUN00018E

- 1. Problem Description:** Authentication timeouts led to a timer failing to reset.
- 2. Potential Impact of Problem:** Unable to access the HMC
- 3. Problem Severity:** Moderate
- 4. Pervasive Problem:** No

ID# 347870

Service: A recoverable error, Service improvements.

AOS connection failure

- 1. Problem Description:** Assist OnSite connection via proxy fails, and AOS must be restarted.
- 2. Potential Impact of Problem:** Remote support access failure
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 327293

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

DS GUI display issue using Multi-Target Incremental FlashCopy

- 1. Problem Description:** When FlashCopy pairs are designated as Multi-Incremental (Type 2), the DS GUI table does not show anything in the "Recording" column. FlashCopy Properties display, and DSCLI, are not affected.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 334418

REST API shows incorrect CKD capacity

- 1. Problem Description:** Capacity units were changed from extents for both Fixed Block and Count-Key-Data, to MB for FB, and cylinders for CKD. But conversion was not provided for cylinders to MB.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 341739

LPAR dumps "re-compressed" during IML

- 1. Problem Description:** When pruning old dumps, the newest should not be pruned, regardless of age.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 342391

0x01B7:3043 MLE

- 1. Problem Description:** High numbers of unsolicited status interrupt threads may encounter ReConnect Control Block contention, leading to thread timeouts.
- 2. Potential Impact of Problem:** ODD Dump
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** Yes

ID# 343541

DS GUI export incomplete

- 1. Problem Description:** Current GUI Export System Summary function does not provide all the information that the previous GUI export provided. But previous GUI export may not provide reliable information.
- 2. Potential Impact of Problem:** Incorrect exported information
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 345308

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

0x01B7:506A MLE

- 1. Problem Description:** Lock contention on Copy Services SideFile and eXtended Distance Consistency Session locks, during periods of high Global Mirror collision activity.
- 2. Potential Impact of Problem:** ODD Dump
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** Yes

ID# 345989

Copy Service Manager lost connection to HMC

- 1. Problem Description:** Out-of-memory condition caused ESSNI crashdump. Fix will increase Java heap size.
- 2. Potential Impact of Problem:** Communication failure
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346308

0x5170 MLE

- 1. Problem Description:** FlashCopy withdraw encountered a deadlock condition when the target volume was also in Validation Required state.
- 2. Potential Impact of Problem:** ODD Dump
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346528

Unable to access DS GUI

- 1. Problem Description:** After code update, DS GUI cache refresh was slowed by query threads consuming large amounts of CPU time.
- 2. Potential Impact of Problem:** DS GUI login failure
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346852

Logical volume creation failure

- 1. Problem Description:** After deleting volumes, storage system may incorrectly identify the number of clean extents available.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346882

False SRC=B7006A72 during quiesce/resume

- 1. Problem Description:** Transient PCIe events during LPAR recycle were not suppressed.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346909

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Microcode Bundle 89.2.40.0 Release Note Information v1.3

CMUN80000E login failure after Customer network IP change

- 1. Problem Description:** If the first configured remote authentication URL is unreachable, HMC does not retry over the second configured URL.
- 2. Potential Impact of Problem:** Unable to authenticate via LDAP
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346946

Missing IBMi GUI option

- 1. Problem Description:** DS GUI Create Custom Volume function does not display the choice to assign the volume to IBMi. Volume can be assigned separately after creation.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 346978

0x747A MLE

- 1. Problem Description:** System attempted to create a Multi-Target Incremental Resync pair that points to itself.
- 2. Potential Impact of Problem:** ODD Dump
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347007

CSM data restore error message

- 1. Problem Description:** After HMC reload, a timing window exists where HMC critical data restore may collide with Copy Services Manager also trying to restore it's data.
- 2. Potential Impact of Problem:** Misleading error message
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347045

CSM communication failure

- 1. Problem Description:** A stuck thread in ESSNI causes queries from Copy Services Manager to fail. This change will perform a thread dump when an ESSNI PE package is collected prior to restart.
- 2. Potential Impact of Problem:** CSM in Severe status
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347048

Unable to access ASMI over AOS or RSC connection

- 1. Problem Description:** Advanced System Management Interface on clusters will only connect over default port 443.
- 2. Potential Impact of Problem:** Onsite SSR required to assist.
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347095

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

0x7E1D MLE during PMFLC establish on cascaded secondary

- 1. Problem Description:** After waiting 15 seconds for sync to complete, primary retried the Preserve Mirror FLashCopy establish, but retry found the relationship already exists.
- 2. Potential Impact of Problem:** ODD Dump
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347123

Incorrect DSCLI help text

- 1. Problem Description:** Help text for lsckdvol and lsfbvol commands shows columns that are not shown by DSCLI itself.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347203

LPAR log entries incorrectly sorted

- 1. Problem Description:** Log analysis routines incorrectly AM/PM timestamps to 24 hour format.
- 2. Potential Impact of Problem:** Logs out of order
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347547

Incorrect HMC firewall rule

- 1. Problem Description:** HMC firewall rule to monitor port 1751 is monitoring outgoing traffic, rather than incoming.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347718

Incorrect attribute name in REST response

- 1. Problem Description:** In PPRC query response, attribute "name" was used, rather than "ID".
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347769

Change DS GUI column names

- 1. Problem Description:** Rename Mirroring and FlashCopy table columns
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Service
- 4. Pervasive Problem:** No

ID# 347801

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

Improvements: Improvements for better usability

Add periodic midplane VPD validation

- 1. Problem Description:** If Vital Product Data are corrupted or unreadable, scrub routines will detect and rewrite the VPD.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Improvement
- 4. Pervasive Problem:** No

ID# 340870

Allow SafeGuarded Copy target to be persistent

- 1. Problem Description:** For GDPS environments, support is added to allow persistent SGC volumes.
- 2. Potential Impact of Problem:** none
- 3. Problem Severity:** Improvement
- 4. Pervasive Problem:** No

ID# 346529

IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

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IBM System Storage - DS8900F Disk Storage

Microcode Bundle 89.2.40.0 Release Note Information v1.3

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