

DataDirectTM

NETWORKS



SS8460 Enclosure

Firmware Update Procedure for SEP 0121-145

Technical Support Bulletin

Revision A1
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1.0 Overview

SEP firmware version 0120-145 is a MANDATORY UPGRADE for all SS8460 enclosures. The firmware addresses an issue with resonance or vibration that can cause rotating disk drives to persistently fail or go “missing”. See [SS8460 Disk Enclosure Firmware Release Notes \(SEP 0120-145\)](#) for a complete description of the release.

This document describes the recommended procedure for updating the SS8460 enclosure SEP firmware from *version 0120-100 to version 0121-145 only*. Earlier firmware versions cannot be updated to version 0121-145 using this procedure.

CAUTION Contact DDN Technical Support for assistance if you need to update SEP firmware version 0103-000 or earlier on the SS8460.

2.0 Update Procedure

2.1 Preparing for the Update

The storage system should be taken offline before updating the SS8460 firmware. These instructions assume you are logged in as user to the command line interface (CLUI).

Step 1. Obtain the 0121-145 firmware files (SS8460_0121_145.DDN) from DDN Technical Support.

Step 2. Collect the following reports from both controllers:

- SHOW SUB SUM
- SHOW SUB SUM ALL

Step 3. Disable background verifies with the command

```
SET SUBSYSTEM VERIFY_POLICY FALSE
```

Step 4. Disable write-back caching for all pools with the command

```
SET POOL * WRITE_BACK_CACHING FALSE
```

Step 5. Pause any other running jobs.

a. Display a list of jobs running on the storage system with the command

```
SHOW JOB
```

b. Pause each job shown with the command

```
PAUSE JOB <index>
```

where

<index> is a job ID in the list of running jobs.

2.2 Updating the Enclosure Firmware

The enclosures should be updated one at a time. The update should take only a few minutes per enclosure.

Step 6. Find the IP address of the current *primary* controller with the command
SHOW CONTROLLER

Step 7. Copy the new enclosure firmware to the primary controller with the command
SCP <filename> FIRMWARE@<primary_IP_address>:

where

<filename> is the name of the firmware file

<primary_IP_address> is the IP address of the primary controller

For example:

```
SCP SS8460_0121_145.DDN FIRMWARE@11.22.33.44:
```

NOTE Be sure to include the colon (:) at the end of the command string.

Step 8. When prompted for a password, enter `Firmware` (first letter capitalized).

Step 9. Log in to the *primary* controller through the CLUI if you are not already on that controller.

Step 10. From the *primary* controller, shut down the secondary controller with the command

```
SHUTDOWN CONTROLLER REMOTE FORCE
```

Wait 90 seconds to ensure that the secondary controller is completely shut down.

Step 11. Take the storage subsystem offline with the command

```
SET SUBSYSTEM OFFLINE
```

Wait 10 seconds to be sure the command has taken effect.

Step 12. Confirm that the subsystem is offline and that the secondary controller is shut down with the command

```
SHOW CONTROLLER ALL
```

Step 13. Get a list of all enclosures and their index numbers with the command

```
SHOW ENCLOSURE
```

NOTE The first and last entries in the list are usually controllers, not enclosures, and may be ignored in Step 14.

Step 14. For each enclosure listed in Step 13, update the firmware *one enclosure at a time* with the command

```
UPDATE ENCLOSURE <index> FILE=<filename>
```

where

<index> is the enclosure index number

<filename> is the name of the firmware file

For example:

```
UPDATE ENCLOSURE 1 FILE=SS8460_0121_145.DDN
```

```
UPDATE ENCLOSURE 2 FILE=SS8460_0121_145.DDN
```

```
UPDATE ENCLOSURE 3 FILE=SS8460_0121_145.DDN
```

```
UPDATE ENCLOSURE 4 FILE=SS8460_0121_145.DDN
```

```
UPDATE ENCLOSURE 5 FILE=SS8460_0121_145.DDN
```

The commands must be issued for each enclosure separately and sequentially, but it is not necessary to wait for one update to complete before issuing the next UPDATE command.

Step 15. Monitor the progress of each enclosure update with the command

```
SHOW ENCLOSURE
```

For example:

```
SHOW ENCLOSURE * UPDATE_FIRMWARE_PROGRESS +5
```

The +5 argument tells the system to run the command every five seconds. To stop execution, simply press the Enter key.

The update should take only a few minutes per enclosure.

Step 16. When all enclosures have been updated, shut down the system with the command

```
SHUTDOWN SUBSYSTEM FORCE
```

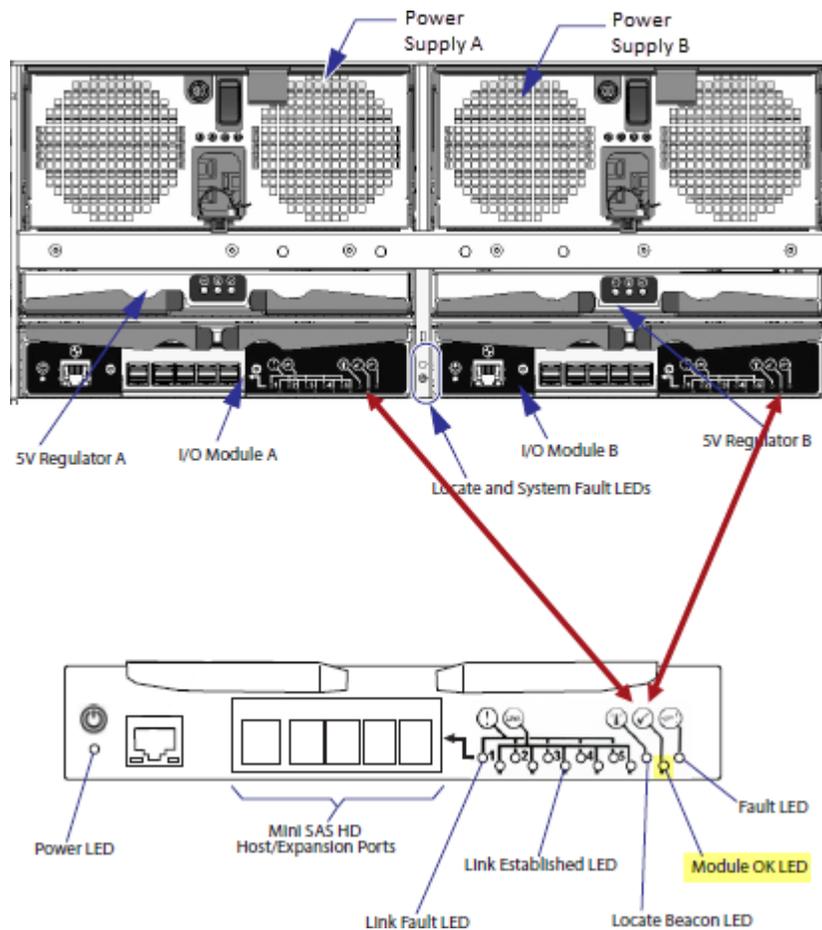
CAUTION The system is not shut down until all LEDs on the back of both controllers are dark. Verify LED status before proceeding.

2.3 Power Cycling the Enclosures

Both controllers must be shut down before you begin this section. Be sure to observe all recommended wait times. Enclosure and expanders are treated identically in this section.

CAUTION Failure to observe the wait times described in this document may damage the equipment or cause data loss.

- Step 17.** Power down all enclosures (and expansion modules) by flipping the rocker switches on the back of both enclosure power supplies. There are two power supplies per enclosure.
- Step 18.** Wait *at least* 1 minute after the last enclosure powers down.
- Step 19.** Power up all enclosures by flipping the rocker switches on the back of both enclosure power supplies (two per enclosure).
- Step 20.** Wait *at least* 3 minutes after the last enclosure is powered up.
- Step 21.** Do a *second power cycle* of the system by repeating Step 17 to Step 20.
- Step 22.** Verify that the checkmark (“Module OK”) LED is lit on the back of both I/O modules (IOMs) in each enclosure. (There are two IOMs in each enclosure.) The checkmark LED is located as shown in the diagram below.



- a. If the LED does not come on after 3 minutes, wait another 60 seconds.
- b. If, after waiting 60 seconds, the LED has still not come on, *carefully* pull out the I/O module(s) whose LED remains dark, wait 15 seconds, then reset it.

CAUTION Be careful not to damage any of the connector pins on the IOM.

- c. If reseating the IOM fails to light up the checkmark LED, power cycle the enclosure again. (Repeat Step 17 to Step 22 for this enclosure.)

2.4 Bringing Up the System and Verifying the Update

All enclosures and expanders should be powered up and all checkmark LEDs should be lit on the enclosure/expander I/O modules before you begin this section.

Step 23. Power on both controllers.

Step 24. Wait 10 minutes to allow both controllers to boot to the RAID prompt.

Step 25. Verify that the enclosures and/or expanders have taken the new firmware by running the following commands.

- a. `SHOW ENCLOSURE ALL`

Confirm that all enclosures show the new firmware level.

- b. `SHOW SEP ALL`

Confirm that the new firmware level is shown.

- c. `SHOW EXPANDER ALL`

Confirm that all expanders show the new firmware level.

If any of these commands show *even one element* not reporting the new firmware level, the update process must be performed again *from Step 6*. Enclosure-specific steps should focus on the enclosures or expanders with elements showing that the firmware update did not “take”.

Step 26. Verify that all expanders are in the “OK” state in the `SHOW EXPANDER ALL` report. If they are, skip to Step 28.

Step 27. If any expanders report as “NON-CRITICAL” instead of “OK”, do the following:

- a. Verify that all ICLs (inter-controller links) are operational with the command

`SHOW ICL_CHANNEL`

- b. Verify that all drives are visible to both controllers and there are no drives in “PARTIAL_READY” status with the command

`SHOW PD`

- c. *If Step 27a and Step 27b above show issues*, remedy the problematic ICL or PARTIAL_READY conditions.

- d. **If Step 27a and Step 27b above do NOT show issues**, reseal any IOM(s) that show as “NON-CRITICAL” in the `SHOW EXPANDER ALL` report. If more than one IOM is “NON-CRITICAL”, perform the following steps for **one IOM**.

- Physically locate one “NON-CRITICAL” IOM with the command

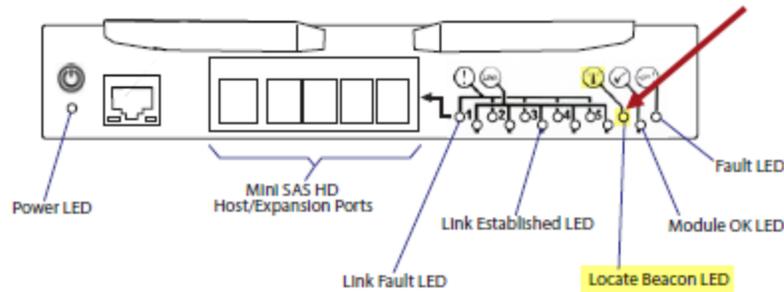
```
LOCATE EXPANDER <enclosure_ID> <expander_ID>
```

where

<enclosure_ID> is the enclosure index in the EXPANDERS list

<expander_ID> is the “Idx” value of the IOM in the EXPANDERS list

The lighthouse (“Locate Beacon”) LED will flash blue for 120 seconds on the back of the IOM identified in the `LOCATE` command. (See diagram.)



- **Carefully** pull the identified IOM out about 3 inches, wait 15 seconds, then **carefully** reseal the IOM.
 - Verify that the reseated IOM is now in “OK” status with the command
`SHOW EXPANDER ALL`
- e. Verify that all pools are healthy, all disks are visible to both controllers, and no partial rebuilds are pending completion as a result of reseating the IOM. Run the commands:
- ```
SHOW POOL
SHOW JOB
SHOW PD
```
- f. **If any issues are traced to the enclosure with the reseated IOM**, the firmware was probably not updated completely. Repeat the update process **from Step 6**. Enclosure-specific steps should focus on the enclosure or expander with the reseated IOM.
- g. **If no issues are found with the most recently reseated IOM**, but **another** IOM reports “NON-CRITICAL” status instead of “OK” in the `SHOW EXPANDER ALL` report, perform Step 27d, e, f, and g with that one IOM. Repeat until all IOMs report “OK”.

**Step 28.** Verify that the SFA system is healthy overall at the new firmware level.

- a. Verify that dual controller communication is present and the correct controller is primary with the command

```
SHOW CONTROLLER
```

- b. Verify that all pools are healthy with the command

```
SHOW POOL
```

- c. Verify that all physical drives are in normal state and all are visible to both controllers (that is, there are no drives in “PARTIAL READY” status) with the command

```
SHOW PD
```

- d. Verify that all virtual drives are in normal state and that each virtual drive is owned by its preferred controller/RAID processor with the command

```
SHOW VD
```

This may take a few minutes.

## 2.5 Bringing the System Back Online

If Step 28 shows that the SFA system is healthy, bring the system back online for host I/O.

**Step 29.** Re-enable write-back caching with the command

```
SET POOL * WRITE_BACK_CACHING TRUE
```

**Step 30.** Resume any paused jobs.

- a. Get the index numbers of all paused jobs with the command

```
SHOW JOB
```

- b. For each paused job in the list, resume execution with the command

```
RESUME JOB <job_index_number>
```

**Step 31.** Enable background verifies with the command

```
SET SUBSYSTEM VERIFY_POLICY TRUE
```

## 3.0 Contacting DDN Technical Support

Contact DDN Technical Support if you need assistance at any time. Support can be reached by telephone, email, or on the web.

### Telephone

*DDN Support Worldwide Directory* <http://www.ddn.com/support/contact-support>

**Email**

*Support Email*

[support@ddn.com](mailto:support@ddn.com)

**Web**

*Support Portal*

<https://portal.ddnsupport.com>

*Portal Assistance*

[webportal.support@ddn.com](mailto:webportal.support@ddn.com)

**Bulletins**

*Support Bulletins*

<http://www.ddn.com/support/technical-service-bulletins>

*Bulletin Subscription Requests*

[support-tsb@ddn.com](mailto:support-tsb@ddn.com)