Upgrading the FAStT Storage Server Controller Firmware/NVSRAM and the EXP100 ESM firmware in FAStT SATA configurations

Revision: 0.3

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About this document

This document describes the procedure to upgrade the FAStT storage server controller firmware/NVSRAM and the EXP100 ESM firmware. The controller firmware must be at version 05.41.xx.xx. This document is not intended for upgrading a FAStT Storage Server from Fibre Channel controller firmware (version 05.40.xx.xx or earlier) to SATA controller firmware (version 05.41.xx.xx). The procedure covers the steps to download the controller firmware, the controller NVSRAM and the EXP100 ESM firmware. You do not need to go through all of the steps depending on your download requirements. However, you must review and perform all of the applicable tasks in the Preparations section before proceeding with the downloads.

If you have questions with the steps in this document, please call IBM Support or Representatives.

EXP100 ESM and FAStT Storage Server controller firmware upgrade procedure overview

Required Firmware Files:

FAStT 600 Firmware Filenames	Description
SNAP_05411101.dlp	FAStT600 controller firmware file
N1722F600R841V03.dlp	FAStT600 controller NVSRAM file

FAStT 900 Firmware Filenames	Description
FW_05411101_05400200.dlp	FAStT900 controller firmware file
N1742F900R841V05.dlp	FAStT900 controller NVSRAM file

EXP100 Firmware Filenames	Description
csb_ibm_04A8.dl	EXP100 csb firmware file
esm953A.dl	EXP100 ESM firmware file

Table 1: Firmware filenames

IMPORTANT: Always refer to table 1 for the correct firmware/NVSRAM filenames that are required for the upgrade. The filenames in the attached screenshots are for illustrative purposes only.

Upgrade overview.

1. Perform a full backup of the data in the logical drives defined in the FAStT Storage Server.
2. Open a management session to the FAStT storage server using the IBM FAStT Storage Manager Client program.
3. Stop IOs to all logical drives defined in the FAStT Storage Server.
4. Use the Performance Monitor option in the FAStT Storage Manager client program to ensure that there are no IOs to the defined logical drives.
4. Download the controller firmware. In the Subsystem Management window, select Storage Subsystem → Download → Firmware and follow the on-screen instructions.
5. Download the controller NVSRAM. In the Subsystem Management window, select Storage Subsystem →Download → NVSRAM and follow the on-screen instructions.
6. Download the file csb_ibm_04A8.dl to all EXP100 ESMs. In the Subsystem Management window, select Advanced → Download → Environment Card (ESM) firmware and follow the on-screen instructions. (Note: Might have to select All Files to get the file listed in the selectable view in the Select file to Download window.)

You do not have to cancel the Download Environmental (ESM) Card Firmware window after the csb_ibm_04A8.dl file is downloaded. You can select the enclosures and start the download for the second esm953A.dl file as stated in step 7.

7. Download the file esm953A.dl to all EXP100 ESMs. In the Subsystem Management window, select Advanced → Download → Environment Card (ESM) firmware and follow the on-screen instructions. (Note: Might have to select All Files to get the file listed in the selectable view in the Select file to Download window.)
8. Restart IOs to the logical drives

Detailed Upgrade Procedure

Preparations

1. Perform full backup of all logical drives defined in the FAStT Storage Server.
2. During the upgrade, there must be no IOs from the host server(s) to the logical drives, especially write IOs. If there are IOs to the drives in the FAStT Storage Server that is updated, drives might be marked as "Failed" during the download. The failed drive(s) will cause the array(s) to be degraded or even failed. There are many ways to prevent IOs from being sent to the logical drives. They are listed below from the most to the least optimal method of stopping IO. Only one of the following preparation options needs to be performed. If you are managing the storage server with in-band management, options a and b are not applicable.

   Preparation Options
   a. Shutdown all host servers that have logical drives mapped to. This is IBM recommended option. This option may not be feasible if the host server is also used as the FAStT Storage Server management station. If this is the case, option b may be the next best choice.
   b. Stop all programs, services or processes in the host servers that access the logical drives. Make sure that there are not any running background programs, services or processes that write data to the logical drives. For example, Microsoft MSCS service periodically writes to the "Quorum" disk. Perform option c to flush I/O the server cache to disks
   c. Unmount the file systems to flush I/O from the server cache to disks. Note: In a Microsoft Windows environment, remove the drive letter or the mount points of the mapped LUNs instead of unmounting the file systems.
   d. Remove the mappings of the logical drives to the host servers using FAStT storage manager client. (Note: Do not remove the mapping of the logical drive named "Access", if defined).
   e. Disconnect the FC connections to FAStT storage server host ports by either physically unplugging the FC cable connectors from the SFP sockets or setting the FC switch ports that the FAStT storage server host ports connect to "Offline" state. The programs, services or processes that use the logical drives may go into failed state because they can not access the logical drives.
   f. Place the arrays in the FAStT storage server to an Offline state.

3. Open a FAStT Storage Manger Client Enterprise Management window to manage the FAStT storage server, which will have firmware upgraded. Refer to the IBM TotalStorage FAStT Storage Manager Installation and Support Guide for the host OS of your FAStT management station for more info.
4. In the Enterprise Management window, right click the FAStT storage server name and select Manage Device option to open the Subsystem Management window.
5. In the Subsystem Management window, start the Performance Monitor by select Storage Subsystem → Monitor Performance menu option.

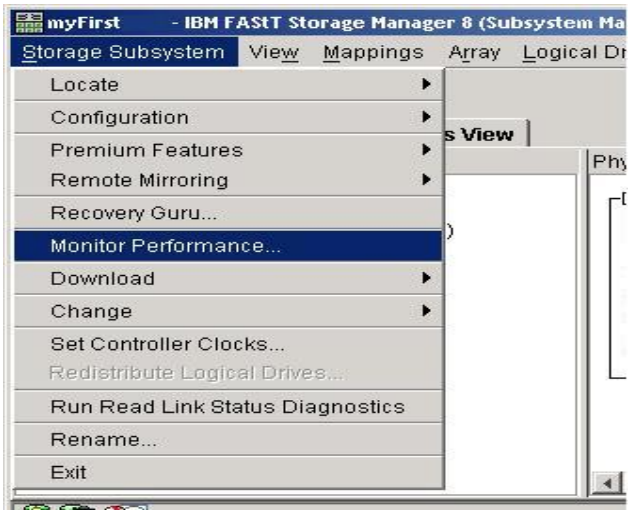

Figure 1: Selecting Monitor Performance option

5. When the Performance Monitor window opens, click Start button to start monitoring. After at least 15 minutes, recheck the Performance Monitor window. You should have values of zeros or something less than 10 under Total IOs column. If there are any IOs, you might consider option a mention in step 2 above to quiesce IOs.

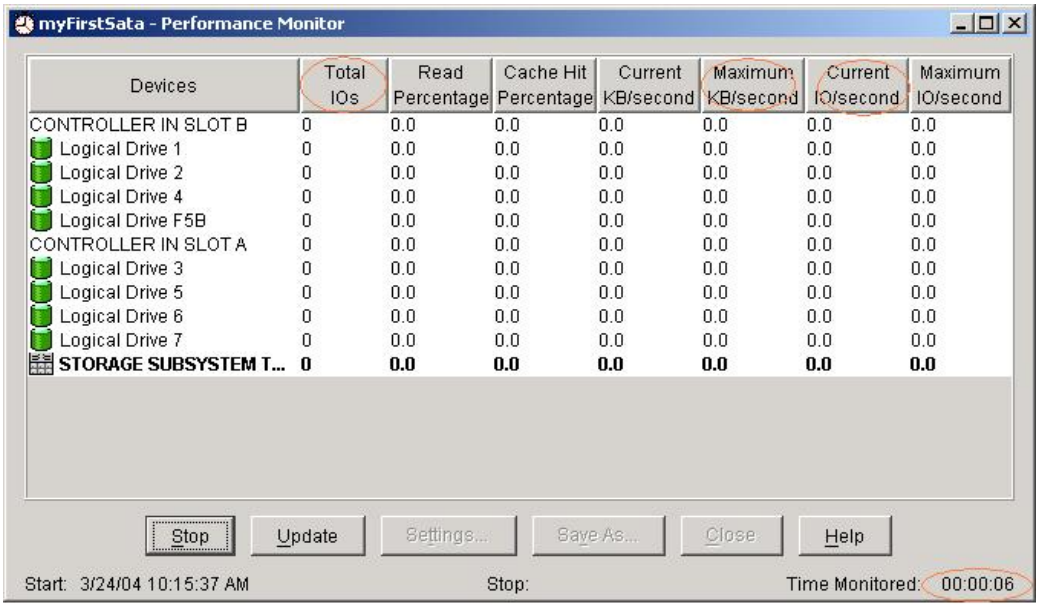

Figure 2:

Upgrade process

Firmware/NVSRAM download

1. In the Subsystem Management window, select Storage Subsystem →Download → firmware.

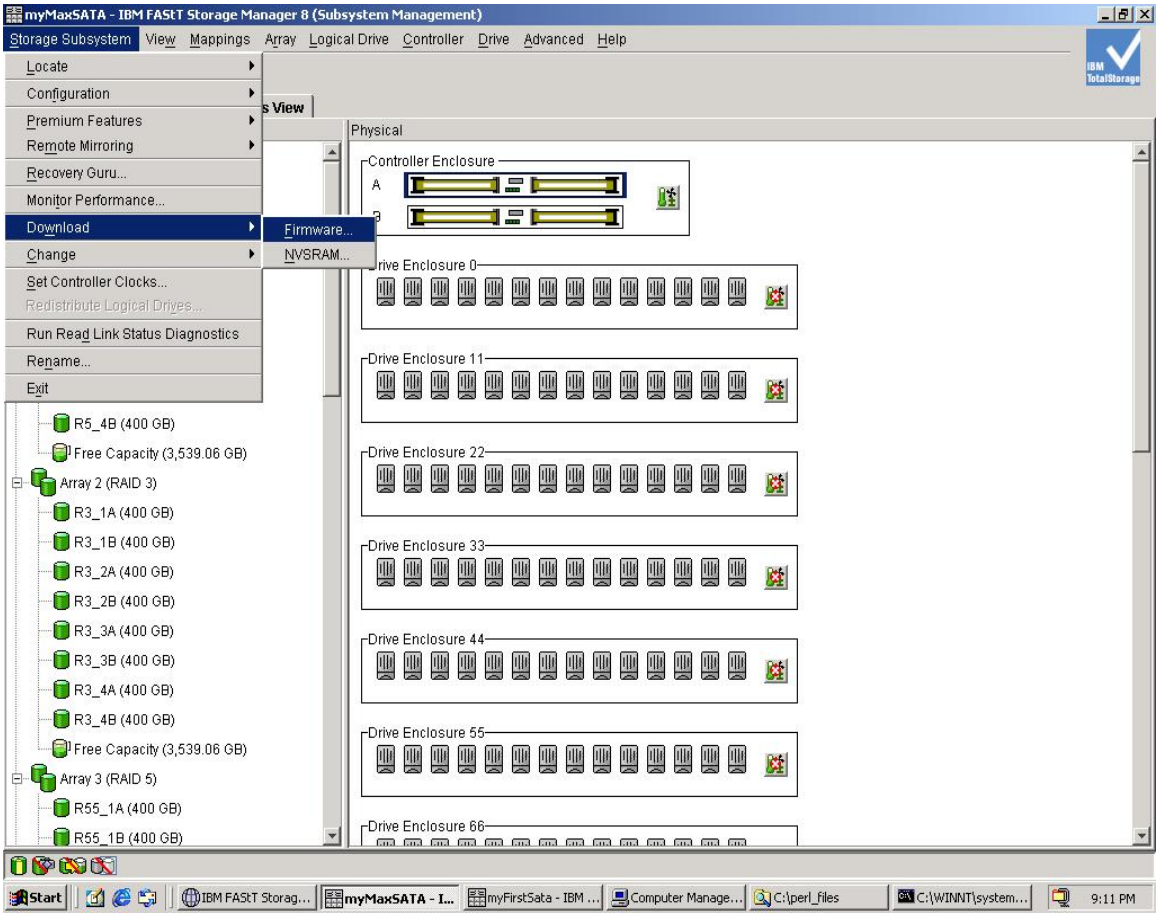

Figure 3:

2. A Download Firmware window opens, select the directory that the controller firmware file resides and select the name of the controller firmware file to be downloaded. Click OK to continue.

IMPORTANT: Always refer to table 1 for the correct firmware/NVSRAM filenames that are required for the upgrade. The filenames in the attached screenshots are for illustrative purposes only.

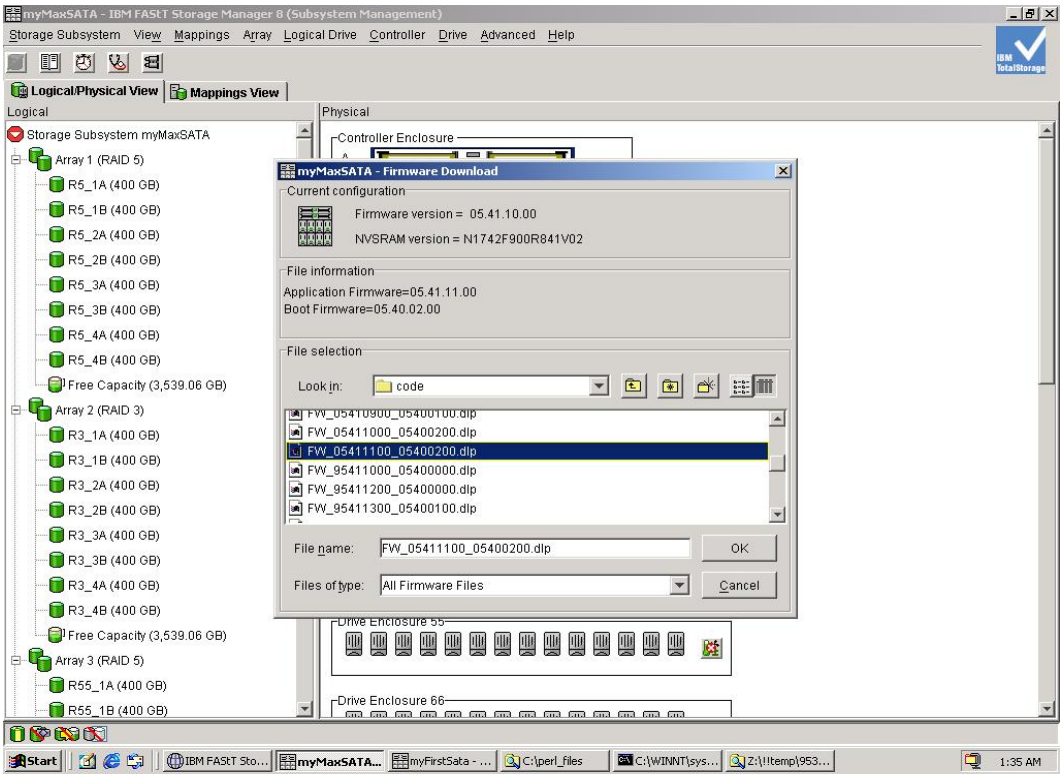

Figure 4:

3. Click Yes when the Confirm Download window opens to start the controller firmware download.

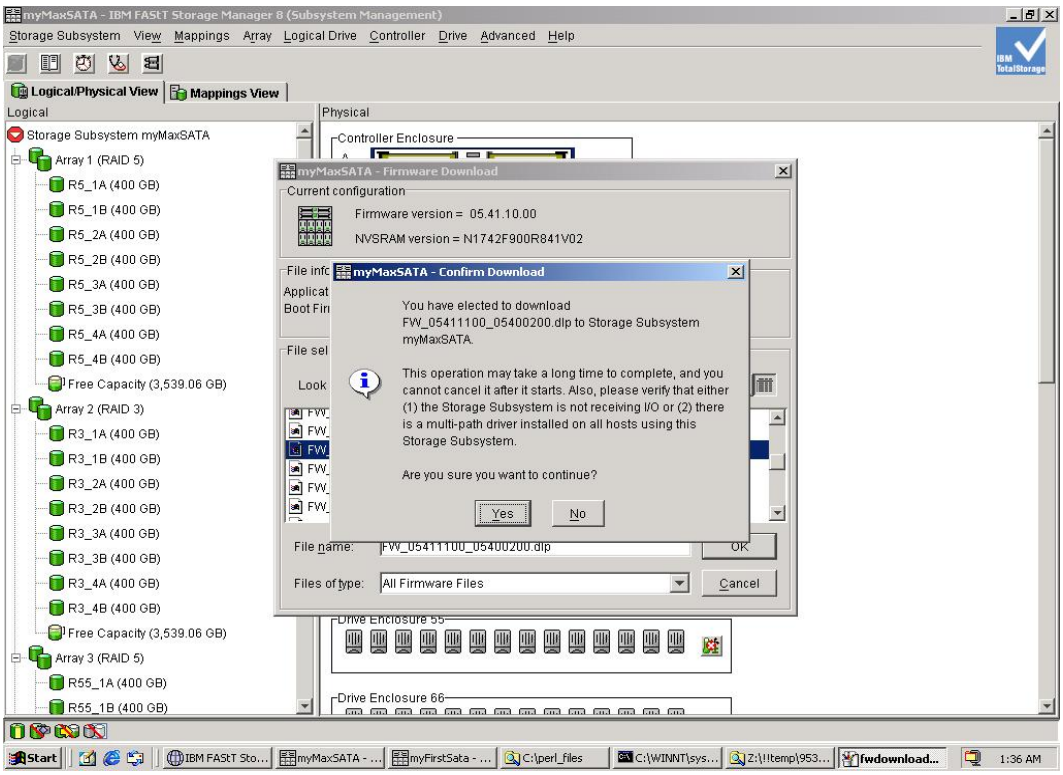

Figure 5:

4. A Downloading window is open to show the download progress.

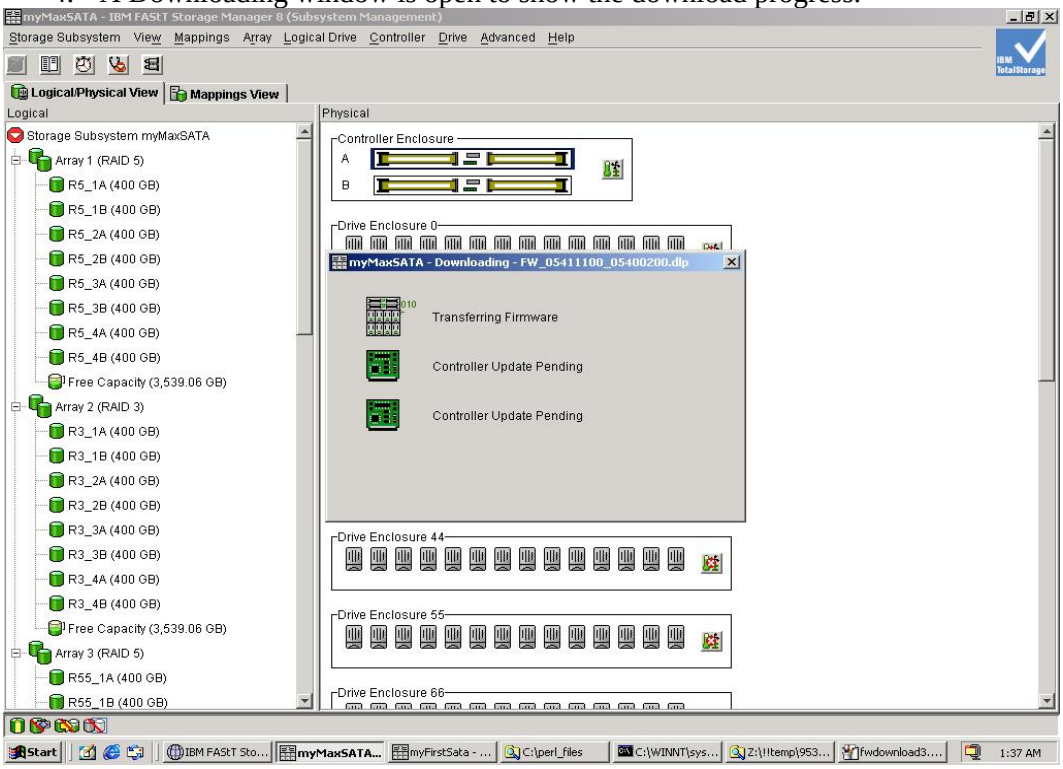

Figure 6:

5. Click Done when the download is completed to close the Downloading window and return to the Subsystem Management window.

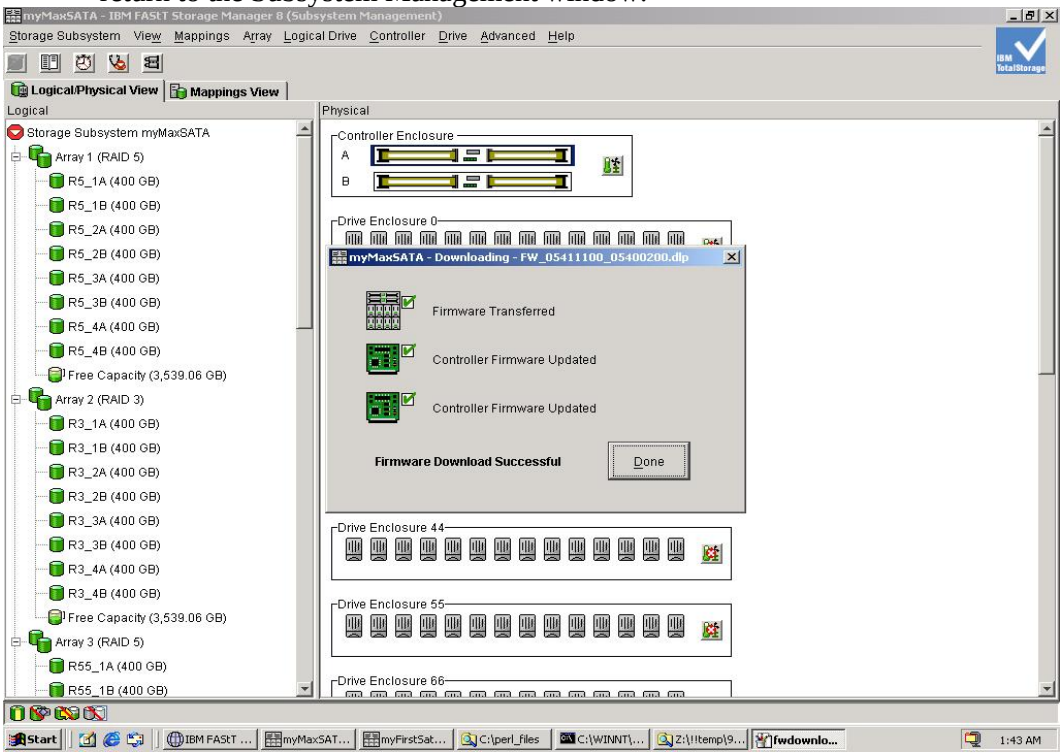

Figure 7:

NVSRAM download

1. In the Subsystem Management window, select Storage Subsystem →Download → NVSRAM.

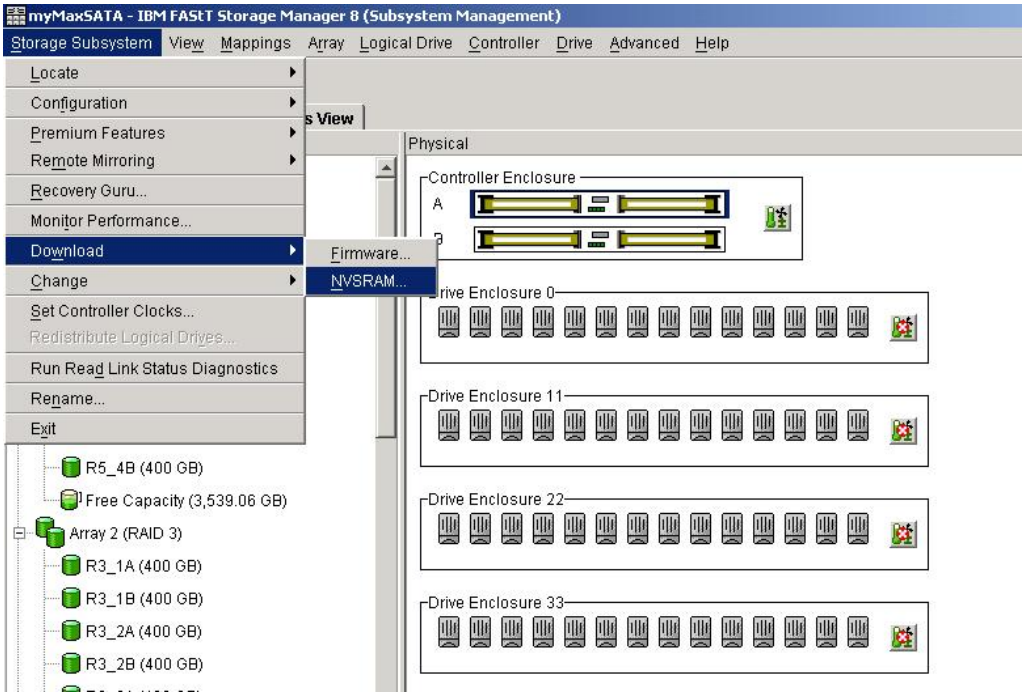

Figure 8:

2. A Download NVSRAM window opens, select the directory that the controller NVSRAM file resides and select the name of the NVSRAM file. Click OK to continue.

IMPORTANT: Always refer to table 1 for the correct firmware/NVSRAM filenames that are required for the upgrade. The filenames in the attached screenshots are for illustrative purposes only.

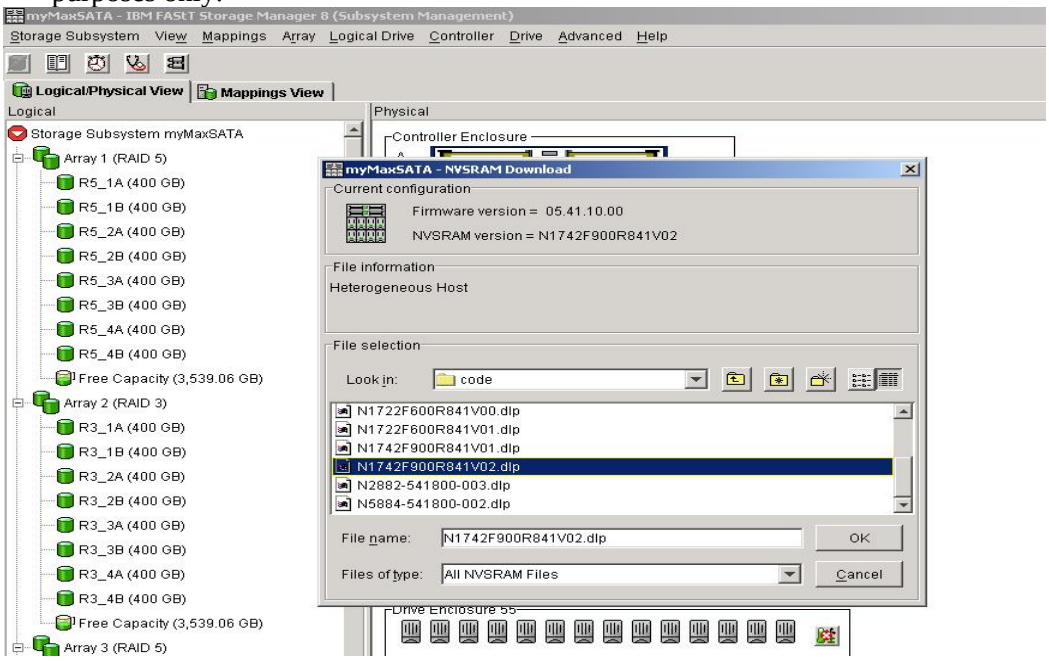

Figure 9:

3. Click Yes when the Confirm Download window opens to start the controller NVSRAM download.

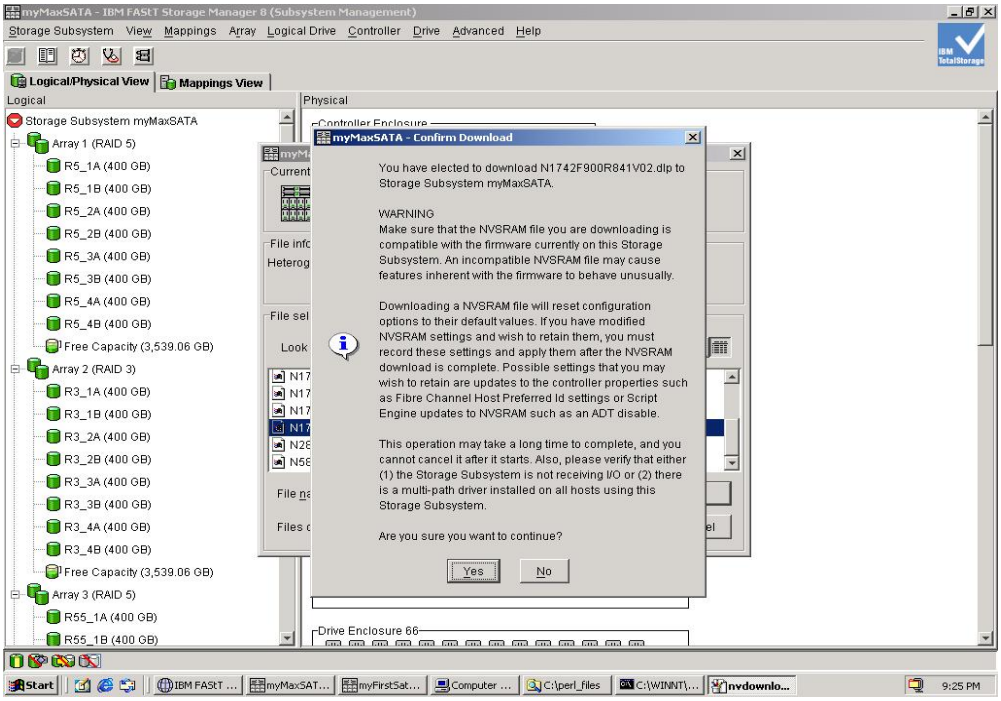

Figure 10:

4. A Downloading window is open to show the download progress

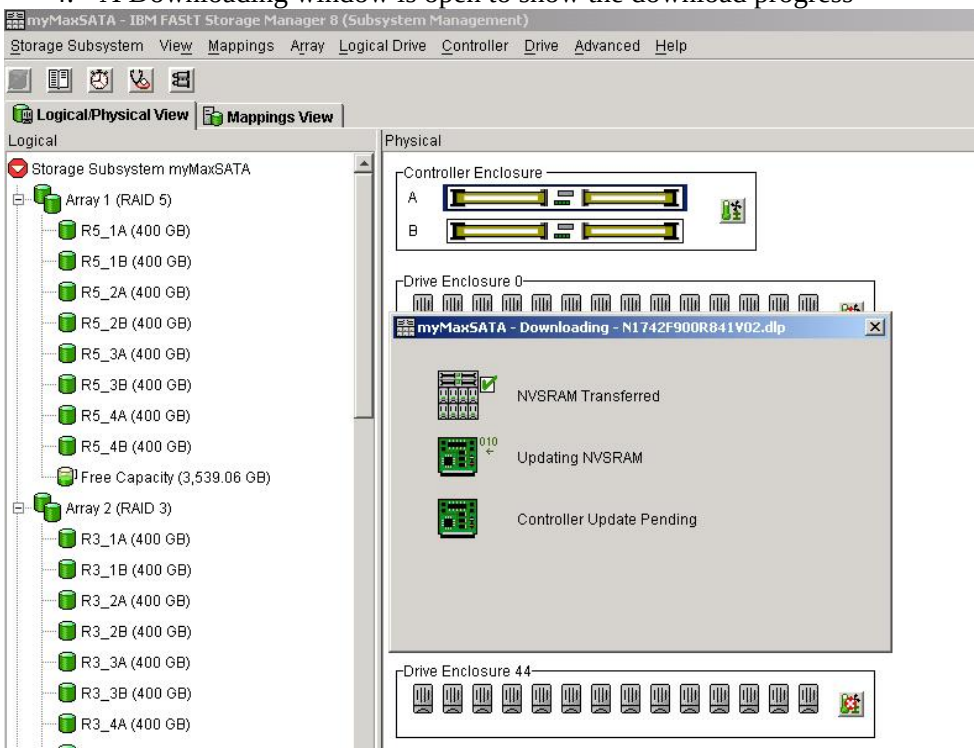

Figure 11:

5. Click Done when the download is completed to close the Downloading window and return to the Subsystem Management window

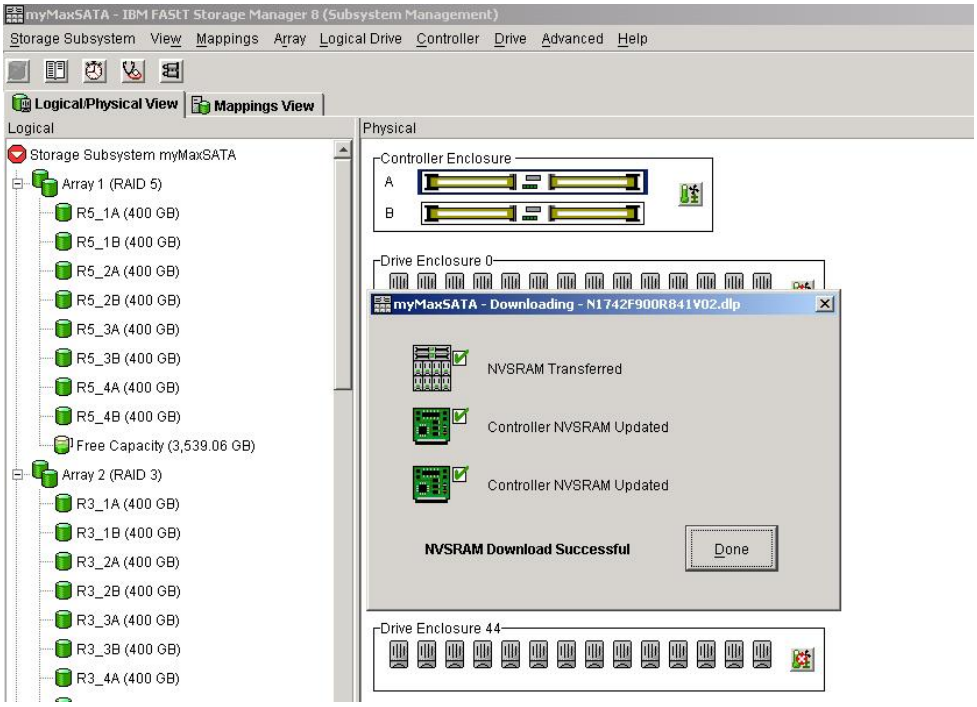

Figure 12:

EXP100 ESM firmware download

Important: This version of EXP100 ESM file requires an additional file to be downloaded. This file – csb_ibm_04A8.dl – could be downloaded before or after the ESM file. The csb_ibm_04A8.dl file will be loaded first in this document.

1. In the Subsystem Management window, select Advanced → Download → Environment Card (ESM) firmware.

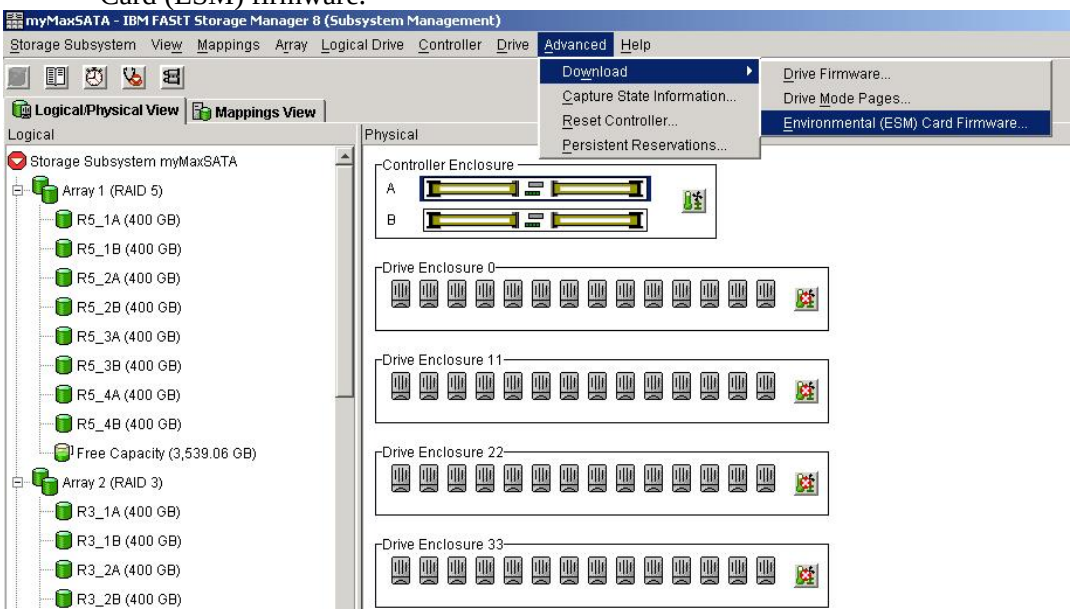

Figure 13:

2. A Download Environmental (ESM) Card Firmware window opens.

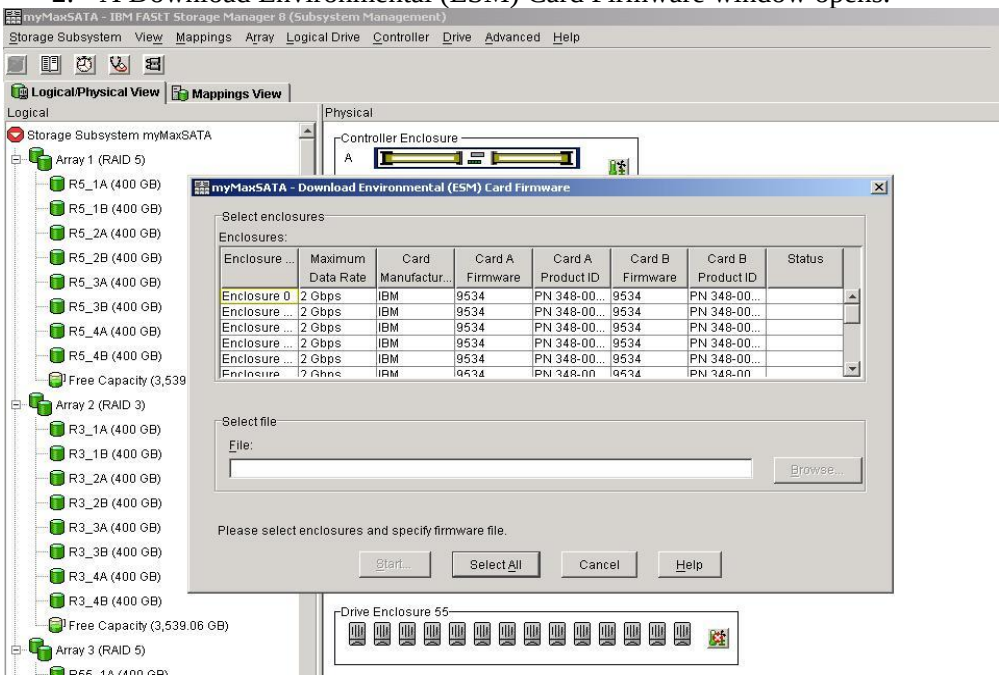

Figure 14:

3. Select the enclosures to be updated with new firmware. You can select a particular enclosure, group of enclosures or all of the enclosures. To select all enclosures, click the Select All button.

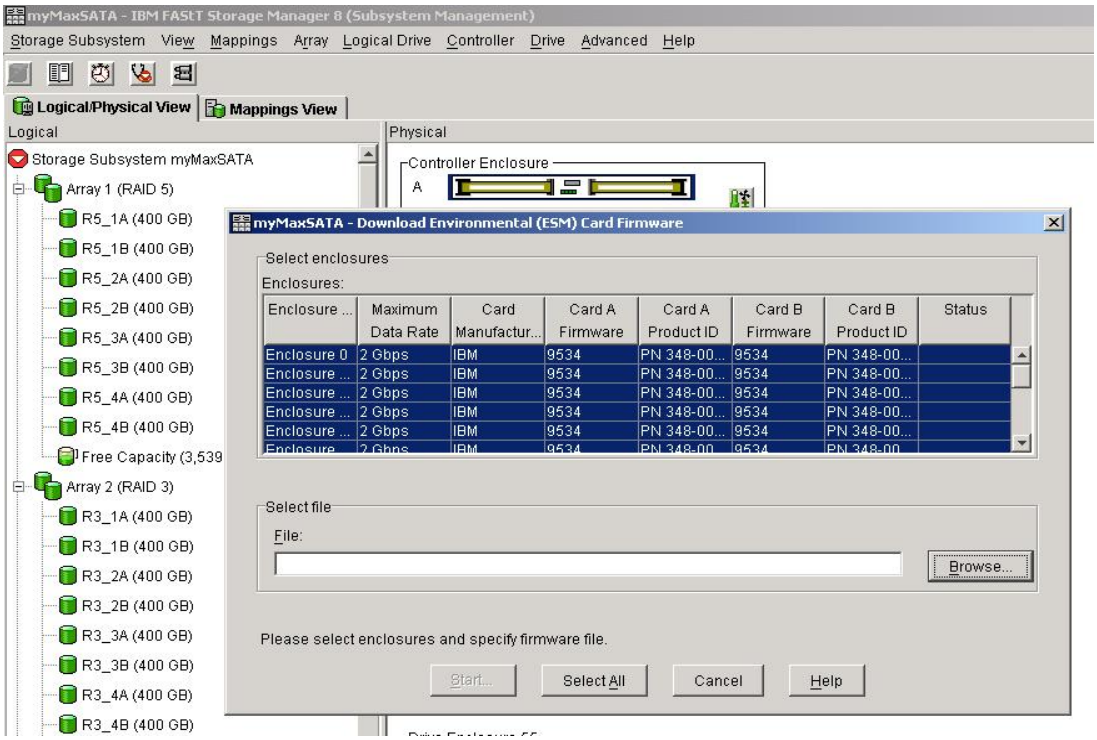

Figure 15:

4. Click Browse to open the Select Environmental (ESM) Card Firmware File window. Select the directory that the ESM firmware file resides and select the name of the ESM firmware file. You might have to change the Files of Type pull-down list to select All Files (*.*) in order to get the file names displayed for selection. Click OK to continue. Note: you will be selecting the file with the name csb_ibm_04A8.dl.

IMPORTANT: Always refer to table 1 for the correct EXP100 csb firmware filenames that are required for the upgrade. The filenames in the attached screenshots are for illustrative purposes only

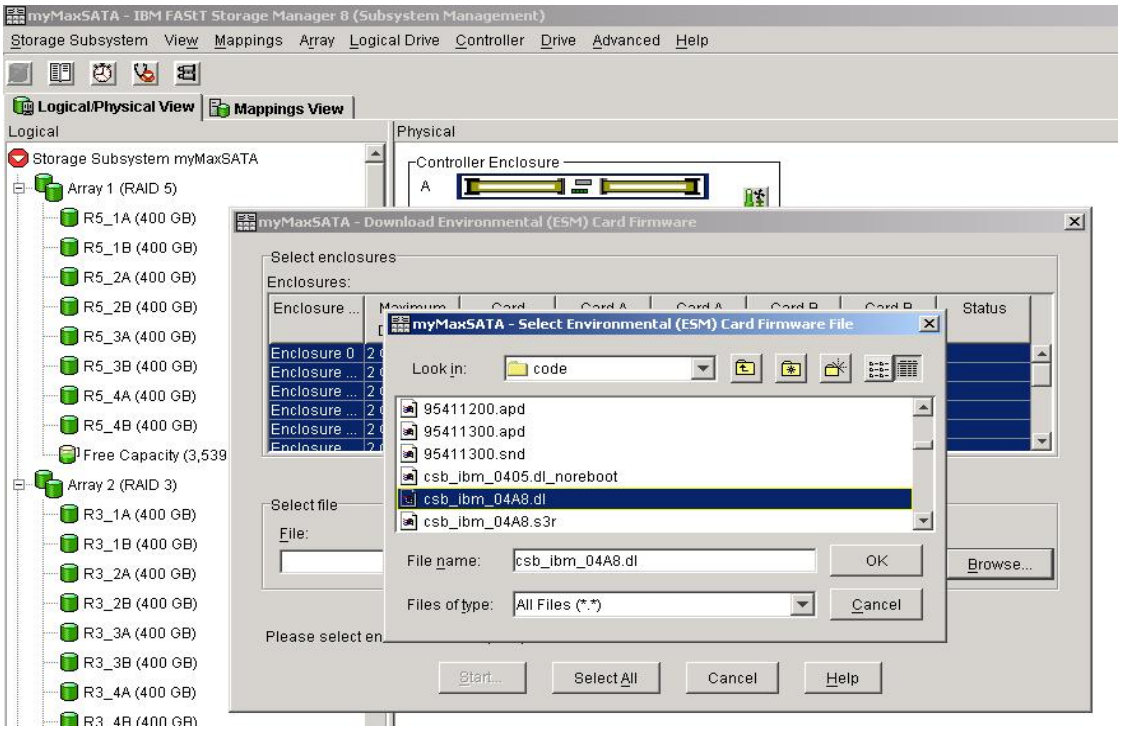

Figure 16:

5. If you change the Files of Type pull-down list to select All Files, a warning window opens. Click OK when the warning window opens.

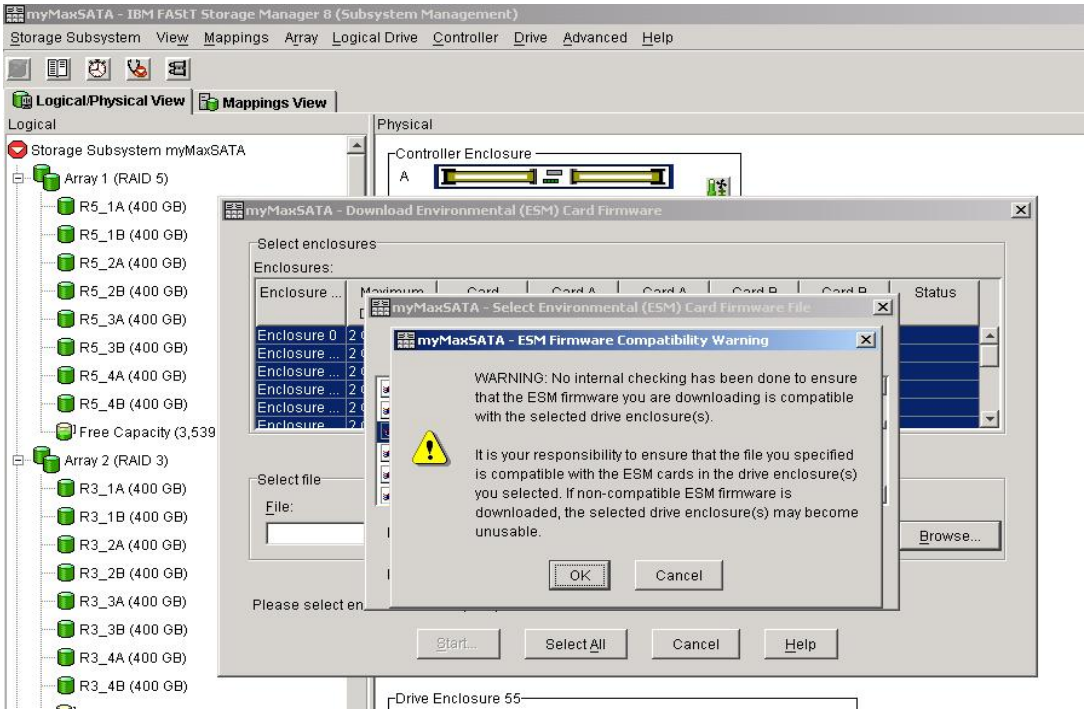

Figure 17:

6. Click Start to start the ESM firmware download

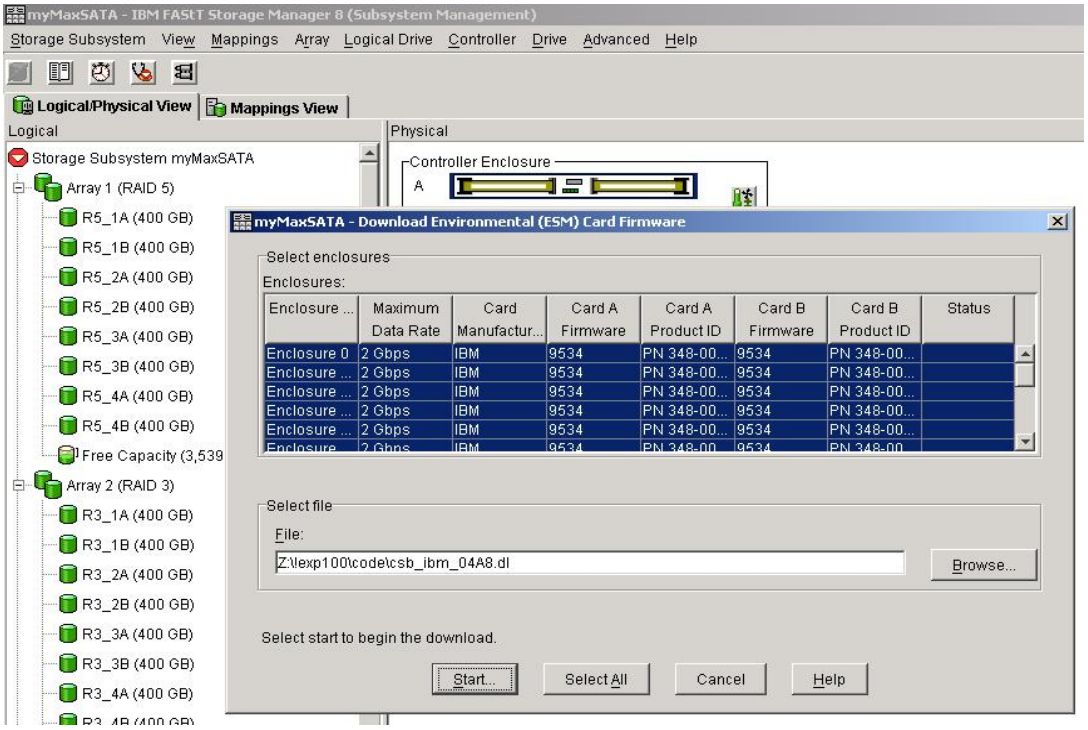

Figure 18:

7. Enter yes and click OK when the Confirm Download window opens.

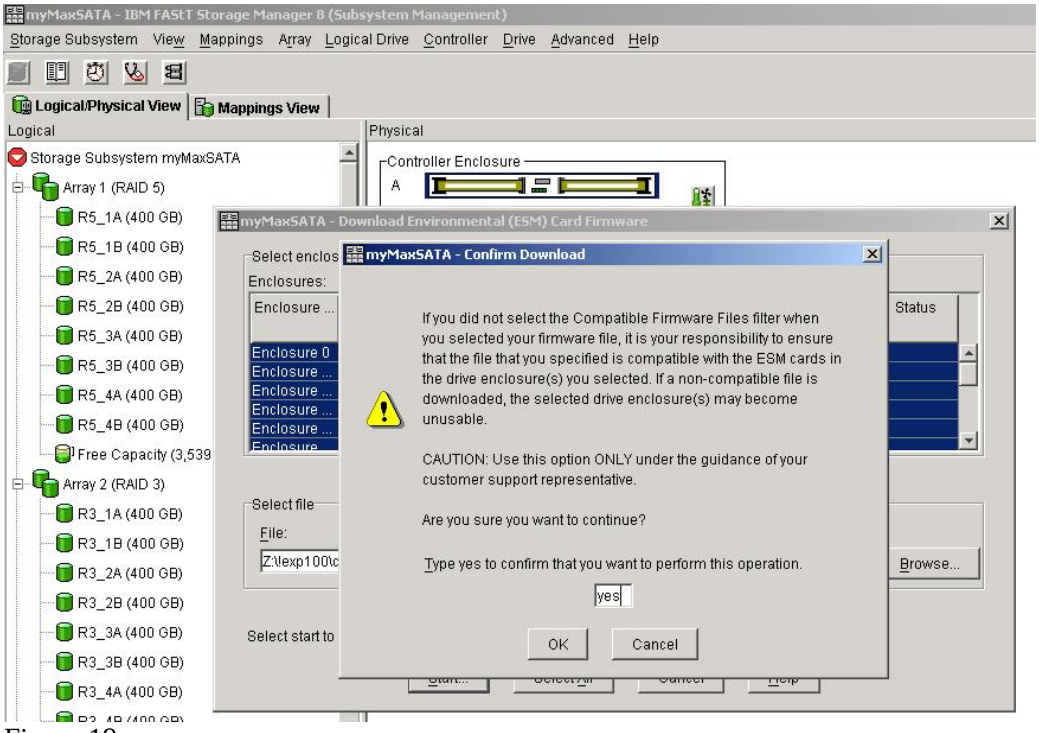

Figure 19:

8. The Confirm Download window will close and the Download Environmental (ESM) Card Firmware window will display the download progress of each enclosure in the status field.

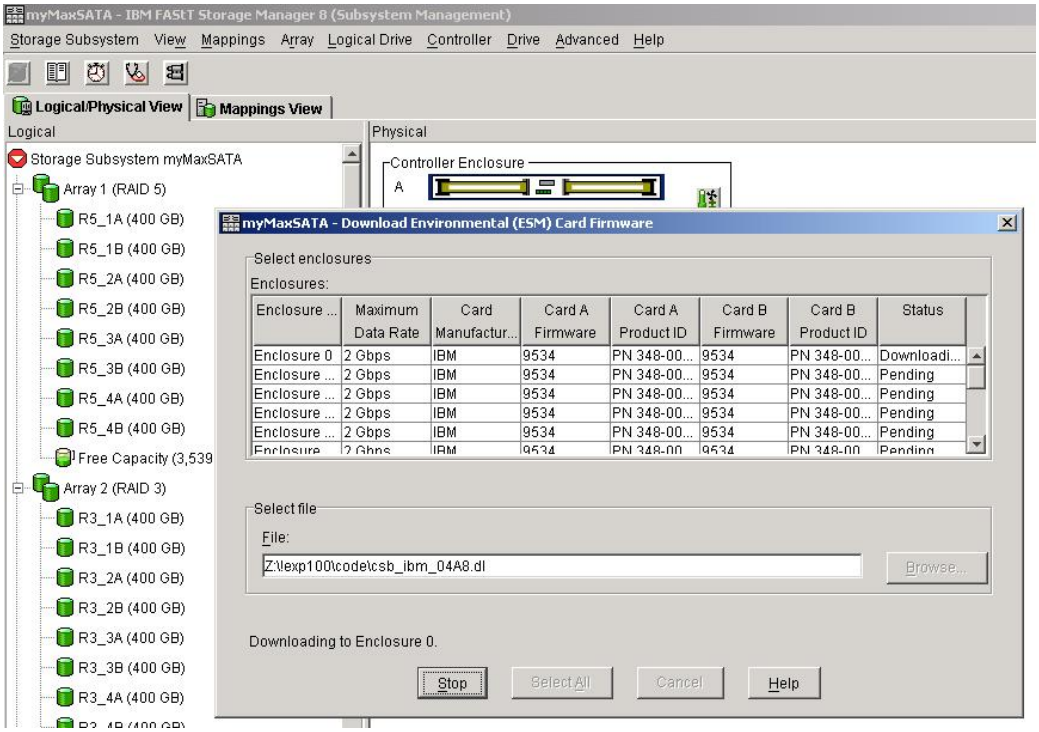

Figure 20:

9. The ESM firmware download is completed when the status fields of all enclosures showed the Complete status.

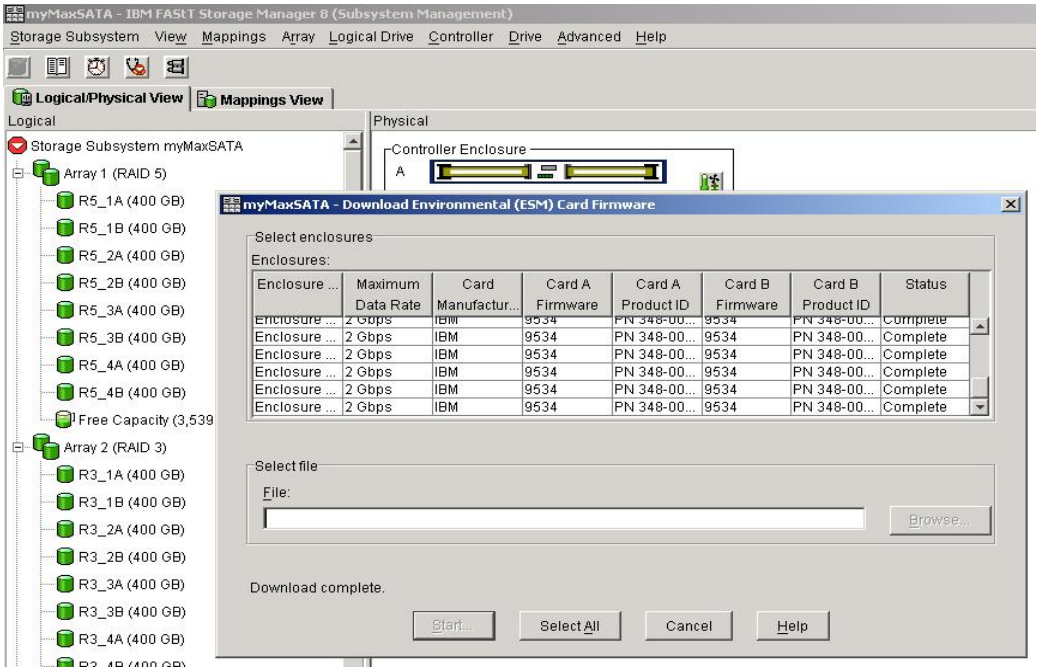

Figure 21:

10 For this ESM firmware update, a second ESM firmware file – esm953A.dl – is to be downloaded next. This file will take at least 5 times longer to download than the first ESM file. Select the enclosures to be updated with new firmware. You can select a particular enclosure, group of enclosures or all of the enclosures. To select all enclosures, click the Select All button.

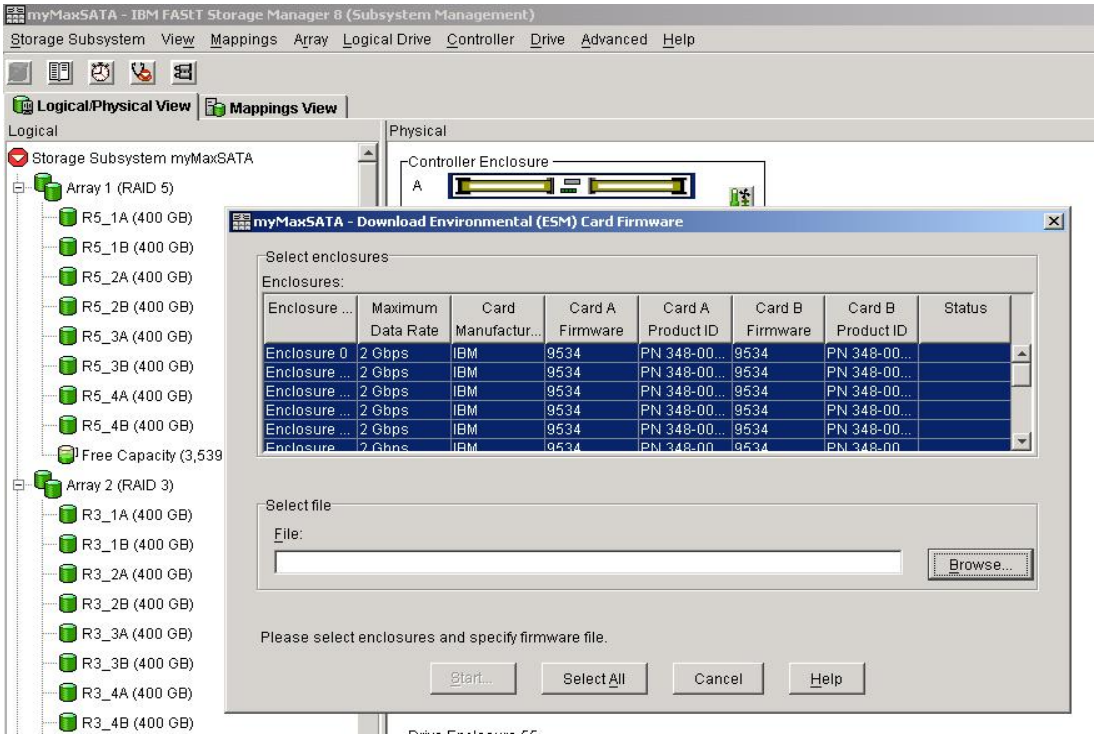

Figure 22:

11 Click Browse to open the Select Environmental (ESM) Card Firmware File window. Select the directory that the ESM firmware file resides and select the name of the ESM firmware file. You might have to change the Files of Type pull-down list to select All Files (*.*) in order to get the file names displayed for selection. Click OK to continue.

IMPORTANT: Always refer to table 1 for the correct EXP100 ESM firmware filenames that are required for the upgrade. The filenames in the attached screenshots are for illustrative purposes only

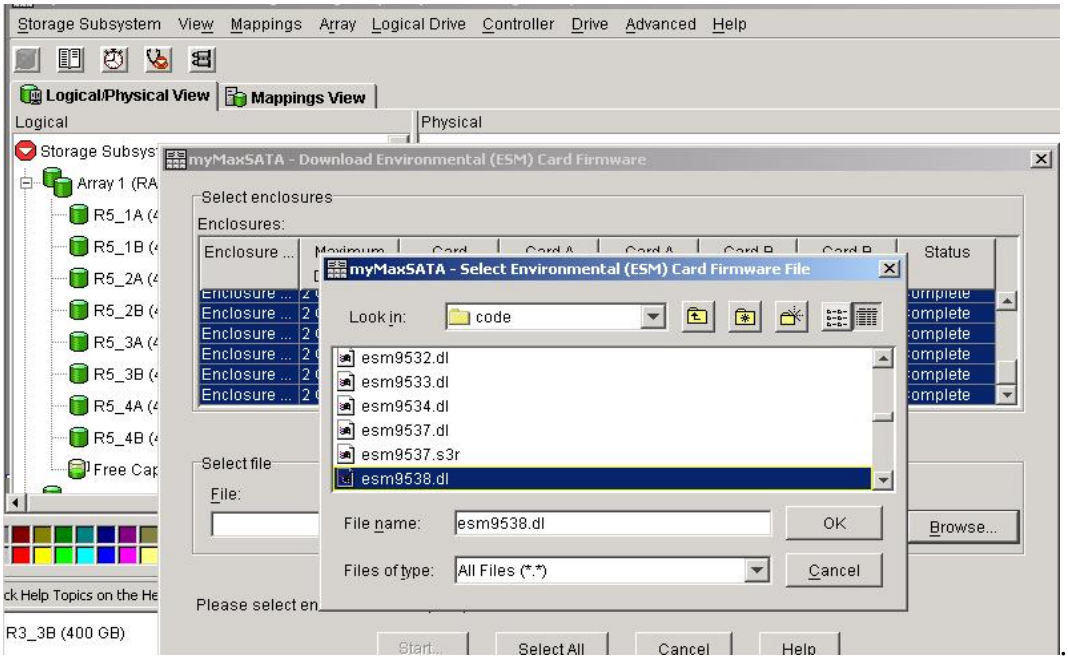

Figure 23:

11. If you change the Files of Type pull-down list to select All Files, a warning window opens. Click OK when the warning window opens

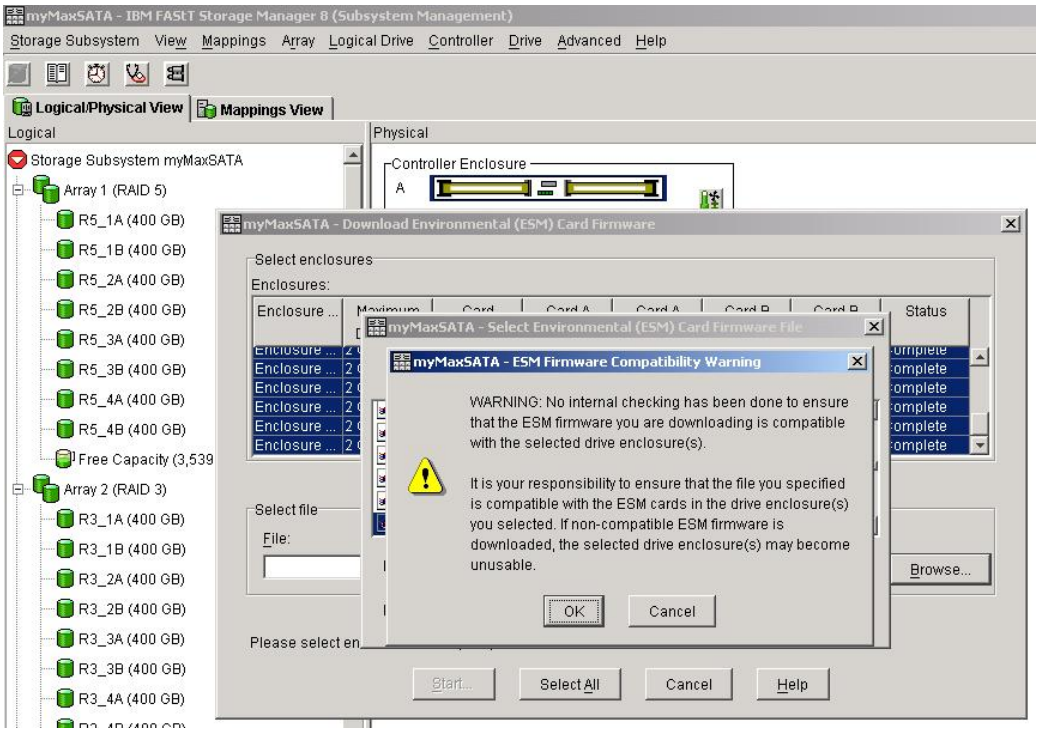

Figure 24:

12. Click Start button in the Download Environmental (ESM) Card Firmware window to start the ESM firmware download. Then, enter yes and click OK when the Confirm Download window opens

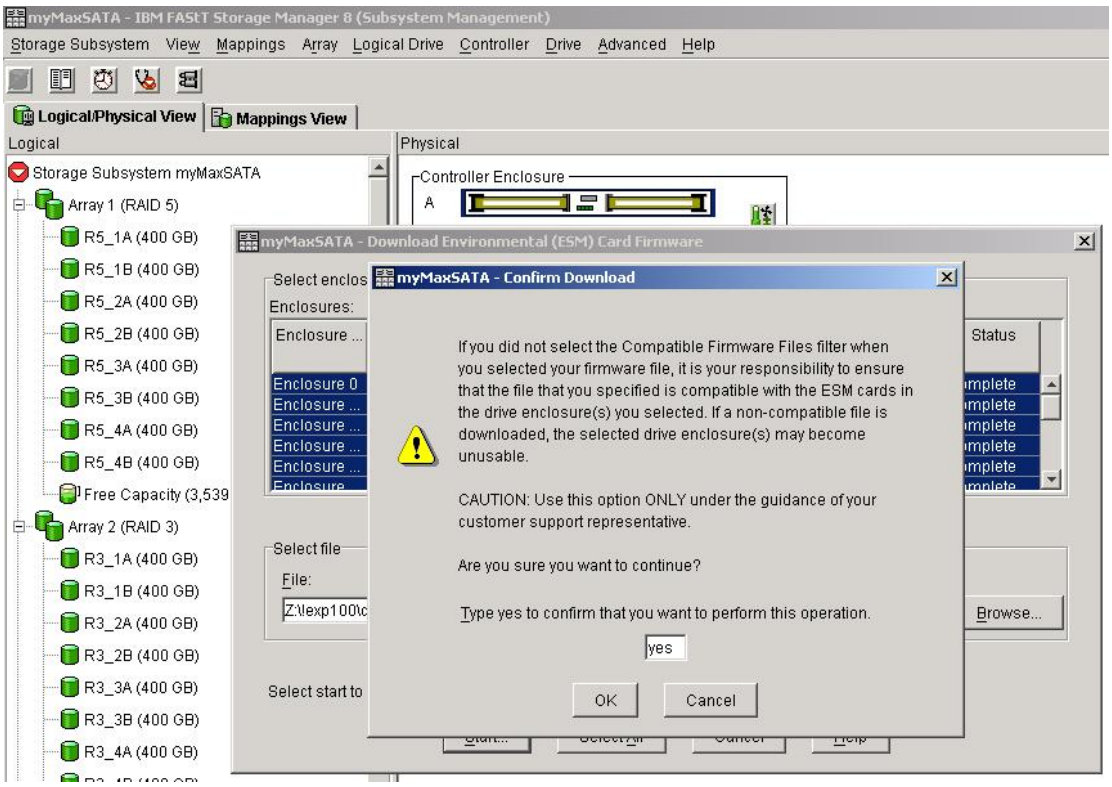

Figure 25:

13. The Confirm Download window will close and the Download Environmental (ESM) Card Firmware window will display the download progress of each enclosure in the status field.

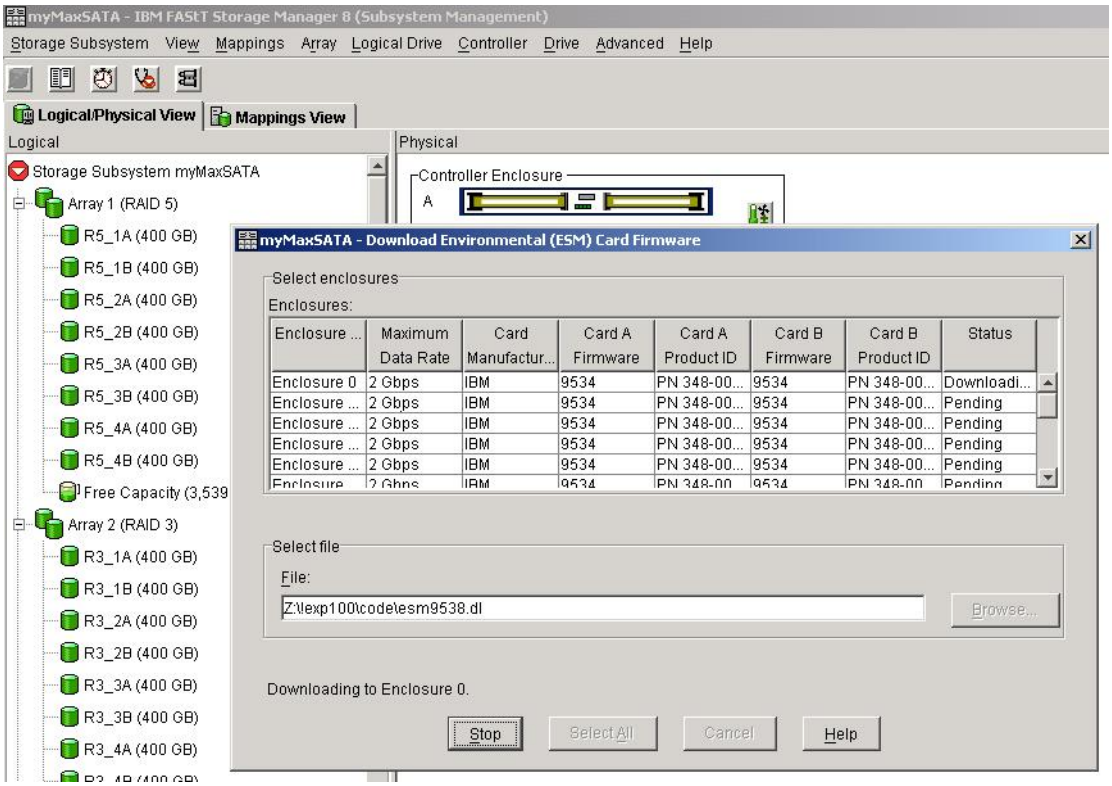

Figure 26:

14. The ESM firmware download is completed when the status fields of all enclosures showed the Complete status. Click Cancel button to close the Download Environmental (ESM) Card Firmware window.

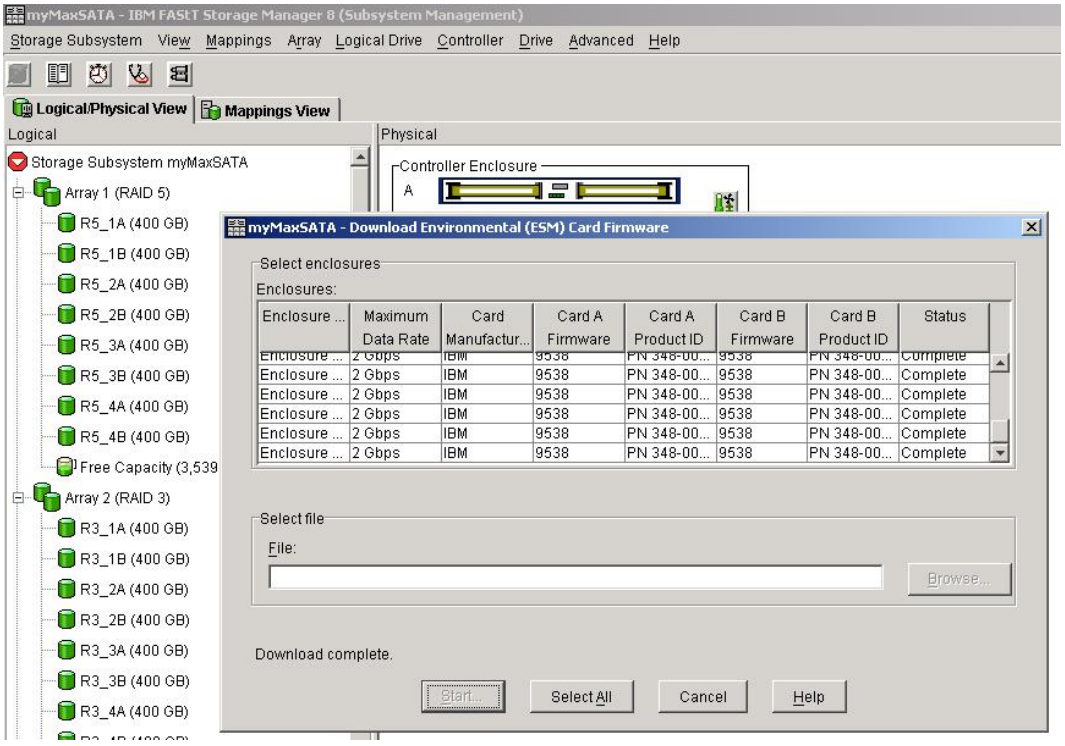

Figure 27:

15. Close the Subsystem Management window and the FAST Storage Manager Client Enterprise window.

Done

1. Undo the tasks that were performed to quiesce IOs.
2. Restore IOs to the logical drives.

Problem recovery

You may encounter the following problems during the download.

Problems	**Actions**
During the FAStT storage server controller firmware or NVSRAM download process, you are presented with an error window stating that the download may be completed but the storage manager client was not able to communicate with the controller to verify the download.	Follow the error recovery procedure shown in the Error window. If the problem persists, contact IBM support.
During the EXP100 csb or ESM firmware download, you may be presented with an error window stating that the ESM firmware download to an enclosure failed. This enclosure will be marked with the word Failed in the status field. If there are other enclosures that are in the pending state to receive the new ESM firmware, those enclosures will have the word Cancelled in the status fields.	Restart the ESM firmware download to the enclosure(s) with the status of cancelled Then, make sure that there is not any ESM Loss of Path Redundancy error using the Recovery Guru icon in the Subsystem Management window. Follow the listed recovery procedure in the window to fix the problems and retry the download to the enclosure(s) that had the status of Failed. If the problem persists, contact IBM support.
Drive(s) mark failed during the firmware download causing the array to be placed in Degraded state	After all of the firmware download are complete, right click the failed drive and select Reconstruct. If the drive is reconstructed OK and becomes optimal, the drive is OK. If the drive is bad, it will fail during the reconstruction and it must be replaced.
Multiple drives mark failed during the firmware download causing the array to be placed in Failed state	Please contact IBM support for proper instructions to revive the failed array(s).