

Installation Instructions
Update IBM 3581 Ultrium Tape Autoloader and Tape
Drive Firmware



3581FirmwareUpdateInstructions Version 1.0 04 SEP 03

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Update IBM 3581 Autoloader and Tape Drive Firmware

Document 3581FirmwareUpdateInstructions Version 1.0

Written by: B. Schweitzer
Checked by: C. Kovalik, R. Roberts, S. Trail, E. Bengds
Approved by: T. Poulton, P. Webster
S.P. Reviewed by: S. Moulton
Status: Field Use
Note: This Install Instruction must be used only on the 3581 L13/H13/L17/H17/L23/H23.

Version 1.0				
04 SEP 03				

Before Installation (Section 1 through 8)

1.0 Machines/Models Affected

This Install Instruction updates firmware on one or more of the following IBM 3581 model L13/H13/L17/H17/L23/H23 devices:

- LTO Ultrium 2 Tape Drive
- Autoloader

2.0 Prerequisite/Concurrent/Companion

Visit <http://www.ibm.com/storage/lto> and do the following:

1. Sign up on the LTO subscription page (if not already)
 - a. In the left hand column click on **Technical Support**.
 - b. Under the Technical support column click on **Tape Storage**.
 - c. In the left hand column click on **LTO Subscriptions**.
 - d. Sign up by entering a valid email address. Select all LTO products or select just the one that pertains to you.
2. While at the website, look under the **Technical Support** section to download the latest levels of drive and library firmware to a temp directory.

To determine the version of Autolader code using the 3581 display, select **diag Menu** and then select option 1 **dsp FW**. Write down the firmware version of each drive for use later in this procedure.

To determine the version of drive code using the 3581 display, select **diag Menu** and then select option 1 **dsp FW**. Write down the firmware version of each drive for use later in this procedure.

Table 1. Firmware levels

Device	Currently Installed Firmware Levels	Latest Firmware Level on Web
LTO Ultrium 1 Tape Drive SCSI		
LTO Ultrium 2 Tape Drive SCSI		
Autoloader		

3.0 Bills of Material to be Installed

None

4.0 Preparation

- Read and understand the purpose and details of this installation instruction.

5.0 Program Updates

None

6.0 Purpose and Description

Note: IBM recommends that you visit the LTO web site at <http://www.ibm.com/storage/lto> periodically to ensure your machines are always at the latest available version, and that you download the latest version and install it on your machine if they are not.

7.0 Installation Time

Total time for the Autoloader and drive firmware update will be approximately 1 hour.

8.0 Special Tools and Materials Required

None

Installation (Sections 9, 10, 11 and 12)

9.0 Safety

None

10.0 Details of Installation

10.1 Determine the Autoloader Firmware Version

If you have not already done so, determine the version of Autoloader code using the 3581 display, select **diag Menu** and then select option 1 **dsp FW**. Write down the firmware version of the Autoloader and drives for use later in this procedure.

Note: To access the **diag Menu** options, press and hold down the **NEXT** operator panel button and then press and hold the **MODE** button for 5 seconds.

- If the Autoloader has a firmware version lower than level recorded in Table 1 on page 2 then you should install the new Autoloader firmware. See <http://www.ibm.com/storage/lto> to obtain the latest firmware. Go to “10.2 Update Autoloader Firmware.”
- If the Autoloader firmware is already at level recorded in Table 1 on page 2 or higher the Autoloader firmware has already been updated. Go to “10.3 Determine the Drive Firmware Version” on page 7.

Note: In most cases the host server provides alternate methods of determining the Inquiry information - including the code version - of attached SCSI devices. These methods (such as TapeUtil or NTUtil) may be used if you are familiar with them, but they are not covered in these instructions.

10.2 Update Autoloader Firmware

Attention: When updating Autoloader firmware, do not power-off the 3581 Autoloader for at least 5 minutes after the update is complete or the Autoloader may become unusable.

Review the following methods of updating Autoloader firmware to determine which method you should use:

- To update Autoloader firmware using SCSI, go to “10.2.2 Update Autoloader Firmware using SCSI.”
- To update Autoloader firmware using the Autoloader FMR cartridge, go to “10.2.3 Update Autoloader Firmware using an Autoloader FMR Tape” on page 7.

Note: The FMR method is only used when the autoloader is attached to an iSeries (AS/400) host server.

10.2.2 Update Autoloader Firmware using SCSI:

Use the following information to assist you in downloading Autoloader firmware from your server (host system) over the SCSI bus using the device drivers and utilities supplied by IBM.

For more detailed information about using the IBM device drivers and utilities (NTUTIL or TAPEUTIL), refer to the *IBM Ultrium Device Drivers Installation and User's Guide* (GA32-0430) that was shipped with the Autoloader. For the latest version of the User's Guide, visit the web at <http://www.ibm.com/storage/lto>.

- If the Autoloader is connected to a Windows server, go to “**10.2.2.1 Update the Autoloader firmware over the SCSI bus using NTUTIL (Windows).**”
- If the Autoloader is connected to a Unix server, go to “**10.2.2.2 Update the Autoloader firmware over the SCSI bus using TAPEUTIL (Unix)**” on page 6.

Note: Unix includes AIX, Sun Solaris, HP-UX, Linux, etc.

10.2.2.1 Update the Autoloader firmware over the SCSI bus using NTUTIL (Windows):

The following procedure describes how to update the Autoloader firmware using NTUTIL.

- ___ 1. If you have not already done so, install the IBM Ultrium Device Driver.
- ___ 2. If you are using a software application that utilizes a different device driver, you will need to stop that device driver and then start the IBM Ultrium NT Device Driver. To start or stop a device driver perform the following steps:
 - Windows NT:
 - ___ a. Click on the Windows START button.
 - ___ b. Select Settings, then click on Control Panel.
 - ___ c. Double-click on Devices.
 - ___ d. Scroll down to the device driver you want to start/stop.
 - ___ e. Click on the device driver to highlight it.
 - ___ f. Click on the Stop or Start button.

Note: If you are using a software application that utilizes a different device driver, you should set the IBM Ultrium Device Driver to Manual mode. To do this click on the device driver to highlight it, then click on the Startup button, select Manual, and click on OK.

- Windows 2000:
 - ___ a. Click on the Windows START button.
 - ___ b. Select Settings, then click on Control Panel.
 - ___ c. Double-click on Administrative Tools.
 - ___ d. Double-click on Computer Management.
 - ___ e. Click on Device Manager.
 - ___ f. Scroll down to the device driver you want to start/stop.
 - ___ g. Click on the device driver to highlight it.
 - ___ h. Click on the Stop or Start button.

Note: If you are using a software application that utilizes a different device driver, you should set the IBM Ultrium Device Driver to Manual mode. To do this click on the device driver to highlight it, then click on the Startup button, select Manual, and click on OK.

- ___ 3. Open a Command Prompt and change the prompt to the temporary directory where you downloaded and extracted the firmware file. As an example, if the firmware file is in C:\TEMP then type **CD \TEMP** and press Enter.
- ___ 4. Type **NTUTIL** and press Enter.
- ___ 5. Type **1** and press Enter to select Manual Test.
- ___ 6. Type **8** and press Enter to select Autoloader Mode.
- ___ 7. Type **88** and press Enter to select List registered devices.
- ___ 8. Write down the tape and Autoloader paths for use later in this procedure.
- ___ 9. Type **1** and press Enter to set device special file.
- ___ 10. Type the name of a tape path displayed in the previous step and press Enter. Then type the name of the Autoloader path displayed in the previous step and press Enter.
- ___ 11. Type **20** and press Enter to open both the drive and media changer. When prompted to select a Mode, type **1** and press Enter to select Read/Write mode.
- ___ 12. Type **49** and press Enter to issue an Inquiry to verify that you have established a connection to the Autoloader.
- ___ 13. At the NTUtil Command Prompt, type **82** to update microcode.
- ___ 14. Follow the instructions to select the device you want to update.

- ___ 15. When prompted to enter the FMR name, type the file name of the Autoloader firmware file **without the .fmr extension** and press Enter.

Note: Updating the Autoloader firmware using NTUtil takes about 10 minutes. When the firmware update process has been completed the Autoloader will reset itself and go through a normal power on process.

- ___ 16. Close the NTUTIL session.
- ___ 17. Verify that the firmware update completed successfully by checking the Autoloader firmware version as described in “10.1 Determine the Autoloader Firmware Version” on page 4.

- If the Autoloader firmware version is level recorded in Table 1 on page 2, the firmware update completed successfully. Go to “10.3 Determine the Drive Firmware Version” on page 7.

Note: Some backup application software packages will not reflect the firmware change until the registry is refreshed by rebooting the server.

- If the Autoloader firmware version is still lower than the level recorded in Table 1 on page 2, the firmware update failed. Retry the firmware update. If the error continues, contact your IBM Service representative.

10.2.2.2 Update the Autoloader firmware over the SCSI bus using TAPEUTIL (Unix):

The following procedure describes how to update the Autoloader firmware in the 3581 Tape Autoloader over the SCSI bus using TAPEUTIL.

Note: Note: Refer to the *IBM Ultrium Device Drivers Installation and User's Guide* (GA32-0430) for instructions on usage of the TAPEUTIL utility for the particular Operating System that the device is attached to. This document is also available on the IBM website, <http://www.ibm.com/storage/lto>. The instructions below are given as an example and refer to the AIX Operating System.

- ___ 1. Change the current directory to the temporary directory where the Autoloader firmware file is located.

Note: Make note of the exact filename of the firmware that is to be used (case sensitive).

- ___ 2. Ensure that the autoloader is **Available** (not just defined) to the A-Tape device driver by listing the devices. Use the command **lsdev -Cc tape**.
- ___ 3. Open a TAPEUTIL session.
- ___ 4. The operator panel will show the message “One moment, the Autoloader is booting...”.
- ___ 5. Select option 4 - tape drive service aids.
- ___ 6. Select microcode load.
- ___ 7. Select the Autoloader device you want to upgrade.
- ___ 8. Enter the exact filename you noted in step 1.
- ___ 9. Press F7 Commit.

Note: Updating the Autoloader firmware using TapeUtil takes about 10 minutes. When the firmware update process has been completed the Autoloader will reset itself and go through a normal power on process.

- ___ 10. Close the TAPEUTIL session.
- ___ 11. Verify that the firmware update completed successfully by checking the Autoloader firmware version as described in “10.1 Determine the Autoloader Firmware Version” on page 4.

- If the Autoloader firmware version is level recorded in Table 1 on page 2, the firmware update completed successfully. Go to “10.3 Determine the Drive Firmware Version” on page 7.

Note: Some backup application software packages will not reflect the firmware change until the registry is refreshed by rebooting the server.

- If the Autoloader firmware version is still lower than the level recorded in Table 1 on page 2, the firmware update failed. Retry the firmware update. If the error continues, contact your IBM Service representative.

10.2.3 Update Autoloader Firmware using an Autoloader FMR Tape:

Note: If using the FMR process order the FMR tape separately.

- ___ 1. Do not load it into the tape drive at this time, but have it ready to load later in this procedure.
- ___ 2. Make sure that the host application is not using the library or tape drive.
- ___ 3. Make sure that no tape cartridges are in the drives.
- ___ 4. Ensure that **LdR REAdY** appears on the message display.
- ___ 5. Press and hold the NEXT button and then the MODE button until **DIAG MENU** appears on the message display (approximately 5 seconds).
- ___ 6. Press MODE until **UPG LdR FW** appears on the message display.
- ___ 7. Press SELECT. **Ld FMR 2** blinks on the message display.
- ___ 8. If not already installed, insert an autoloader FMR tape into slot 2 then press SELECT to update the drive's firmware.
 - After a series of messages display, **READING FW** displays, the status lights alternate between on and off, and the activity bars appear and disappear rapidly to indicate drive activity. In addition, the POWER button is disabled during the update.
 - When the update process is completed, the autoloader unloads the tape and returns it to storage slot 2. **RMV SLOT 2** blinks on the message display.
- ___ 9. Remove the FMR tape from slot 2, then press SELECT. **LdR REAdY** displays.
- ___ 10. Cycle power (turn it off, then on) to activate the new firmware.

Note: Occasionally, after you update the autoloader's firmware, the buttons on the operator panel remain disabled (they become disabled in step 8 during the firmware update). If this happens, to cycle power and activate the new firmware you must unplug and replug the power cord from the autoloader.

- ___ 11. Record the autoloader firmware revision level on the Vital Product Data form.
- ___ 12. Verify that the firmware update completed successfully by checking the Autoloader firmware version as described in "10.1 Determine the Autoloader Firmware Version" on page 4.
 - If the Autoloader firmware version is level recorded in Table 1 on page 2, the firmware update completed successfully. Go to "10.3 Determine the Drive Firmware Version."

Note: Some backup application software packages will not reflect the firmware change until the registry is refreshed by rebooting the server.

- If the Autoloader firmware version is still lower than the level recorded in Table 1 on page 2, the firmware update failed. Retry the firmware update. If the error continues, contact your IBM Service representative.

10.3 Determine the Drive Firmware Version

If you have not already done so, determine the version of drive code using the 3581 display, **diag Menu** and then select option 1 **dsp FW**. Write down the firmware version of the Autoloader and drives for use later in this procedure.

Note: To access the **diag Menu** options, press and hold down the **NEXT** operator panel button and then press and hold the **MODE** button for 5 seconds.

- If any drive has a firmware version lower than the level recorded in Table 1 on page 2 then you should install the new drive firmware. See <http://www.ibm.com/storage/ltc> to obtain the latest firmware. Go to "10.4 Update Drive Firmware" on page 8.

- If the drive firmware is already at the level recorded in Table 1 on page 2 or higher the drive firmware has already been updated. Go to “10.1 Determine the Autoloader Firmware Version” on page 4.

Note: In most cases the host server provides alternate methods of determining the Inquiry information - including the code version - of attached SCSI devices. These methods (such as TapeUtil or NTUtil) may be used if you are familiar with them, but they are not covered in these instructions.

10.4 Update Drive Firmware

Attention: When updating drive firmware, do not power-off the 3581 Autoloader for at least 5 minutes after the update is complete or the drives may become unusable.

Review the following methods of updating drive firmware to determine which method you should use:

- To update drive firmware using SCSI, go to “10.4.2 Update Drive Firmware using SCSI.”
- To update drive firmware using an FMR tape, go to “10.4.3 Update Drive Firmware using an FMR tape” on page 10.

Note: The FMR tape method is only used when the Autoloader is attached to an iSeries (AS/400) host server.

10.4.2 Update Drive Firmware using SCSI:

Use the following information to assist you in downloading drive firmware from your server (host system) over the SCSI bus using the device drivers and utilities supplied by IBM.

For more detailed information about using the IBM device drivers and utilities (NTUTIL or TAPEUTIL), refer to the *IBM Ultrium Device Drivers Installation and User's Guide (GA32-0430)* that was shipped with the drive. For the latest version of the User's Guide, visit the web at <http://www.ibm.com/storage/lto>.

- If the drive is connected to a Windows server, go to “10.4.2.1 Update the drive firmware over the SCSI bus using NTUTIL (Windows).”
- If the drive is connected to a Unix server, go to “10.4.2.2 Update the tape drive firmware over the SCSI bus using TAPEUTIL (Unix)” on page 9.

Note: Unix includes AIX, Sun Solaris, HP-UX, Linux, etc.

10.4.2.1 Update the drive firmware over the SCSI bus using NTUTIL (Windows):

The following procedure describes how to update the drive firmware using NTUTIL.

- ___ 1. If you have not already done so, install the IBM Ultrium Device Driver.
- ___ 2. If you are using a software application that utilizes a different device driver, you will need to stop that device driver and then start the IBM Ultrium NT Device Driver. To start or stop a device driver perform the following steps:
 - Windows NT:
 - ___ a. Click on the Windows START button.
 - ___ b. Select Settings, then click on Control Panel.
 - ___ c. Double-click on Devices.
 - ___ d. Scroll down to the device driver you want to start/stop.
 - ___ e. Click on the device driver to highlight it.
 - ___ f. Click on the Stop or Start button.

Note: If you are using a software application that utilizes a different device driver, you should set the IBM Ultrium Device Driver to Manual mode. To do this click on the device driver to highlight it, then click on the Startup button, select Manual, and click on OK.

- Windows 2000:

- ___ a. Click on the Windows START button.
- ___ b. Select Settings, then click on Control Panel.
- ___ c. Double-click on Administrative Tools.
- ___ d. Double-click on Computer Management.
- ___ e. Click on Device Manager.
- ___ f. Scroll down to the device driver you want to start/stop.
- ___ g. Click on the device driver to highlight it.
- ___ h. Click on the Stop or Start button.

Note: If you are using a software application that utilizes a different device driver, you should set the IBM Ultrium Device Driver to Manual mode. To do this click on the device driver to highlight it, then click on the Startup button, select Manual, and click on OK.

- ___ 3. Open a Command Prompt and change the prompt to the temporary directory where you downloaded the firmware file. As an example, if the firmware file is in C:\TEMP then type **CD \TEMP** and press Enter.
- ___ 4. Type **NTUTIL** and press Enter.
- ___ 5. Type **1** and press Enter to select Manual Test.
- ___ 6. Type **88** and press Enter to select List registered devices.
- ___ 7. Write down the tape and Autoloader paths for use later in this procedure.
- ___ 8. Type **1** and press Enter to set device special file.
- ___ 9. Type the name of a tape path displayed in the previous step and press Enter. Then type the name of the Autoloader path displayed in the previous step and press Enter.
- ___ 10. Type **20** and press Enter to open both the drive and media changer. When prompted to select a Mode, type **1** and press Enter to select Read/Write mode.
- ___ 11. Type **49** and press Enter to issue an Inquiry to verify that you have established a connection to the Autoloader.
- ___ 12. At the NTUtil Command Prompt, type **82** to update microcode.
- ___ 13. Follow the instructions to select the device you want to update.
- ___ 14. When prompted to enter the FMR name, type the file name of the drive firmware file **without the .ro extension** and press Enter.

Note: Updating the drive firmware using NTUtil takes about 10 minutes. When the firmware update process has been completed the Autoloader will reset itself and go through a normal power on process.

- ___ 15. Close the NTUTIL session.
- ___ 16. Verify that the firmware update completed successfully by checking the drive firmware version as described in “10.3 Determine the Drive Firmware Version” on page 7.
 - If the drive firmware version is the level recorded in Table 1 on page 2, the firmware update completed successfully.

Note: Some backup application software packages will not reflect the firmware change until the registry is refreshed by rebooting the server.

- If the drive firmware version is still lower than the level recorded in Table 1 on page 2, the firmware update failed. Retry the firmware update. If the error continues, contact your IBM Service representative.

10.4.2.2 Update the tape drive firmware over the SCSI bus using TAPEUTIL (Unix):

The following procedure describes how to update the drive firmware in the 3581 Tape Autoloader over the SCSI bus using TAPEUTIL.

Note: Refer to the *IBM Ultrium Device Drivers Installation and User's Guide (GA32-0430)* for instructions on usage of the TAPEUTIL utility for the particular Operating System that the device is attached to. This document is also available on the IBM website, <http://www.ibm.com/storage/ltc>. The instructions below are given as an example and refer to the AIX Operating System.

- ___ 1. Change the current directory to the temporary directory where the drive firmware file is located.

Note: Make note of the exact filename of the firmware that is to be used (case sensitive).

- ___ 2. Ensure that the drive is **Available** (not just defined) to the A-Tape device driver by listing the devices. Use the command **lsdev -Cc tape**.
- ___ 3. Open a TAPEUTIL session.
- ___ 4. Select option 4 - tape drive service aids.
- ___ 5. Select microcode load.
- ___ 6. Select the tape drive device you want to upgrade.
- ___ 7. Enter the exact filename you noted in step 1.
- ___ 8. Press F7 Commit.

Note: Updating the tape drive firmware using TapeUtil takes about 5 minutes. When the firmware update process has been completed the tape drive will reset itself and go through a normal power on process.

- ___ 9. Close the TAPEUTIL session.
- ___ 10. Verify that the tape drive firmware update completed successfully by checking the tape drive firmware version as described in "10.3 Determine the Drive Firmware Version" on page 7.
 - If the tape drive firmware version is the level recorded in Table 1 on page 2, the firmware update completed successfully.

Note: Some backup application software packages will not reflect the firmware change until the registry is refreshed by rebooting the server.

- If the tape drive firmware version is still lower than the level recorded in Table 1 on page 2, the firmware update failed. Retry the firmware update. If the error continues, contact your IBM Service representative.

10.4.3 Update Drive Firmware using an FMR tape:

Note: If using the FMR process order the FMR tape separately.

- ___ 1. Do not load it into the tape drive at this time, but have it ready to load later in this procedure.
- ___ 2. Make sure that the host application is not using the Autoloader or tape drive.
- ___ 3. Make sure that no tape cartridges are in the drives.
- ___ 4. Ensure that **LdR REAdY** appears on the message display.
- ___ 5. Press and hold the NEXT button and then the MODE button until **DIAG MENU** appears on the message display (approximately 5 seconds).
- ___ 6. Press MODE until **UPG dRV FW** appears on the message display.
- ___ 7. Press SELECT. **Ld FMR 2** blinks on the message display.
- ___ 8. If not already installed, insert a drive FMR tape into slot 2 then press SELECT to update the drive's firmware.
 - After a series of messages display, **REAdING FW** displays, the status lights alternate between on and off, and the activity bars appear and disappear rapidly to indicate drive activity. In addition, the POWER button is disabled during the update.
 - When the update process is completed, the autoloader unloads the tape and returns it to storage slot 2. **RMV SLOT 2** blinks on the message display.

- ___ 9. Remove the FMR tape from slot 2, then press SELECT. The drive automatically reboots and **LdR REAdY** displays.
- ___ 10. Record the drive firmware revision level on the Vital Product Data form.
- ___ 11. Verify that the firmware update completed successfully by checking the drive firmware version as described in “10.3 Determine the Drive Firmware Version” on page 7.
 - If the drive firmware version is the level recorded in Table 1 on page 2, the firmware update completed successfully.

Note: Some backup application software packages will not reflect the firmware change until the registry is refreshed by rebooting the server.

- If the drive firmware version is still lower than the level recorded in Table 1 on page 2, the firmware update failed. Retry the firmware update. If the error continues, contact your IBM Service representative.

11.0 Test Procedures

None

12.0 Field Updating

None

After Installation (Sections 13 through 15)

13.0 Publications Update

None

14.0 Parts Disposition

None

15.0 Machine Records

None