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**Drivers & software**

# HPE Ultrium 45000 LTO-9 Secure Mode Tape Drive Firmware

Type:                          Firmware
Version:                       S2S1 (Secure Mode Only)(5 Aug 2025)
Upgrade Requirement:           Recommended
Operating System(s):           OS Independent

# Description

This firmware version is for use only when using Secure Mode with hardware-based encryption. To enable Secure Mode, Secure Mode firmware must be installed before you can activate the feature from the library RMI. For details, see the library user guide and the HPE Storage MSL Tape Libraries Encryption Key Server Configuration Guide.

# Release Notes

**End User License Agreements:**
HPE Software License Agreement v1
(https://downloads.hpe.com/pub/softlib2/software1/doc/p1796552785/v113125/eula-en.html)

**Important:**

## HPE GPG Signature Verification

The .sig files on this page can be used with GPG to validate and verify the digital signature of the .frm firmware files on this page.
GPG Signature Verification Procedure:
Verify the signature by running 'gpg --verify ' Name.of.Sig.File'
Note: The HPE Public Key, hpePublicKey2048_key1.pub (fingerprint: 26C2B797), is required to support signature verification and is available from the HPE Software Delivery Repository (SDR) (https://downloads.linux.hpe.com/SDR/keys.html (https://downloads.linux.hpe.com/SDR/keys.html)). Download the HPE Public key and import the key using "gpg --import hpePublicKey2048_key1.pub" command before running the verification command.

## HPE Storage 1/8 Tape Autoloader and MSL Tape Libraries

## Ultrium 45000 LTO-9 Version S2S1 Secure Mode Firmware

## Release Notes

Abstract

This document provides information about enhancements and fixes to the firmware for the LTO-9 Ultrium 45000 tape drives used with the HPE Storage 1/8 Tape Autoloader and MSL2024, MSL3040, and MSL6480 Tape Libraries. This document also provides instructions for updating the tape drive firmware.
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# Release Notes

## Description

**NOTE:**
This firmware version is for use only when using Secure Mode with hardware-based encryption. To enable Secure Mode, Secure Mode firmware must be installed before you can activate the feature from the library RMI. For details, see the library user guide and the HPE Storage MSL Tape Libraries Encryption Key Server Configuration Guide.
This release includes Secure Mode tape drive firmware for Ultrium 45000 tape drives in HPE Storage 1/8 Tape Autoloaders and MSL2024, MSL3040, and MSL6480 Tape Libraries.
**NOTE:**
The MSL4048, MSL8048, and MSL8096 Tape Libraries do not support LTO-9 tape drives.
The tape drive firmware can be updated through any of the following methods:
- Remote management interface (RMI)
- Operator control panel (OCP)
- HPE Library and Tape Tools (L&TT)
- HPE Command View for Tape Libraries (CVTL)

Tape drive firmware version: S2S1
Effective date: August 2025

## Update recommendation

Update recommendation: Recommended

## Supersede information

Supersedes: R3G3 and all previous version of LTO-9 tape drive firmware.

## Product models

This release applies to the following HPE Storage product models:

- 1/8 Tape Autoloader with an Ultrium 45000 SAS or FC tape drive
- MSL2024 Tape Library with one or more Ultrium 45000 SAS or FC tape drives
- MSL3040 Tape Library with one or more Ultrium 45000 SAS or FC tape drives
- MSL6480 Tape Library with one or more Ultrium 45000 SAS or FC tape drives

**NOTE:** 1/8 Autoloader refers to 1/8 G2 Autoloader and 1/8 G3 Autoloader unless explicitly stated.

## Operating systems

The release is not OS-dependent.

## Languages

Languages supported for this release:
- English (American)
- English (International)

## Compatibility notes

This version of LTO-9 Ultrium 45000 firmware is compatible with:
- HPE Library and Tape Tools (L&TT) standalone version 6.6 and newer
- Command View for Tape Libraries (Command View TL) version 6.5.64 and newer
- TapeAssure Advanced (license installed from and used with Command View TL 6.5.64 and newer)
- Data Verification (license installed from and used with Command View TL 6.5.64 and newer)

## Enhancements

- Reduced time to perform a Mid-Tape Recovery (MTR), if a drive has been powered on with a tape loaded.
- Tape transport improvement during WRITE and READ operations.
- Improved error recovery procedures to reduce occurrence of errors during LOAD and READ operations.
- Optimized the tape tension control for better LOAD/WRITE/READ performance.
- Added a new Cartridge Memory (CM) attribute (0C00h) to report EOD validity per partition.
- Improved drive logging to aid failure analysis.

## Fixes

- Fixed a LOAD failure issue after a Cartridge Memory (CM) check failure.
- Fixed an issue where a drive could become unresponsive after a 2E1B drive error.
- Fixed an issue where a drive could become unresponsive if a LOAD command is received during MTR.
- Fixed WRITE append errors due to invalid media position information.
- Fixed issues that could cause the drive to become unresponsive during WRITE/READ operations.
- Fixed an issue where an UNLOAD during cartridge initialization could cause the drive to become unresponsive.
- Fixed a cartridge eject issue after drive error 2E01 during a LOAD operation.
- Fixed a Position Error Signal (PES) error after exiting power-saving mode.
- Fixed an issue at the end-of-tape or wrap turnarounds that could cause WRITE/READ errors to be reported.
- Fixed an issue where a SAS drive could unexpectedly reset when the SAS task set is full.
- Fixed an internal SAS loopback test.
- Fixed a 7250 drive error when the host connection is terminated by the tape library.

- Fixed an issue where the library set drive serial number in LP14:0041h may have two invalid trailing bytes.

## Installation instructions

About this task
**NOTE:**
This firmware version is for use only when using Secure Mode with hardware-based encryption. To enable Secure Mode, Secure Mode firmware must be installed before you can activate the feature from the library RMI. For details, see the library user guide and the HPE Storage MSL Tape Libraries Encryption Key Server Configuration Guide.
See **Downloading firmware** for instructions to download from the Hewlett Packard Enterprise support website.
Procedure

- **1/8 G3 Tape Autoloader, MSL3040 or MSL6480 RMI**
    1. Log in to the RMI as the administrator user.
    2. Navigate to the Maintenance > Firmware Upgrades > Drive Firmware screen. The tape drives are organized by drive type.
    3. Select a drive or group of drives to update.
    4. Click Choose File, and then select the file from the local computer.
    5. Click Submit.
- **1/8 G3 Tape Autoloader OCP**
    1. Copy the firmware file to a USB flash drive.
    2. Log in to the OCP as the administrator user.
    3. Insert the USB flash drive into the USB port on the front of the library.
    4. Navigate to Maintenance > Upgrade Drive from USB Device, and follow the prompts to begin the firmware upgrade.
- **MSL3040 OCP**
    1. Copy the firmware file to a USB flash drive.
    2. Log in to the OCP as the administrator user.
    3. Insert the USB flash drive into the USB port on the front of the library.
    4. Navigate to Maintenance > Drive Firmware Upgrade, and follow the prompts to begin the firmware upgrade.
- **MSL6480 OCP**
    1. Copy the firmware file to a USB flash drive.
    2. Log in to the OCP as the administrator user.
    3. Insert the USB flash drive into the USB port on the front of the library.
    4. Navigate to Maintenance > Firmware Upgrades > Drive Firmware, and follow the prompts to begin the firmware upgrade.
- **1/8 G2 Tape Autoloader or MSL2024 RMI**
    1. Log in to the RMI as the administrator user.
    2. In the Support: Firmware age, select the tape drive, browse to the location of the tape drive firmware file, and click Update.
    3. Repeat step 3 to update firmware for additional tape drives in the library.
- **1/8 G2 Tape Autoloader or MSL2024 OCP**
    1. Copy the firmware onto the USB flash drive.
    2. Insert the USB flash drive into the USB port on the back of the autoloader or library.
    3. From the Home screen, press Next until the screen displays Support. Press Enter to select.
    4. Press Next until the screen displays Drive FW upgrade. Press Enter to select.
    5. Enter the administrator password if prompted.
    6. Select Drive FW upgrade by USB and press Enter.
    7. Press Next until the screen displays the filename of the tape drive firmware file on the USB drive. Press Enter to select the firmware file.

8. When the upgrade is complete, remove the USB flash drive from the USB port.

### Downloading firmware

Procedure

1. Go to the Hewlett Packard Enterprise support website **https://www.hpe.com/support/storage (https://www.hpe.com/support/storage)**.
2. Enter a product name and firmware version in the Search field and press Enter.
   The search result is displayed.
3. Select the Drivers and Software tab.
4. In the search results, confirm the firmware by the product name and by the version listed for the latest version.

## Related information

The latest documentation for your tape product is available on the Hewlett Packard Enterprise Support Center at **https://www.hpe.com/support (https://www.hpe.com/support)**.
Locate the user and service guide for your product, which provides the most complete information about installation and operation.

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# Revision History

**Version**
S2S1 (Secure Mode Only)(5 Aug 2025)
**Version**
R3G3 (Secure Mode Only)(9 Sep 2024)
**Version**
Q3F9 (Secure Mode Only)(9 Aug 2023)
**Version**
PA61 (Secure Mode Only)(21 Oct 2022)
**Version**
P371 (Secure Mode Only)(29 Apr 2022)

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