



Monitor Upgrade Solution v2.0

Linux User's Guide

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Version History

<i>Version</i>	<i>Date</i>	<i>Change Description</i>
1.00	13/01/2014	Draft Copy
1.01	13/02/2014	-Added Section for Rpm -Uvh Support -Added Note for Supported packages (MUS 2.0 OP will only use MUS 2.0 UPs)
1.02	24/04/2014	-Added section for Known Limitations -Modified Touch Configurations Section
1.03	09/05/2014	-Modified latest known UP for 6149-5xx monitors
1.04	19/05/2014	-Added known limitation for unplugging USB while updating 6149 Monitor firmware.
1.05	21/05/2014	-Added known limitation for libusb-1.0 segmentation fault issue
1.06	27/05/2014	-Updated TOC
1.07	03/06/2014	-Updated list of recovery scenarios when flashing touch firmware with 48202LX5LX
1.08	05/06/2014	-Added note regarding the duration of the FW update recovery
1.09	06/08/2014	-Removed the first known limitation in version 1.08 of this document as it is already supported in MUS OP 2.0-18
1.10	13/05/2015	-Fixed typos and formatting

1 Introduction to MUS

1.1 What is Monitor Upgrade Solution

The Monitor Upgrade Solution (MUS) is a solution by Toshiba Global Commerce Solutions, Inc. to perform silent and remote updating of the Touch and Video Firmware of Toshiba Monitor types 4820_21x/51x , 4820_2Lx/5Lx and 6149-5xx . Monitor Upgrade Solution is composed of two parts.

- First is the Operational Package (OP), this is needed to be pre-installed to the system for the MUS solution to operate. This is the base mechanism for upgrading. It contains the monitor upgrade service and other support executables.
- Secondly, there will be an upgrade-specific upgrade package (UP) for the actual upgrade to be done. And this package is made when a critical firmware change is released by a vendor. So for example there may be a release of new firmware for 4820 21x/51x Video micro-controller - in this case a 4820 21x/51x Video firmware UP will be created by TGCS and tested. This will then be released to customers. Similarly another critical touch firmware change may be released by the touch vendor for 4820 2Lx/5Lx. Another UP will be created by TGCS, tested and released. Each upgrade is domain specific.

2 MUS Contents

2.1 Operational Package (OP)

This is the basic mechanism needed to perform firmware and other upgrades on a POS System with newer 4820 xLx and x1x models. It consists of Monitor Upgrade Service scripts which run at boot time in order to perform monitor upgrade tasks.

2.1.1 File format

The OP will be in an RPM in this format `<name>-<version>-<release>.<arch>.rpm`

Example: `toshiba-mus_op-suse-2.0-1.noarch.rpm`

2.1.2 Components of OP

The components included in the Operational Package are:

- ❖ Monitor Upgrade Service support scripts
- ❖ Video firmware update utility - **Sampo 4820MonUtil**
- ❖ Touch firmware update utilities - **elo_config and elo_download**
- ❖ Toshiba Video firmware update utility - **aipfwupdate**
- ❖ Ocular/Atmel Touch firmware update utilities - **mxt-app**

2.2 Upgrade Packages (UP)

The Upgrade Packages contain the actual Upgrade Tasks to be performed by the Monitor Upgrade Service.

Typically they provide the updated touch or video firmware files along with a manifest and any support files required. Each represents a compact atomic upgrade task.

UP Tasks are run by the Monitor Upgrade Service at system boot time.

2.2.1 File format

The UPs are also RPMs with format *name-version-release.arch.rpm*

RPM Dependency

Requires: toshiba-mus_op-suse >= 2.0

Example: toshiba-mus2.0_up_21x51x_touch-fw_010d-1.0-1.noarch.rpm

3 Pre Requisites

The following are the things that Monitor Upgrade Solution needs to work.

3.1 Linux OS Supports

- ❖ SLES 11 SP3 32-Bit
- ❖ SLED 11 SP3 32-Bit
- ❖ SLEPOS 11 SP3 32-Bit

3.1.1 Minimum Kernel Levels Needed

1. For "default" kernel setup
kernel-default-3.0.101-0.5.1.i586.rpm
kernel-default-base-3.0.101-0.5.1.i586.rpm
2. For "pae" kernel setup
kernel-pae-3.0.101-0.5.1.i586.rpm
kernel-pae-base-3.0.101-0.5.1.i586.rpm

3.2 Python 2.6 Environment

Python 2.6 is a default package included with SLES 11 and SLED 11, however SLEPOS sometimes may not have included Python 2.6. So a user needs to check if the SLEPOS environment has it.

Download the latest version of Python 2.6 in the link below if needed.

<http://www.python.org/download/releases/2.6.8/>

3.3 Zypper command line tool

Zypper is a default package included with SLES, SLED. If this package is not installed then the user needs to install this package.

For SLEPOS Users:

This is not a default package. Therefore, the user needs to include the Zypper package when they create their SLEPOS image.

4 Installing MUS

MUS 2.0 and MUS 1.0 are incompatible and cannot co-exist on the same system. If MUS 1.0 OP is installed in the system the user MUST uninstall this first before installing the new MUS 2.0 OP rpm file. This will ensure that there will be no file or driver conflicts between the two OPs.

4.1 Cleaning the system of a previous MUS 1.0 Install

Remove MUS 1.0 install file tree and binaries by using the uninstall script provided.

```
# /opt/toshiba/UNINSTALL/MUS_Uninstall
```

Important:

Also remove the independent elofousb-kmp kernel driver package using rpm uninstall

```
# rpm -ev elofousb-kmp-pae-1.0_3.0.13_0.27-4
```

```
# rpm -ev elofousb-kmp-default-1.0_3.0.13_0.27-4
```

4.2 MUS 2.0 OP Installation

Via RPM Install (Fresh Install)

Execute the following command:

```
# rpm -ivh toshiba-mus_op-suse-2.0-1.noarch.rpm
```

Via RPM Upgrade

Execute the following command:

```
# rpm -Uvh toshiba-mus_op-suse-2.0-1.noarch.rpm
```

Note: Rpm upgrade is only supported when the current installed MUS package is from version *toshiba-mus_op-suse-1.1-5.noarch.rpm* **onwards**. Versions lower than this are recommended to be uninstalled first and then perform the fresh installation.

This installs just the basic upgrade mechanisms. No Upgrade Tasks are installed yet.

4.3 MUS 2.0 UP Installations

Each Upgrade Task is contained in its own RPM package.

These RPMs will install UP task files under a folder called */opt/toshiba/mus/UpdateTasks/*. Each task (video, touch, touch configuration) will be installed into its appropriate part of the sub-tree.

Currently known MUS 2.0 UP Tasks:

Toshiba_POS_Monitor_Upgrade_Solution_Linux-User_Guide , May 13, 2015

- **Elo Touch Configuration Update**
File Name: toshiba-mus2.0_up_2xx5xx_touch-config_elo-1.0-**n**.noarch.rpm
- **4820-2Lx/5Lx USB touch monitor Touch Firmware Upgrade**
File Name: toshiba-mus2.0_up_2Lx5Lx_touch-fw_XXXX-1.0-**n**.noarch.rpm
- **4820-2Lx/5Lx USB touch monitor Video Firmware Upgrade**
File Name: toshiba-mus2.0_up_2Lx5Lx_video-fw_XXXX-1.0-**n**.noarch.rpm
- **4820-21x/51x USB touch monitor Touch Firmware Upgrade**
File Name: toshiba-mus2.0_up_21x51x_touch-fw_XXXX-1.0-**n**.noarch.rpm
- **4820-21x/51x USB touch monitor Video Firmware Upgrade**
File Name: toshiba-mus2.0_up_21x51x_video-fw_XXXX-1.0-**n**.noarch.rpm
- **6149-5CR USB touch monitor Touch Firmware Upgrade**
File Name: toshiba-mus2.0_up_6149_touch-fwXXXX_XXXX-1.0-**n**.noarch.rpm
- **6149-5CR USB touch monitor Video Firmware Upgrade**
File Name: toshiba-mus2.0_up_6149_video-XXXX_XXXX-1.0-**n**.noarch.rpm

A user may install “by hand” with RPM or Auto-install new UP Tasks by “dropping” the RPM package into a special folder called */opt/toshiba/mus/RpmUpdates* and having them installed at boot time.

NOTE:

1. **XXXX** is the version of the firmware.
2. **n** is the incremental version of the UP which normally contains bug fixes and always start from 1.

4.3.1 Install by hand

```
#rpm -ivh toshiba-mus2.0_up_21x51x_touch-fw_010d-1.0-1.noarch.rpm
```

4.3.2 Install at boot time (via RpmUpdates directory).

The */opt/toshiba/mus/RpmUpdates* is the directory where the UP RPMs must be placed when there are new UP available. These RPMs will get installed by the Monitor Upgrade Service on the next system reboot. After uninstallation, the RPM package will be removed from this directory.

5 MUS 2.0 UNINSTALLATION

5.1 MUS 2.0 UP Un-installation

Tasks may be uninstalled by a user via RPM at any time. This is not done by the Monitor Upgrade Service.

5.2 MUS 2.0 OP Un-installation

Run the script “*mus_uninstall_script*” found at the directory */opt/toshiba/mus*. This script takes care of dependencies created by the UP installations.

Note: Running an rpm command to uninstall the OP rpm will fail when one or more UP(s) are installed.

(i.e. # rpm -ev toshiba-mus_op-suse-2.0-1.noarch.rpm)

6 How MUS Works

The Monitor Upgrade Service is installed as a Linux Service. It will run at boot time. In the Normal case the Monitor Upgrade Service will run a Normal Update Cycle.

If there are recoverable failure scenarios encountered during the Normal Update Cycle the Monitor Upgrade Service will stop processing upgrades and reboot again in order to run a Recovery Cycle. A recoverable failure is one where the manufacturer has provided failure recovery as part of their supplied utility. An example of a recoverable failure scenario is when power is removed from the Monitor during the actual byte transfer update part of a video firmware update task for 4820.

Recoverable Scenarios:

1. Interruption when touch firmware flashing - 4820 2LX5LX Only

Supported Interruption:

A. Power Loss/ Unplug Power cable

2. Interruption when video firmware flashing

Supported Interruption:

A. Power Loss/ Unplug Power cable

Note: Please refer to the **Section 11. Known Limitations** for what is not currently supported type of firmware flash interruption. Configuration updates do not have any built-in recovery mechanism.

6.1 Normal Update Cycle

1. MUS will install any UP Task RPM packages it finds in RpmUpdates - if it is not already installed – and will then move the RPM files for successfully installed packages to: **/opt/toshiba/mus/ProcessedRpms**

NOTE: MUS 2.0 OP will not support UP task RPM other than those mention in the available UP Tasks in Section 4.3

2. After installing the UP Task RPM a new sub-tree folder corresponding to that update level is created.

Example: **/opt/toshiba/mus/UpdateTasks/Touch/toshiba-mus2.0_up_21x51x_touch-fw_010d/**

3. MUS will then check if there are any appropriate installed update tasks to be executed for any of the currently connected monitors.

This is done by comparing the current update level (both touch and video) of all attached monitors to the current greatest update level in all UP Task manifests.

4. MUS will then execute all the necessary update tasks in sequence (one or many).
5. Configuration Tasks will always be applied. This is much faster than querying USB controller devices and then deciding whether update is needed.
6. All tasks will be attempted and will only abort the processing if there is a task failure. If a task failed, then MUS will abort. If the task is recoverable, MUS will then reboot and perform a recovery cycle – see Section 6.2.

7. If there is no error then after any and all tasks are completed MUS will exit. There will be no reboot required.

6.2 Recovery Update Cycle

1. The recoverable task will be re-attempted using the specific recovery processing by the vendor support utility.
2. If recovery routine is successful, MUS will reboot the system one more time to put it back to working state.
3. If the recovery fails MUS will try to attempt recovery one more time.
4. If (all) recovery attempts have failed MUS will exit the Recovery cycle and then reboot the system to Normal update cycle. RECOMMENDED PROCEDURE at this point is to unplug and remove the affected monitor. Field Support may be required.
5. If the recovery succeeds, MUS will exit and reboot the system to bring it to a consistent state and boot into Normal update cycle.

NOTE: The duration of a single recovery, 1 firmware update, is approximately 10 minutes. The time may vary from system to system depending on its speed. The approximated time is from attempting to reboot the system, do the recovery routine, reboot the system again and boot to normal user session.

7 Updating Touch Configurations

7.1 4820_21x/51x and 4820_2Lx/5Lx Touch Configuration Update

1. Install UP rpm for Touch Configuration

NOTE: *MUS 2.0 OP will not support UP task RPM other than those mention in the available UP Tasks in Section 4.3*

2. Modify the configuration file “*/opt/toshiba/mus/UpdateTasks/TouchConfig/EloTouch/eloConfigOpt.ini*” for desired settings.
3. Reboot the system.
4. All attached 4820 monitors now should show the Touch configurations specify in the configuration file.

7.2 614x Touch Configuration Update

For 614x monitors, Touch Configurations are bundled together with the Firmware Update packages. This configuration is not intended to be modified by the user. If there are any touch configuration updates available, a new UP will be release and this will be the only way to update the existing configurations.

NOTE: This touch configuration will be loaded to all attached 614x Monitors every time the system reboots .This is to ensure that the monitors will always have the same configurations.

8 Updating Touch Firmware

1. Install UP rpm for new Touch Firmware or place this UP rpm at */opt/toshiba/mus/RpmUpdates* folder for auto install on boot-time.

NOTE: *MUS 2.0 OP will not support UP task RPM other than those mention in the available UP Tasks in Section 4.3*

2. Reboot the system
3. All attached designated monitors will now have the new Touch Firmware level.

9 Updating Video Firmware

1. Install UP rpm for new Video Firmware or place this UP rpm at */opt/toshiba/mus/RpmUpdates* folder for auto install on boot-time.

NOTE: *MUS 2.0 OP will not support UP task RPM other than those mention in the available UP Tasks in Section 4.3*

2. Reboot the system
3. All attached designated monitors will now have the new Video Firmware level.

10 MUS Directory Structure

Describe below are the well - known directories that the user can refer to about MUS.

10.1 MUS base directory

This will be the root directory for all of the upgrade solution functionality containing:

- ❖ OP support scripts (ex. ELO,SAMPO)
- ❖ UP RPM Directories
- ❖ Update Tasks Folder

MUS ROOT DIRECTORY

/opt/toshiba/mus/

10.2 Logs Directory

This directory contains the log for all MUS operations including OP Installation ,log history and the latest MUS log.

OP_INSTALLATION:

/var/log/toshiba/mus/op_installation/

LOG HISTORY:

/var/log/toshiba/mus/history/

LATEST LOG:

/var/log/toshiba/mus/latest/

11 Known Limitations

1. MUS 2.0 Linux does not support unplugging of power USB cable from the attached 6149 monitor while a firmware update is ongoing. Doing so will cause undesirable damage to the firmware and perhaps to the monitor itself.
2. A possible segmentation fault occurs when a configuration of both 6149 and 4820 Monitor types are attached in a system while performing a video firmware update for the 6149 Monitors. This is a known issue being thrown by the library libusb-1.0 version 1.0.8 when doing asynchronous bulk transfer. This library is being use by the video firmware update utility. To recover firmware update, the customer must remove the 4820 Monitors first before rebooting the system to trigger firmware update.