



eSTS Product Family Installation Manual

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Abstract

The LAVA eSTS Product Family permit the charging of select Samsung tablets while simultaneously interacting with USB accessories. The eSTS extended features include battery modulation, screen brightness management, and improved network operation.

This document describes the eSTS product setup and software installation procedure for the tablet.

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Introduction

Using a LAVA eSTS product requires the following installation steps:

- ❑ Obtain a copy of the “LAVA eSTS Software Release.ZIP” from LAVA Sales or Support
- ❑ Copy the LTM.INI file, to the Internal Storage folder of the tablet
- ❑ Install the LAVA Tablet Manager applications on the tablet
- ❑ Allow LAVA Tablet Manager to change system settings
- ❑ Enable a WiFi connection
- ❑ Enable the LTM application as a Device Administrator and activate the KNOX license
- ❑ Disable the WiFi connection (optional)
- ❑ Turn off the “auto screen brightness” on the Tablet
- ❑ Verify the time zone and time on the Tablet
- ❑ Connect the eSTS product to the Tablet with the supplied LAVA cable
- ❑ Apply power to the eSTS product

There are no jumpers to be set on an eSTS product required by the standard installation.

Do not plug in USB accessories during the initial setup. Always test a system in incremental steps and in the prescribed order.

This document describes each of the above steps in further detail.

Note: *The LAVA Tablet Manager **must** be installed on the tablet; else eSTS products restart the USB connection every few minutes.*

Note: *This document does not discuss issues related to the remote setup of a mobile device when using Samsung's KNOX Configure.*

LAVA eSTS Software Release Package

The “LAVA eSTS Software Release” package is provided by LAVA Sales or Support for eSTS customers. The file is named “LAVA eSTS Software Release.zip”. The package content can be extracted on a PC or Tablet with one of many decompression tools that are freely available.

LAVA eSTS Software Release - Files		
Item	File Name	Description
1	README.TXT	The README file is a summary of the release packages along with any last minute information.
2	LTM_v2.03.APK	The “LAVA Tablet Manager” application for earlier versions of Android, typically 5 and 6.
3	LTM_v3.01.APK	The “LAVA Tablet Manager” application for newer versions of Android, typically 7 and 8.
4	board-type=1\LTM.INI board-type=2\LTM.INI board-type=3\LTM.INI	The LTM.INI is the configuration file for the “LAVA Tablet Manager” application. The “board-type” parameter in the file must be matched to the Tablet. Three versions are present with the “board-type” already set.
5	LTM_Setup.APK	The “LTM Setup” utility allows the LTM.INI file to be viewed, modified, or created on a tablet.
6	LBI.APK	The “LAVA Battery Information” application is a free utility used to verify the battery charge status. Installation of this application is recommended for initial verification of an eSTS product. The LBI application can be removed once the device is operational.
7	eSTS Installation Manual.PDF	This is the document currently being read.
8	LAVA Battery Information Manual.PDF	The manual for the LAVA Battery Information application.

The LAVA Tablet Manager (LTM) is only available as part of the release package. A version of LTM **must** be installed to permit an eSTS to function. This application has no GUI component. The LTM application is not on GooglePlay due to the special installation steps required.

The eSTS applications are “sideloaded” onto the Tablet, rather than going through Google Play. To “sideload” an eSTS application, copy the APK file to a Tablet folder such as the Download folder. Using the “My Files”, locate and select the APK to begin the installation. You may have to permit installation from “Unknown sources” depending on your specific Tablet settings.

An alternative to copying the APKs to a Tablet folder is to place the files on a memory stick and use an OTG adapter such as the LAVA TL002 to make the files accessible by the Tablet.

Product Setup

Selecting the LTM.INI file

The LTM.INI file is the configuration file for the LAVA Tablet Manager (LTM) application. There are several samples of the file in the release package, each with minor adjustments.

LTM.INI FILE SELECTION	
Configuration File	Tablets
board-type=1\LTM.INI	Tab S2 9.7", Tab S2 8.0", and Tab E 8.0"
board-type=2\LTM.INI	Tab E 9.6", Tab A 9.7", and Tab A 8.0"
board-type=3\LTM.INI	Tab A 10.1"
Do not keep the "board-type=n" folder name, only copy the INI file to the Internal Storage folder.	

Once the LAVASynC+ product is working, you may customize the settings in LTM.INI file for your project. The "LAVASynC+ Product Family - Reference Manual" contains a detailed description of the INI file. The file format is UTF-8 (simple ASCII). Any simple text editor can be used to view and change an LTM.INI file. The mobile devices do not ship with a suitable editor for the INI file as a standard feature.

The "LTM Setup" utility allows the most common attributes in the LTM.ini file to be directly managed on the tablet.

The LTM application checks for updates to the LTM.INI file, which permits updates to the configuration to be made at any time.

Note: The LTM.INI files in this package are intended for eSTS products which support Ethernet. To use these LTM.INI files with the eSTS-3U, eSTS-1U-OEM, or eSTS-BM-OEM, please modify the LTM.INI so the command "permit-ethernet=0" is used, or use "LTM Setup" to disable Ethernet operation.

Selecting the version of LTM

There are two versions of the LAVA Tablet Manager (LTM) in the release package. The primary difference is support for the Samsung KNOX SDK.

The LTM v3.00 (and newer) works with tablets using KNOX 2.7 and newer. For the tablets available to LAVA as of October 2018, LTM v3.00 is compatible with devices running Android 7 and Android 8. All Samsung tablets running Android 8 have been observed to use KNOX 3.0 and newer.

The LTM v2.03 works with tablets running older versions of KNOX. There is an additional requirement to support the KNOX Standard SDK v5.1 or newer. The tablets identified as having been tested with eSTS products running Android 5 and Android 6 should use LTM v2.03. The list of tested Samsung tablets can be found on the LAVA web site.

The LTM v2.03 works with all Android 7 based Samsung tablets identified by LAVA as being compatible with eSTS products. It is recommended that these tablets use LTM v3.00 (or newer) to deal with a tablet update to Android 8.

Installation of LAVA Software

Software Installation Steps		
Step	Action	Comments
1	Copy the required LTM.INI file to the Internal Storage folder of the Tablet. This folder that contains sub-folders such as Download, Music, and so on.	The LTM.INI file is the configuration file for the LAVA Tablet Manager application. The “board-type” parameter MUST be set correctly for the Tablet being used. There are three sample copies of the file in the release package, each with a different setting for “board-type”.
2	Install required LTM APK.	This application is “sideloaded” onto the Tablet. The LTM application appears in the Application manager as "LAVA Tablet Manager VII". This application has no GUI component.
3	Allow LTM to access system settings.	Locate “LAVA Tablet Manager VII” in the Application Information screen of the mobile device. Under Advanced settings, go into the “Apps that can change system settings” screen. Enable the permission, which allows LTM to update the screen brightness of the mobile device. This is only required for LTM v3.0 and newer.
4	Allow LTM permission to access the tablet “Storage”.	Locate “LAVA Tablet Manager VII” in the Application Information screen of the mobile device. Under Permissions settings, enable access to “Storage”. This is only required for LTM v3.0 and newer.
5	Install LTM_Setup.APK	This utility is “sideloaded” onto the mobile device. The utility appears in the the mobile device Application manager as “LTM Setup”. Installation of this utility is optional.
6	Install LBI.APK	This application is "sideloaded" onto the tablet.The LBI application appears in the tablet Application manager as "Battery Information". Installation of this utility is optional.
7	Enable WiFi on the tablet.	The next step requires a valid Internet connection over WiFi.
8	Activate the “LAVA Tablet Manager VII” as a Device Administrator.	Locate the “Device administrators” menu. On newer Tablets, the required menu is under the “Lock screen and security” + “Other security settings”. On older Tablets, the required menu is under “General” + “Security”. Enable “LAVA Tablet Manager VII” in the Device Administrator menu, and then select ACTIVATE. After selecting activate, the next menu presented is for accepting a Samsung KNOX license. If you previously installed a Mobile Device Management application, the KNOX license screen may not be presented, as it has already been agreed to. After the KNOX license activation, an Android Toast message reports success or failure. If the request fails, disable the application in "Device administrators" and try again in a few minutes. Ensure you have a connection to the Internet over WiFi.
8	Disable WiFi (optional)	After completing the Samsung KNOX authentication, the WiFi connection can be turned off.
9	Disable Auto Screen Brightness.	The Auto Screen Brightness must be disabled in the tablet to permit LTM to manage the screen brightness.
10	Verify the tablet time zone, date, and time are correct.	Several LTM features require that the correct time is set on the tablet.
End of the eSTS Software Installation		

Connect the eSTS product to the Tablet

Connect the LAVA provided cable to the eSTS “To Tablet” port. This cable has a Micro USB-B connector at each end. Either end of the cable can be used. Then connect the other end of the cable to the Tablet.

Always verify the connector orientation to prevent damaging the receptacle.

Do not extend the LAVA provided cable.

Powering up the eSTS product (5V Power Input)

The eSTS-E, eSTS-2UE, eSTS-3U, eSTS-1U-OEM, and eSTS-BM-OEM have a “5V Power Input”.

Connect a USB Supply to the “5V Power Input”. Always verify the connector orientation to prevent damaging the receptacle. Ensure the supply is rated for at least 2 amperes. Do not extend the original power supply cable until the system is debugged.

The voltage reaching the eSTS product should be at least 5 volts. The preferred range is 5.1 to 5.25 volts. The input voltage must never exceed 5.25 volts. Exceeding 5.25 volts can result in **immediate** damage to the eSTS and possibly other components in the system. Application of the wrong input voltage does violate LAVA’s Manufacturer Warranty.

Powering an eSTS “vc” product

The eSTS “vc” products are powered through a DC barrel jack with a 2-millimeter positive center pin. The barrel jack is labeled “11-36 VDC In”. The user supplies the power cable and power supply.

The typical application uses either a 12-volt 2-ampere power supply or a 24-volt 1-ampere power supply. The permitted input range is 11 to 36 volts. Any unregulated power supply can be used. This range of supported voltages allows the power supply to be placed up to 50 feet away from the eSTS when a suitable wire gauge is used.

When connecting the eSTS to the supply, ensure the wiring is such that the center pin is positive. If the polarity is reversed, the damage to the eSTS is immediate. Application of the wrong input voltage does violate LAVA’s Manufacturer Warranty.

The attached power supply and wiring are responsible for providing short circuit protection.

Powering up a PoE capable eSTS (eSTS-PE or eSTS-P2UE)

The eSTS-PE and eSTS normally derive power from the network cable. Attach a network cable between the eSTS RJ45 port and a PoE enabled Network Switch or Poe Injector.

If you do not have a PoE-enabled Network Switch or PoE Injector, a USB Power Supply can be connected to the "Aux. 5V Input" of the eSTS product. Always verify the connector orientation to prevent damaging the receptacle. Ensure the supply is rated for at least 2 amperes. Do not extend the original power supply cable until the system is debugged.

The voltage reaching the eSTS product should be at least 5 volts. The preferred range is 5.1 to 5.25 volts. The input voltage must never exceed 5.25 volts. Exceeding 5.25 volts can result in **immediate** damage to the eSTS and possibly other components in the system. Application of the wrong input voltage does violate LAVA’s Manufacturer Warranty.

Warning: *When supplying power using the “Aux. 5 Volt” input on the eSTS-PE or eSTS-P2UE, you must not use PoE supplied power.*

Power Up Behavior

With power applied to the eSTS product, the green “Charge State” LED will flash on and off for the first 2 to 3 seconds and then the yellow “eSTS Mode” LED goes active.

The yellow “eSTS Mode” LED must be active shortly after power up. If this LED is not active, verify the connection between the eSTS and tablet.

The Android Notification line at the top of the screen has an "LTM" displayed once the LTM application is active. With the LTM active, the extended features of the eSTS are enabled. The LTM application can only run when the “eSTS Mode” LED is active.

When using an Ethernet-based eSTS, the Network Link and USB Activity LEDs pulse to confirm an active network connection. In the event, the network connection fails to work, verify the Ethernet interface is enabled in the tablet setup.

If the “Allow LTM to access system settings” is skipped during the installation of LTM v3.00 (or newer), the required tablet setup screen is automatically presented shortly after LTM runs for the first time. This permission is required to allow LTM to manage the tablet screen brightness. If screen brightness management is turned off, this permission is not required. Using the screen brightness management feature is strongly recommended to reduce heat issues over time.

The “LTM Setup” Utility

The “LTM Setup” utility can be used to review, modify, or create an LTM.ini configuration file. The utility can be used while LTM is running, as changes are automatically picked up. This APK is part of the standard software release package for the eSTS Product Family.

The utility allows the most common attributes in the LTM.ini file to be directly managed. Attributes that are not managed by LTM are written back to a modified INI file without any changes. The attributes not directly handled by “LTM Setup” can be modified on a PC with any standard text editor.

The “APPLY” in the top right corner is selected to write changes to the mobile device. Only comments at the top of the LTM.ini file are preserved. Attributes not directly managed by the utility are moved to the bottom of the file.

Once an LTM.ini file is finalized, it can be directly copied to other mobile devices which are to run with the same configuration.

The “LTM Setup” utility is compatible with all LAVASync+, eSTS, and STS-RBM products.

Installing the “LTM Setup” utility is optional.

The “LAVA Device Info” Utility

This utility is used to report the firmware versions on the LAVA product and several non-volatile settings. The non-volatile settings are generally modified by LTM based on the INI configuration file. Some settings can be directly modified with this utility. In some cases LAVA Support may ask you to install this utility to assist in diagnosing installation issues. This utility is not included in the installation steps.

Additional Comments

The “Allow LTM permission to access the tablet Storage” step in the Software Installation Steps should not be required for LTM v3.00 and newer as a special feature in the KNOX SDK is used to grant the permission dynamically. When installing LTM for the first time, manually grant the permission in case the required KNOX function is not operational on the tablet you are using.

With LTM running, the battery level is maintained between the upper and lower thresholds defined in the LTM.INI file. The LAVA Battery Information (LBI) application can be used to monitor the battery charge status. When the charging state is active, the battery charging current can be viewed with LBI to ensure the tablet is charging. The LBI application is used to log the battery charging status to a file, which allows the behavior over several hours to be monitored.

The tablet charging icon cannot be relied upon to indicate if the battery is charging - only by checking the battery charge current, or observing the charge level for a period of time, is a valid check. The tablet draws less current from the external power supply during SimulCharge mode by design. If the tablet is not charging, verify the voltage reaching the eSTS is at least 5 volts. In some cases reducing the tablet screen brightness, by 10 to 20 percent, allows the battery to charge.

The LTM.ini can be replaced at any point to alter the configuration. Changing the “user-debug=0” and “Ethernet-debug=0” settings can enable several useful debug messages. The “eSTS Product Family - Reference Manual” contains a detailed description of the INI file.

Removing power to an eSTS shuts down the LTM application, and all USB accessories are disconnected.

Note: *When using “board-type=2” or “board-type=3”, removing power from an eSTS product does not result in a shutdown of the eSTS board if Battery Modulation is in the discharge state. The eSTS continues to function in this state until the lower charging threshold is reached as defined by “bty-lower-threshold”.*

Technical Support

LAVA Technical support is open from 9:00 am to 5:00 pm Monday through Friday (EST).

<p>Telephone: +1 416 674-5942</p> <p>Fax: +1 416 674-8262</p> <p>Toll-Free (US and Canada): 800 241-5282</p> <p>Internet: www.lavalink.com/helpdesk</p>
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History

Document Revision	Date	Change
A01	March 23, 2017	Initial release.
A02	September 6, 2017	Added comments on the effect of a Mobile Device Management application during the installation of LTM. Removed the “eSTS Product Family - Reference Manual.PDF” from the list of files in the release package. This file is available on the LAVA web-site.
A03	September 27, 2017	Added comment that Tab A 8.0’ uses board-type=2.
A04	January 8, 2018	Added Tab S2 8.0’ to list of tablets in Software Installation Steps. Minor updates in other sections.
A05	October 10, 2018	Updated for LTM v3.xx, which is compatible with Android 7 and 8.
A06	January 11, 2019	Now using LTM_v3.01 in place of LTM_v3.00. Eliminated the term “root” when referring to the storage location of the INI file. Added summary of the LAVA Device Info utility. Changed “rar” to “zip”.