User Manual

Android™ 9 2.02
for DLT-V72 Facelift Series

ADVANTECH DLOG

IMPORTANT:
For safe and proper use, follow the instructions in this manual.
Keep the manual for future reference.

Manual version

Manual version: V1.05
Completed on: May 09, 2022

Revision history:

Version	Date	Manual modifications
V1.00	October 14, 2020	Initial document Android™ 9 2.00 release.
V1.01	March 03, 2021	Description of Android™ 9 2.01 release added.
V1.02	June 10, 2021	Description of Android™ 9 2.01.2 release added.
V1.03	August 20, 2021	Description of Android™ 9 2.01.4 release added.
V1.04	November 30, 2021	Description of Android™ 9 2.02 release added.
V1.05	May 09, 2022	Merger with Advantech Europe B.V. The web address “www.advantech-service-iot.eu” is hereby invalid and has been deleted.

Copyright and Disclaimer

Acknowledgements

Technical customer support

Contact your distributor, sales representative, or an Advantech Service Center for technical support. Please have the following information ready:

- Product name
- Serial number
- Description of your peripheral attachments
- Description of your software (operating system, application software, etc.)
- The exact wording of any error messages
- A complete description of the problem

Find the contact data of our Global Advantech Service Centers on our website:

http://erma.advantech.com

Contents

1. Introduction

1.1. Area of applicability

Information and settings described in this manual apply to product Android™ 9 2.02 for ADLoG DLT-V72 Facelift Industrial Computer including MDevice configuration tool 1.17.

1.2. Target group for this manual / loss of warranty

Android installation and configuration should only be performed by qualified, skilled personnel, such as IT administrators.

Incorrect installation and configuration can compromise the function of your DLT-V72 Facelift Industrial Computer.

Incorrect installation and/or configuration of Android by the user, releases Advantech Co., Ltd. from all liability for warranty claims

1.3. Current manual versions

NOTE

The latest versions of our manuals are available at our websites:

www.advantech.com

1.4. Abbreviations in this manual

Complete term	Abbreviation
ADLoG DLT-V72 Facelift (Industrial Computer)	DLT-V72 Facelift
Android™ Debug Bridge	ADB
Android™ 9 2.02 for ADLoG DLT-V72	Android
Android™ Scanner Wedge	Scanner Wedge
Android™ Open Source Project	AOSP
Android™ MStage 1.1.8 for ADLoG DLT-V72	MStage
Android™ MDevice 1.17 for ADLoG DLT-V72	MDevice
Android™ ScreenBlanking 1.1.0 for ADLoG DLT-V72	ScreenBlanking
Android™ MTouch 1.1.0 for ADLoG DLT-V72	MTouch

1.5. Design elements in this manual

1.5.1. Safety notes and other notices

<Signal word>

Damage to persons:

*Signal word **DANGER** means that death or severe bodily injury will occur if this information is not observed.*

*Signal word **WARNING** means that death or severe bodily injury can occur if this information is not observed.*

*Signal word **CAUTION** means that slight bodily injury can occur if this information is not observed.*

NOTICE ***Prevent system malfunction and property damage.***

Information about possible property damage to avoid damaging hardware or losing data

NOTE *Notes provide optional additional information*

1.5.2. Text formatting conventions

Subject	Formatting	Example
Lists	Bullet points	• Part 1 • Part 2
Instructions	Numbers	Copy file … Rename file …
Product names	Normal, not highlighted	Software MDevice is a setup tool for …
Buttons in software dialogues	**Bold**	With button **Next** …
Texts, parameters in software dialogues	**Bold**	Parameter setting **ID-Test** should …
Placeholder for a variable	<x> value in angle brackets	Value <x> depends on …
Syntax, Strings	`Courier New Size 11`	The `AT` prefix must be set.
Keyboard keys	In capital letters, sequence with +	CTRL + ALT + DEL
Cross reference to other manual chapters	Text in *italics, underlined*	Please refer to manual section *1.1 Examples*
Program files File names Directories	In quotation marks	File “quectel.exe“ … In directory “C:/Program Files” ….
Links	Underlined, blue	Website https://advantech.eu

2. Functional description

2.1. Supported hardware and peripherals

Android is running on DLT-V72 Facelift model variants. Android is supporting following peripherals:

- USB keyboards
- USB mass-storage
- Mini Bluetooth adapter
- Internal / external GPS receiver
- USB / Serial handheld scanners

2.2. Updates from Microsoft Windows to Android

If you want to update your device from Microsoft Windows to Android, please contact our customer support. We do not allow customers to change from any other operating system to Android by themselves.

2.3. Android for DLT-V72 Facelift - Overview

Android is based on android-x86.org Android open source and built for enterprise environment.

- Kernel Version: 4.19.122
- Android security patch level: August 5, 2021
- Android Version: 9
- CPU Type: Intel (r) Bay trail
- Processor Configuration and ABI (Application Binary Interface): x86_64

Android is delivered as a User Build Image signed with Advantech certificates.

Figure 2.1: Android for DLT-V72 Facelift– Advantech Launcher Screen

2.3.1. Main applications integrated with Android

The following table provides an overview of the main applications integrated with Android:

Application	Source	Description
Advantech Launcher	Advantech	Allows Kiosk Mode operation of the device
Advantech Launcher Configuration	Advantech	Application to configure the Kiosk Mode Launcher
Calculator	AOSP	Standard Android calculator application
Calendar	AOSP	Standard Android calendar application
Clock	AOSP	Standard Android clock application
Files	AOSP	Standard Android file manager application
Gallery	AOSP	Standard Android gallery application
MDevice	Advantech	Configuration utility
MStage	Advantech	Utility to create / apply terminal based application settings like (Wi-Fi / MDevice / Advantech Launcher)
MTouch	Advantech	User can increase the sensitivity of the PCT touchscreen to facilitate operation with gloves.
Notes	AOSP	Standard Android notepad application
OI File Manager	Open Intents	Full featured File Manager under an Apache 2.0 license that can be used for installing additional apps (APKs).

ScannerApp Admin	Advantech	An application, which allows using legacy scanners under Android.
Search	AOSP	Standard Android search application
Settings	AOSP	Menu used to configure system, including roaming behavior.
Terminal Emulator	AOSP	Standard Android command line application
WebView Browser Tester	AOSP	Standard Android web browser application

NOTES

*Starting with Android image release v2.02 a new home screen folder named **MApps** has been added to collect all Advantech utilities for easy access.*

2.3.2. Optimized for enterprise use

For enhanced security and guaranteed system stability, Android for DLT-V72 Facelift is optimized for enterprise use. Some applications commonly found on Android based consumer devices are removed:

Application	Reason of removal	Description
GMS and Google Apps	Security	Google Mobile Services and Applications requiring a Google Play Store account
Phone	Not supported on device	Telephony services
Camera	Not supported on device	Camera app
Contacts	Not relevant for device	An app to handle personal contacts
NFC	Not supported on device	Near Field Communication
Torch	Not supported on device	Torch application using a camera's flash light
MMS	Not supported on device	Multimedia Messaging Service

2.3.3. Optimized for on-vehicle use

The DLT-V72 Facelift Industrial Computer has been optimized for on-vehicle, industrial use. This optimization results in a different behavior from consumer grade Android devices:

Aspect	Difference to consumer grade Android	Description
System Shutdown	No shutdown via soft buttons and menu.	Device shutdown is only possible via the power button integrated on the front panel or via the ignition indication from the vehicle to avoid unintended shutdowns caused by erroneous touch screen activity from operators. Shutdown behavior can be configured via MDevice.
Display brightness	Not software defined	As vehicles such as forklifts move quickly, the software based brightness control of Android yields undesirable results. Brightness is controlled using buttons on the front panel.
Battery	DLT-V72 Facelift terminal's UPS battery support	Android indicates the battery level of the DLT-V72 Facelift terminal's integrated UPS (UPS is optional available), but it doesn't measure the vehicle's battery status.
Integrated peripherals	No handheld / consumer peripherals	Certain HW components and related system applications are not supported because they are not suitable for the type of device, including: • Notifications via vibration • No camera support • No integrated phone support • No microphone • No NFC sensor
Bluetooth Support	None	DLT-V72 Facelift supports Bluetooth next to WLAN (no additional hardware is required).
Optional GPS Support	None	DLT-V72 Facelift supports GPRS / GPS in case optional extension has been placed.

Support for legacy Scanners	Integrated	Serial port no.1 (COM1) has an optional 5 V power supply, which can be enabled using MDevice to power external legacy scanners. Android comes with an integrated scanner app developed by Advantech which injects the characters scanned by the legacy scanner as key strokes into the Android system. By default, COM1 is reserved for legacy scanners under Android and cannot be used for other purposes. By using the Scanner Wedge application this parameter can be modified. See chapter *8 Android Scanner Wedge* for details.

2.3.4. Licensing

By using Android, you implicitly accept the license terms of the Android Open Source Project.

Detailed information on the related licenses and legal terms are available on **Android under Settings -> System -> About tablet -> Legal information**.

Please note that specific applications from third parties may have individual license terms and may prompt you to accept these when first launching the app.

3. Getting Started

3.1. Native Mode and Kiosk Mode

Android has been optimized for enterprise use in the logistic industry. This and the following sections of this document describe how administrators can integrate the DLT-V72 Facelift Industrial Computer into their enterprise environment. This includes configuring the system, adding enterprise applications and creating new user profiles.

Android supports two basic options to set-up the system:

- Native Mode
- Kiosk Mode

Native Mode

In this mode, the native launcher, which comes with AOSP, called Launcher3, is used as home app. Administrators need to use Android 9 multi user support and additional Enterprise Mobility Management (EMM) software to configure and set up the device.

Configuration of multiple user profiles is described in section *6.8 Multiple Users.*

NOTICE ***Prevent system malfunction.***

Please note that there are some restrictions on multiple user profiles under Android 9 and that the use of an EMM suite is highly recommended.

Some features have been built into the device, which allow enhancing system startup behavior. These features can be configured using MDevice (refer to section *5.5 Startup Setting*.)

Kiosk Mode

In this mode, Advantech's Kiosk Mode launcher will be used as home app. Administrators can define which applications are available to operators and/or auto-launched on the Kiosk Mode home screen.

Advantech provides a dedicated application for configuring Kiosk mode.

3.2. Recommendations for configuring the system

Here are some additional hints / recommendations for administrators to configure the system for best performance:

WLAN Roaming:

For achieving proper roaming performance and the desired roaming behavior, please make sure to follow the instructions in section *6.1 WLAN Roaming*.

System Power Management:

Android has been enriched with special features to manage the device's power up and down behavior for integration in industrial environments.

You can configure these features using the MDevice application as described in section *5.4 Power Setting*.

Installing Apps:

Android does not include Google Mobile Services to protect your enterprise's privacy.

Chapter *6.5.1 APK Installation* describes how to install applications on Android.

Android is an x86 64bit based system.

Please make sure that the applications you wish to install have been compiled for this configuration.

3.3. Installing Android (USB-Stick)

NOTICE ***Prevent system malfunction.***

Carefully check section 2.1 Supported hardware and peripherals before continuing.

Back up your existing OS (if any) and all data on your device.

NOTICE ***OTA Update support at DLT-V72 Android9.***

*Use an USB-Stick in case Android9 should be installed for the **first time** on your device or in case an **OTA update cannot be performed.***

*If the DLT-V72 terminal already **has an Android9 image installed,** please use an **OTA update** instead of the USB-Stick method. The handling of OTA updates performed is described in the section 7 OTA Updates.*

3.3.1. Required items

- 2 GB or larger USB thumb drive
- A supported target device, see section *2.1 Supported hardware and peripherals*.
- A laptop or PC running Linux, or MS-Windows with working Internet connection

3.3.2. Prepare the USB thumb drive

Step 1: Get the latest Android image (.iso) for your device.

Contact the technical support.

Step 2: Flash process

Linux users:

Unzip the downloaded file: “IMG_Android9x64_Vxxx_USER_DLT-V72FL.zip”

Insert the USB thumb drive into your machine

Open your terminal application and find the device name of the thumb drive.

Run “dmesg” and look near the end for a name like "/dev/sdX" where X is a letter.

Unmount any partitions that may have been automatically mounted: “sudo umount /dev/sdX*” (Where X is the letter from above)

Write the “IMG_Android9x64_Vxxx_USER_DLT-V72FL.iso” file from the extracted zip to the USB flash:

“sudo dd if=IMG_Android9x64_Vxxx_USER_DLT-V72FL.iso of=/dev/sdX bs=1M conv=fsync”
(Where X is the letter from above)

Windows users:

NOTE

In case USB-Stick already contained a former released Android image file Windows will not recognize the drive letter automatically because non-supported file system of the USB-Stick (file system ext4).

The USB-Stick content will be erased. Please backup your data before continuing.

Please follow the next steps to “clean” the USB-Stick before installing a new Android “.img” file.

Insert the USB disk drive into your computer.

Start **diskpart** utility from cmd line.

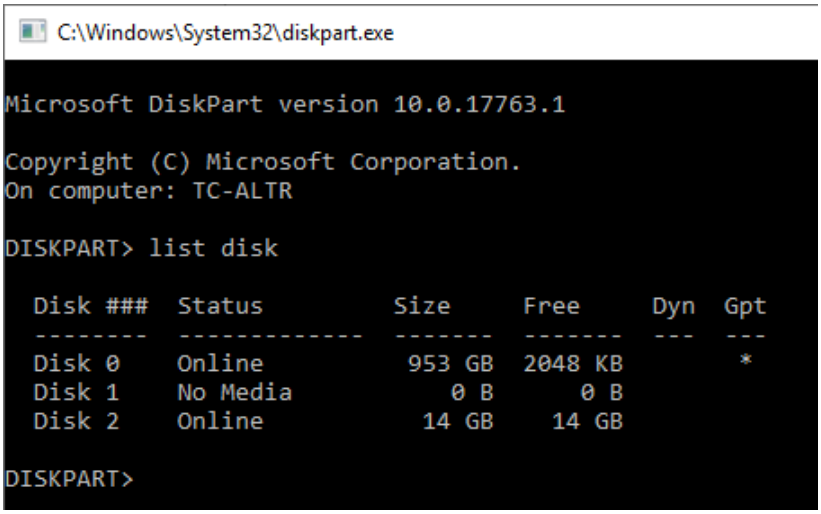


Figure 3.1: Start diskpart utility

Perform as above shown command `list disk`
(example shows Disk 2 as the USB disk drive).

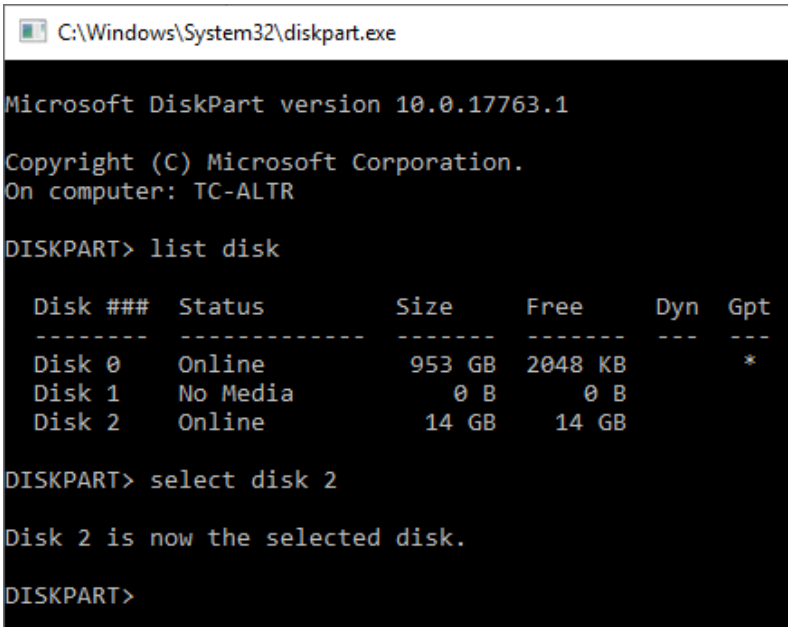


Figure 3.2: Diskpart utility – List disk

Enter e.g. command `select disk 2` (the number can differ based on existing drives).

Be sure that USB disk is selected correctly by enter command `list disk` again (the * sign will show the selected disk).

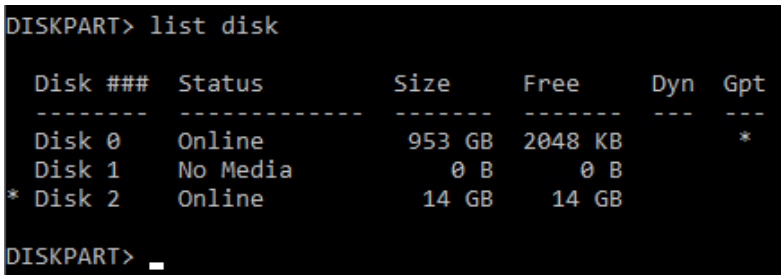


Figure 3.3: Diskpart utility – List disk again

If USB disk is selected correctly, enter the following command: `clean`.

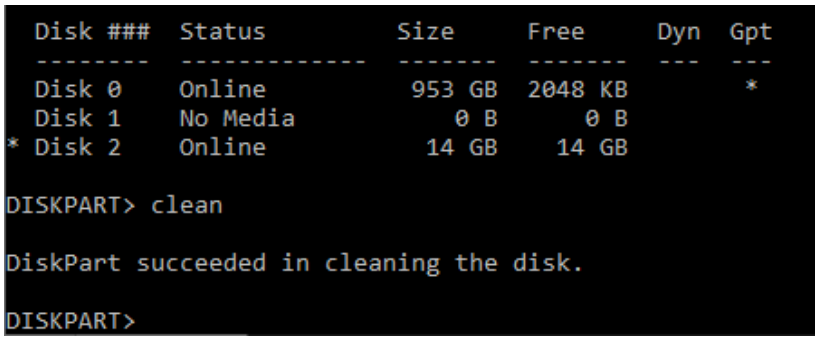


Figure 3.4: Diskpart utility - Clean

In case Android was installed former to the USB stick, it can happen that diskpart utility is reporting an error but this **can be ignored**, because Windows does not work well with ext4 formatted devices.

Flash the Android iso image file to the USB thumb drive by using any application like Win32 Disk Imager which is used for reference in this document:
Win32 Disk Imager tool is downloadable from:
https://sourceforge.net/projects/win32diskimager/

Extract it to a folder of your choice.

Extract the “IMG_Android9x64_Vxxx_USER_DLT-V72FL.iso” image file from the downloaded zip file

Insert a “clean” USB drive into your computer.

Find the drive letter of your USB drive by opening **My Computer** on the desktop.

Run “Win32DiskImager.exe” from Image Writer's directory.

In Image Writer's window, select the “IMG_Android9x64_Vxxx_USER_DLT-V72FL.iso” you extracted from the downloaded zip

In Image Writer's window, select your thumb drive's letter that you found in **My Computer**.

Click **Write** and wait until the process is finished.

3.3.3. Installation options

NOTICE ***Prevent system malfunction and property damage.***

Before you start: Android offers various installation methods, note the following before selecting one of the available methods.

Use case 1:

Initial situation: Android 9 (V2.01 and above) is installed on DLT-V72 Facelift ***first time.***

Use ***Auto Installation and clean hard disk. (USB-Stick)***

Customer specific data, for example passwords, user data etc. are completely deleted.

Use case 2:

Initial situation: Android 9 (V2.01 and above) ***is already installed*** *on DLT-V72 Facelift.*

Use the ***OTA update method instead of the USB-Stick!***

Customer specific data, for example passwords, user data etc. will remain unchanged.

Please change to section 7 OTA Updates for further information.

Use case 3:

Initial situation: Android 7 (all versions) is installed on DLT-V72 Facelift.

***IMPORTANT**: Updating Android 7 to Android 9 with OTA-Update is not possible!*

*Use **Auto Installation and clean hard disk USB-Stick method**.*

Customer specific data, for example passwords, user data etc. are completely deleted.

3.3.4. Installation procedure

Insert the USB thumb drive with the installer image created into one of the DLT-V72 Facelift USB ports.

Attach an USB-Keyboard and power on the DLT-V72 Facelift.

From the GRUB-boot menu, choose the required installation method in the selection list:

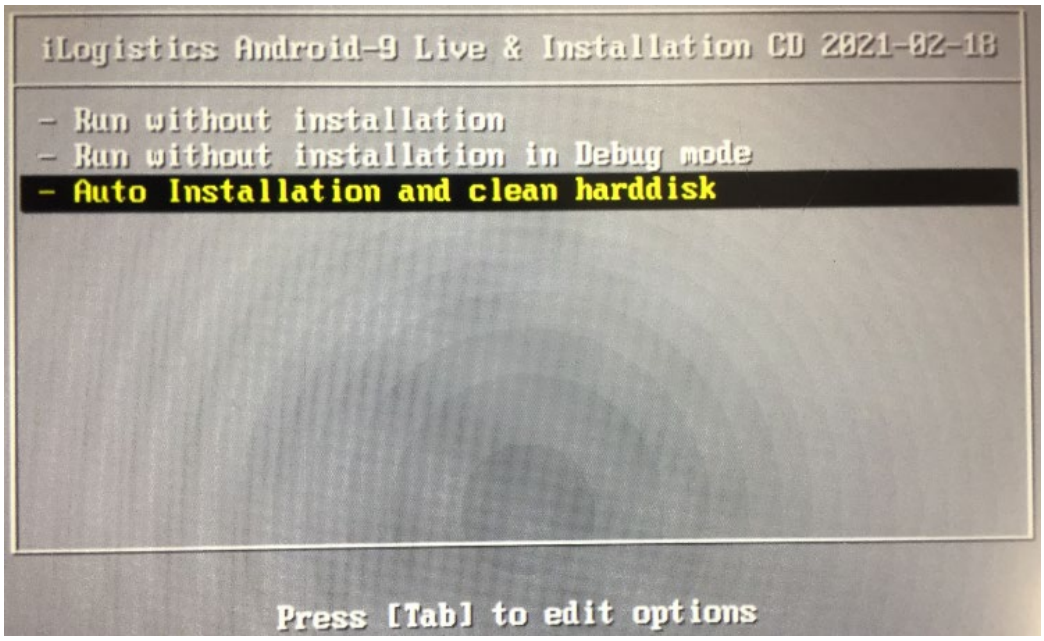


Figure 3.5: Bootloader GRUB installation menu

NOTICE ***Prevent system malfunction and property damage.***

An installation can fail, if:

- *Boot-stick has not been created properly.*
- *Disk drive has been damaged / is not working properly.*

3.3.5. Auto Installation and clean hard disk

This method will clean the complete hard drive, and make a new installation.

NOTICE ***Prevent system malfunction and property damage.***

The complete hard drive will be formatted, and a new Android installation will be finished automatically.

Customer specific data, for example passwords, user data etc. are completely deleted.

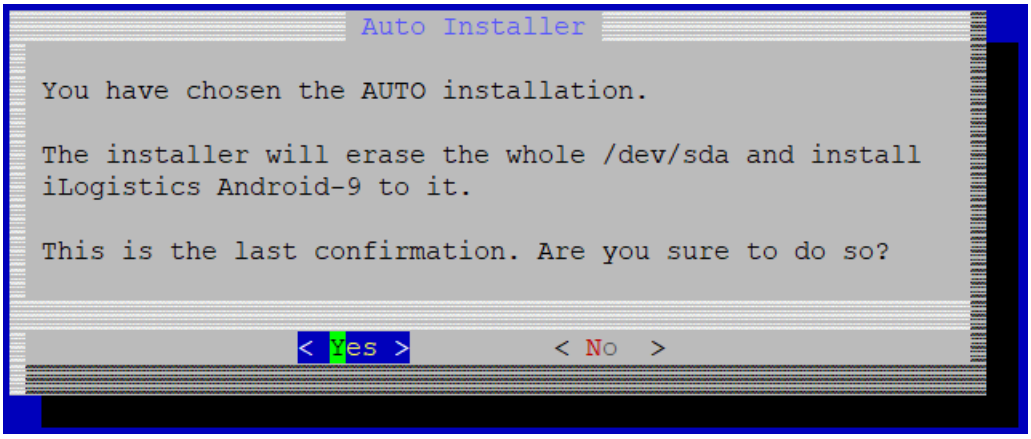


Figure 3.6: Auto installer confirmation

After a successful installation

After successful installation it is recommended to start Android with Reboot and hit <ENTER>: (Remove the attached USB-Stick)

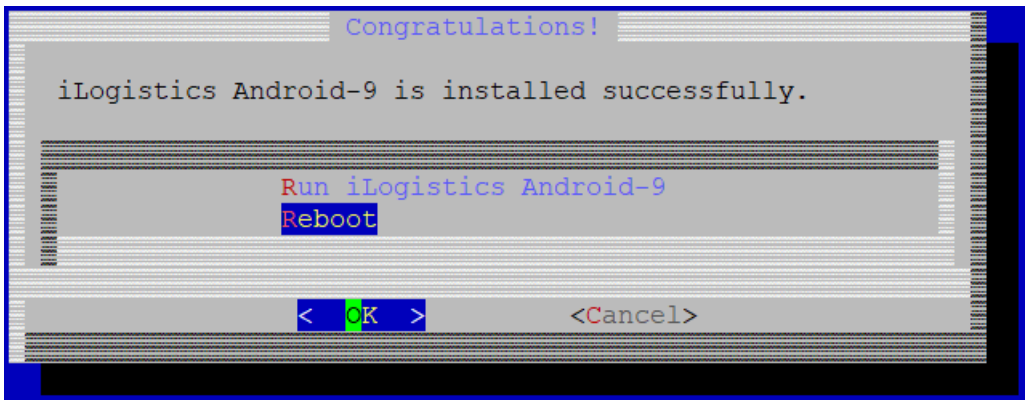


Figure 3.7: Run Android after installation

The Android System will appear with a selection dialog:

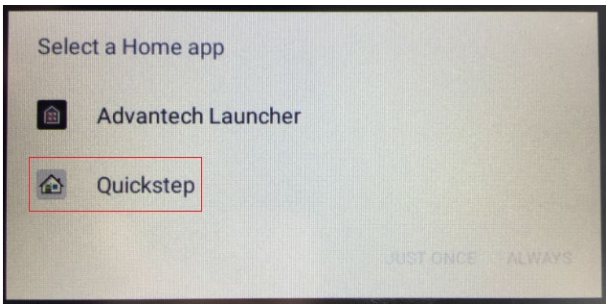


Figure 3.8: Selection dialog

Choose Quickstep.

If you want to setup the device in Native Mode, select **ALWAYS**.

If you want to setup the device in Kiosk Mode, select **JUST ONCE**.

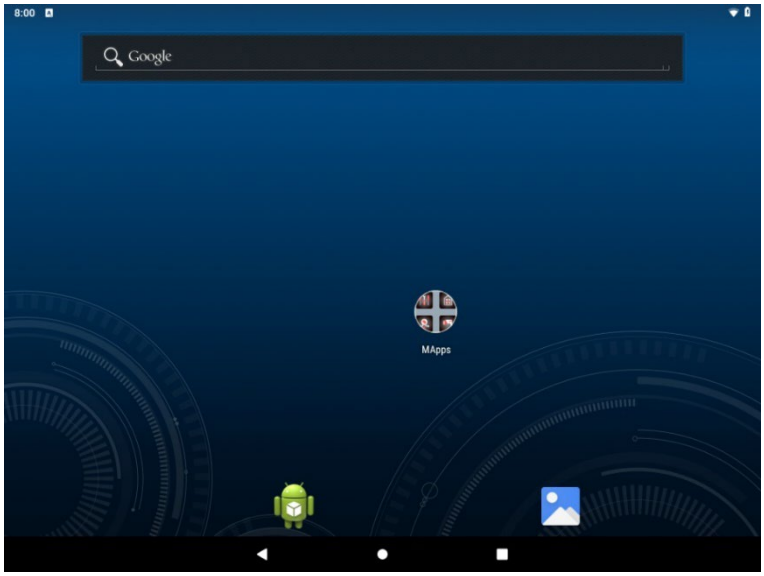


Figure 3.9: Android default home screen using Quickstep

To set up the device in Kiosk Mode, click the **HOME** button once.

You will be asked to select a **HOME** app again as shown in dialog **Selection a Home app**.

Choose Advantech Launcher.

Select **ALWAYS**.

The system will launch into your selected home app.

3.4. Kiosk Mode / Advantech Launcher

When set up for Kiosk Mode, the system runs a single, pre-configured application in foreground thereby restricting the user's access to other apps and underlying system services.

NOTICE ***Prevent system malfunction and property damage.***

It is highly recommended that administrators set up limited access rights for users by configuring Advantech Launcher accordingly.

The Advantech Launcher can be configured using the **Advantech Launcher Configuration** app.

The Advantech Launcher default screen is shown below:

Figure 3.10: Android Kiosk Mode - Advantech Launcher Screen

The following applications appear on the Advantech Launcher Screen by default:

- Calculator
- Calendar
- Notes

Administrators can configure the Advantech Launcher Screen by terminating Kiosk Mode and running the Advantech Launcher Configuration app as described in the sections below.

3.5. Accessing the Android Home Screen

Administrators can access the Android home screen by terminating Kiosk mode:

To exit Kiosk Mode, press and hold the background Advantech/DLoG logo until the password dialog appears.

Input the **MDevice / Advantech Launcher** password.
The factory setting for this password reads **“gold”.** (Use USB- or SW virtual keyboard)

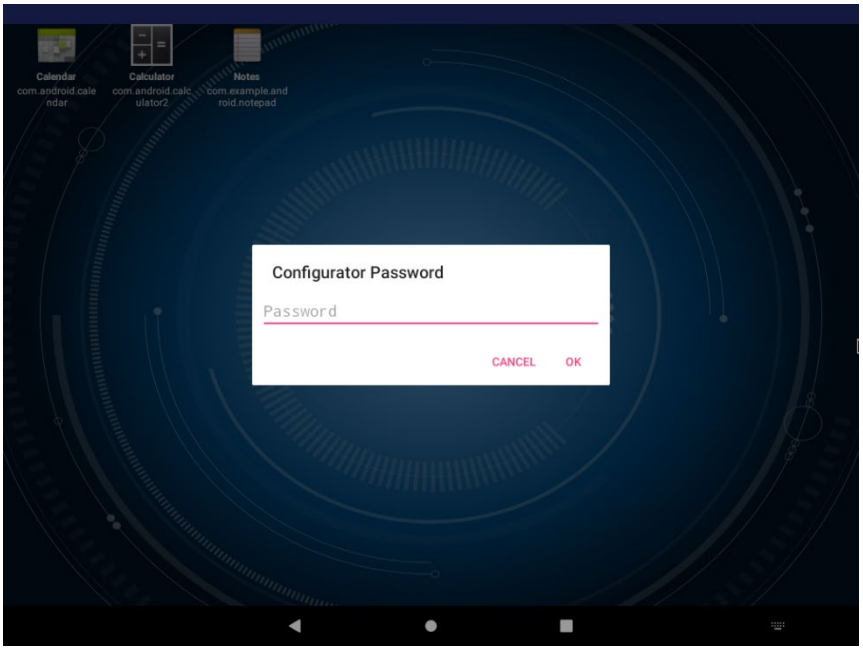


Figure 3.11: Exit Kiosk Mode

The administrator will now have access to the Android home screen.

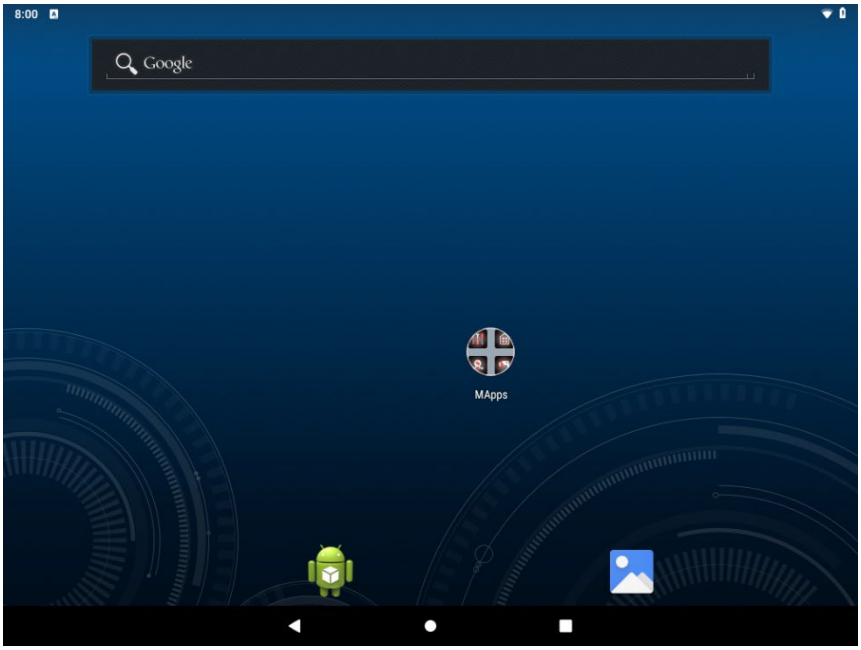


Figure 3.12: Android Home Screen

3.6. Kiosk Mode / Advantech Launcher Configuration

The Advantech Launcher Configuration can be used to set the configuration parameters in Advantech Launcher.

The screen below shows the Advantech Launcher configuration mask:

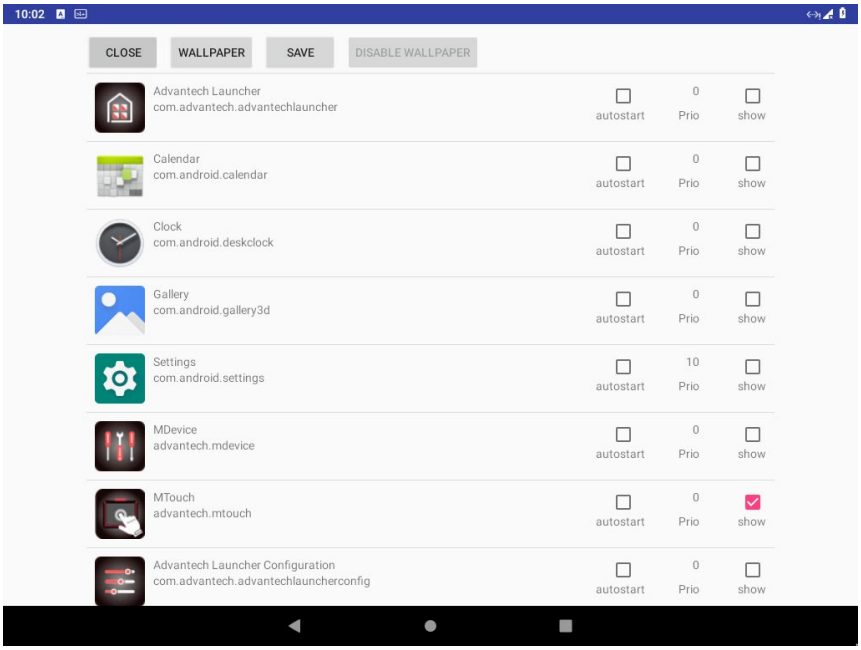


Figure 3.13: Advantech Launcher Configuration

The following options can be selected on a per-app basis:

Auto start	If checked, the application will be started automatically on each boot. If an application has been selected for **Auto start**, it will implicitly be whitelisted (cf. show below).
Prio	Sets the priority when multiple applications are to be started. Applications with the lowest priority will be started last.
Show	Whitelists applications in kiosk mode. The application's icon will be shown on the Kiosk Mode Home Screen.
Wallpaper	To exchange default wallpaper with customized one
Save	Save the settings. ***NOTE**: The application is not auto-saving the parameters on exit.*
Disable Wallpaper	To remove customized wallpaper
Close	Close the application.

3.6.1. Set customized Wallpaper

To exchange default Wallpaper with customized one follow the next instructions:

Copy a new Wallpaper on a standard USB-Stick. Most supported format is **.jpg**

Connect USB-Stick to DLT-V72 Facelift

Open Advantech Launcher Configuration and press **Wallpaper**

Press icon  at left upper corner

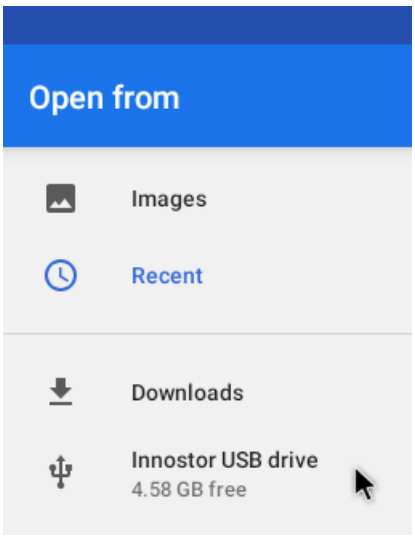


Figure 3.14: Advantech Launcher – USB-Stick selection

Select from list item called **USB drive**

Change to folder containing the Wallpaper

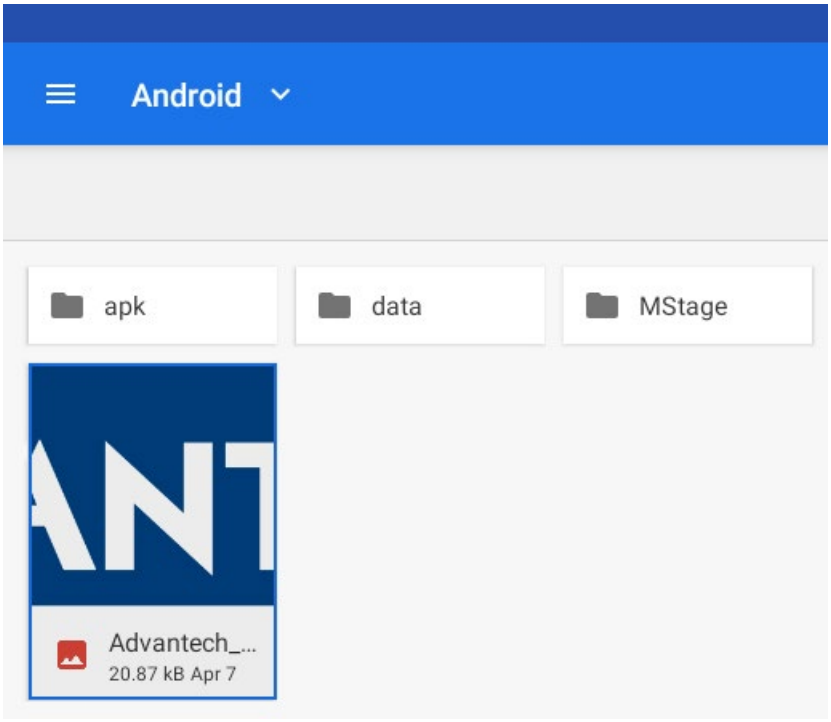


Figure 3.15: Advantech Launcher – Wallpaper Destination

Select Wallpaper and press **Open** at right upper corner

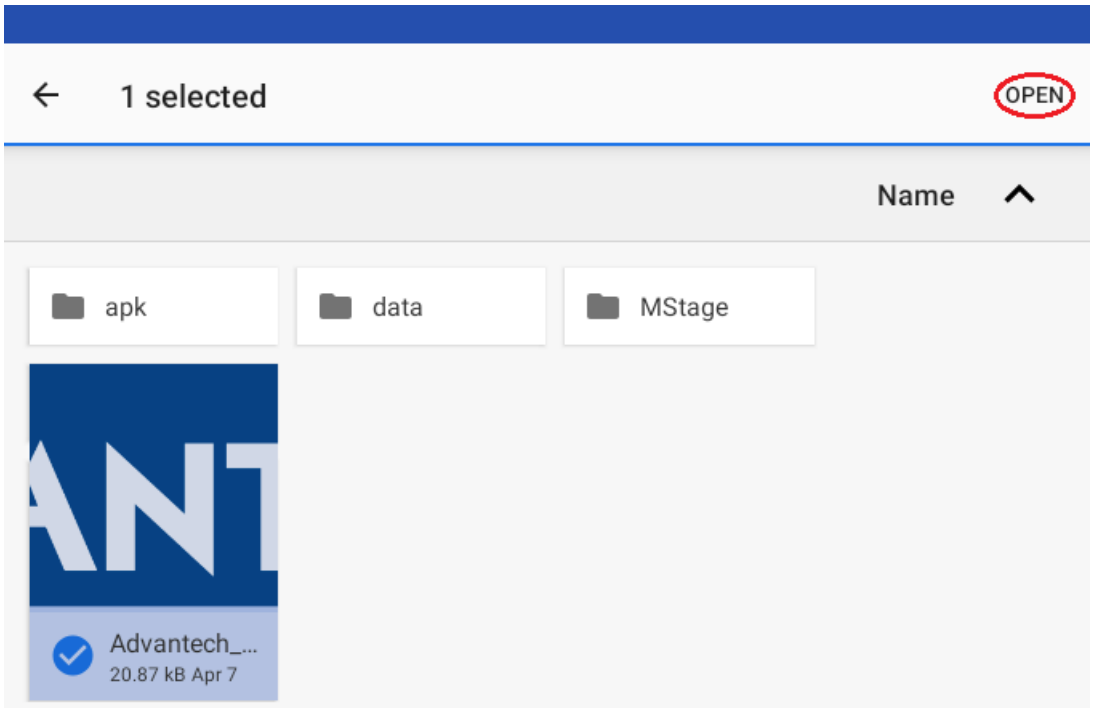


Figure 3.16: Advantech Launcher – Wallpaper Selection

Next **Opacity level** can be adjusted between **100 – 0%**

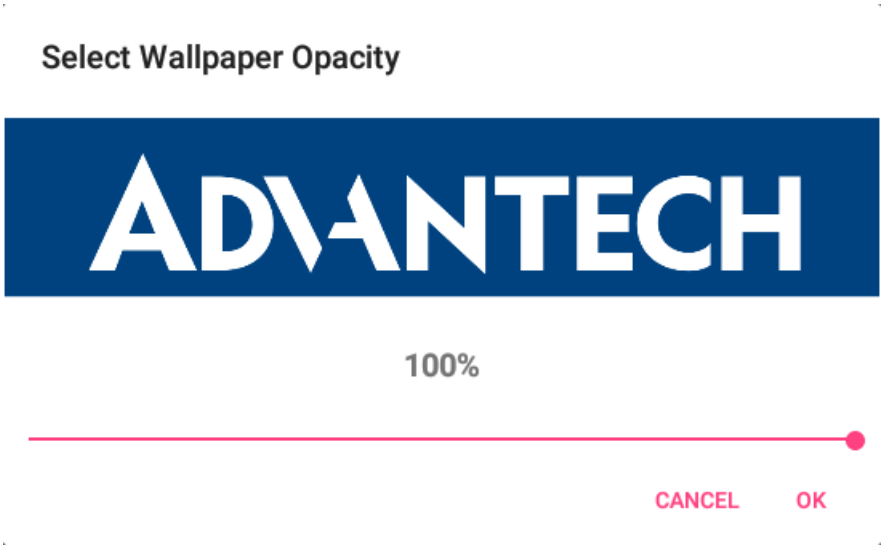


Figure 3.17: Advantech Launcher – Wallpaper Opacity level

Change slider until Opacity level fits requirement followed by **OK**

NOTE *This feature helps at full screen background pictures to allow application icons to be clearly visible in front of the background Wallpaper.*

The following status dialog and counter will be shown during save progress:

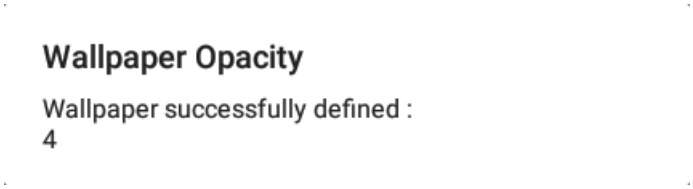


Figure 3.18: Advantech Launcher – Wallpaper Opacity success

Example view of updated Wallpaper (Kiosk Mode):

Figure 3.19: Advantech Laucher – Customized Wallpaper example

3.6.2. Restore default Wallpaper

To restore **default** Wallpaper option **Disable Wallpaper** can be used as part of Advantech Launcher Configuration

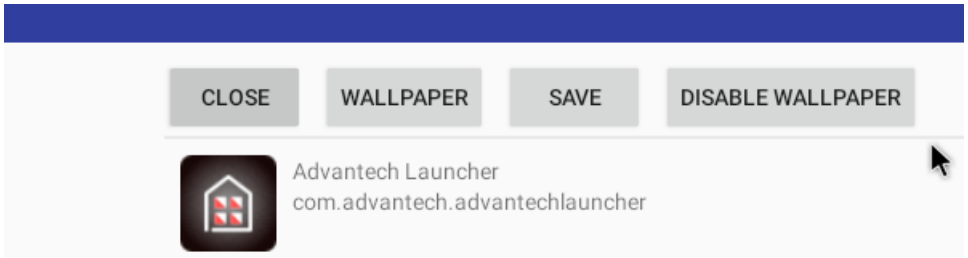


Figure 3.20: Advantech Launcher – Disable Customized Wallpaper

NOTE *This button will only be displayed in case a customized Wallpaper was set before!*

3.6.3. Switch default Home app (Advantech Launcher / Launcher3)

To fully activate the KIOSK Mode / Advantech Launcher or to restore to the default Android Launcher3 Home application, follow the instructions below:

Open “Settings.apk” (Option **Apps & notifications**)

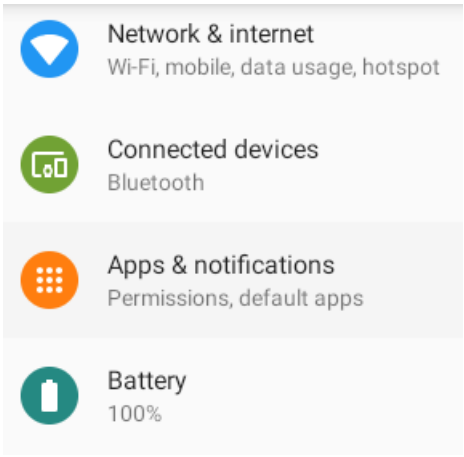


Figure 3.21: Switch default Home app, open “Settings.apk”

Select **Quickstep** app, open **Advanced** and afterwards press **Home app:**

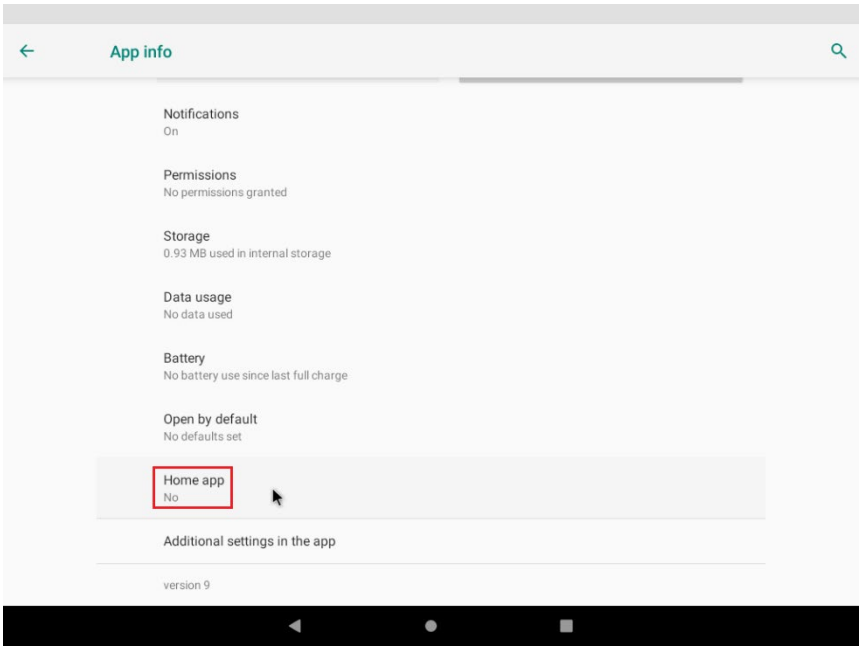


Figure 3.22: Switch default Home app, select Launcher3 app

Press again at sub item **Home app**, the following sub dialog will be shown:

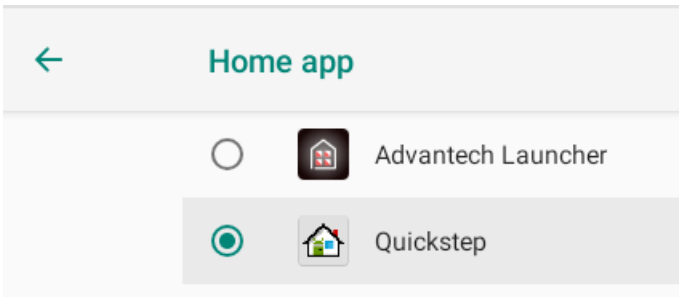


Figure 3.23: Switch default Home app, select Home app

Select between **Advantech Launcher** and **Quickstep**.
The **(Default)** text behind the selected launcher will highlight the current set one.

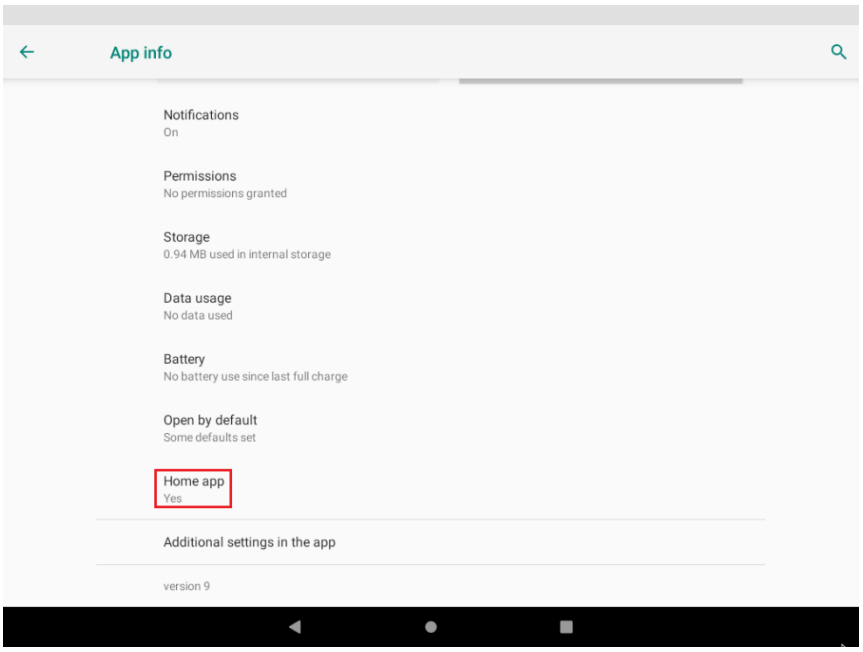


Figure 3.24: Switch default Home app, Home app selected

4. Settings Menu

4.1. Common settings

Android can be configured using the **Settings** menu as found on commercial Android devices.

NOTE *Please refer to documentation available on the Internet for common Android settings and features.*

The following section provides an overview and addresses aspects, which are specific to **Android**.

Additionally, special features of **Android** and the DLT-V72 Facelift can be configured using **MDevice** as described in chapter *5 MDevice Utility* .

For installations of multiple terminals with identical settings, especially Wi-Fi configuration and MDevice, it is recommended to use MStage utility provided by Advantech described in details in manual section *9.2 MStage – Application specific information* .

4.2. Suggestions

This section contains suggestions created automatically by the Android system.

4.2.1. Network & Internet

WLAN

The menu item shows you the current enablement and connection status. Clicking on the item is taking to the wireless settings menu, which is described in greater detail in manual section *6.1 WLAN Roaming*.

Ethernet

The menu item shows you the current enablement and connection status. Clicking on the item is taking to the Ethernet settings menu, which is described in greater detail in manual section *6.2 Ethernet settings*.

Advanced

This item takes you to a submenu containing additional network relation configuration items for GPRS such as setting up VPNs or resetting the device's network configuration.

4.2.2. Connected Devices

Bluetooth

This menu item shows the current status of the Bluetooth connection. This item can be used to enable/disable Bluetooth support as well as perform pairing with Bluetooth devices.

4.2.3. General Settings

Apps & Notifications

The menu item allows managing the apps installed on your device. Please note that apps, which have been pre-integrated into Android, cannot be uninstalled. To deactivate such an app, choose **Disable** in the related submenu. The submenu Notifications can be used to manage which type of notification privileges individual apps have on the system.

Battery

Android indicates the battery level of the DLT-V72 Facelift terminal's integrated UPS (UPS is optional available), but it does not measure the vehicle's battery status.

Display

This item takes you to a submenu that provides configuration options for the user interface such as selecting a wallpaper or defining font sizes. Please note that display brightness is managed by the related buttons on the front panel and the software based brightness control of Android is not supported. Similarly, the screensaver function is without function in Android.

Sound

This item takes you to a submenu that allows tweaking the volume for different type of system sounds as well as select the related ringtones. As there is no phone support on Android, please note that all submenu items related to phone sounds are without functions but have been retained for compatibility reasons.

Android-x86 options

This menu item allows setting **Enable native bridge** option, to support apps with arm native libraries.

Storage

This menu item shows you the current storage usage. In this context, "Internal storage" refers to the CFast card installed in your DLT-V72 Industrial Computer. Clicking on the item takes you to a submenu that provides a more detailed breakdown of storage usage.

Multiple Users

This item allows you to add multiple users to the device. Details are described in section *6.8 Multiple Users.*

4.2.4. Security & location

Device Security

This item takes you to a submenu for managing the system's security settings.

Screen lock provides the option to enable and configure the timeout for a lock screen. This option is disabled by default.

Location allows you to enable device location

Show passwords defines if password characters are visible on screen when typing passwords or not.

Device admin apps allows managing the privileges for device administration.

SIM card lock (option only available at DLT-V72 Facelift GPRS enabled device)

Encryption & credentials allows you to encrypt the device completely.

Install unknown apps allows installing applications via other means than the Google or other trusted app stores, e.g. via a USB memory stick as described in chapter *6.5.1 APK Installation*.

Trusted Credentials contains a list of certificate authorities, which are regarded trusted by the Android Open Source Project. If you wish to install applications that have been signed, the certificates used for signing the apps need to be rooted back into one of the Trusted CAs listed.

User Credentials allows managing user passwords

Install from SD Card allows installing certificates via storage devices or via downloading from a web site.

Clear credentials perform a wipe of all certificates installed.

Accounts

This item allows managing accounts on your device. As Advantech has removed GMS (Google Mobile Services) including Play Store option **(Settings – Accounts)** cannot be used to add existing Google user accounts!

Accessibility

Accessibility allows configuring various aspects of the user interface of your device. A submenu opens when you click on this item.

4.2.5. System

About Tablet: Obtaining information about your device

About Tablet provides you with a wealth of information about your device:

Legal Information provide details about the licenses of the Android system as well as any 3rd party applications

Manufacturer is Advantech

Model & hardware is the DLT-V72 Facelift

Android Version provides Google's Version number for the Android installed on your system

Android Security Patch Level represents the information, which is the last security update that has been integrated into Android. Clicking on this item will open a hyperlink and guide you to the related Android security bulletin.

Kernel Version provides detailed version information on the underlying Linux Kernel of Android.

OpenGL driver version provides information on the drivers for the graphics subsystem

Advantech Version provided Advantech's Version number for the Android installed on your system

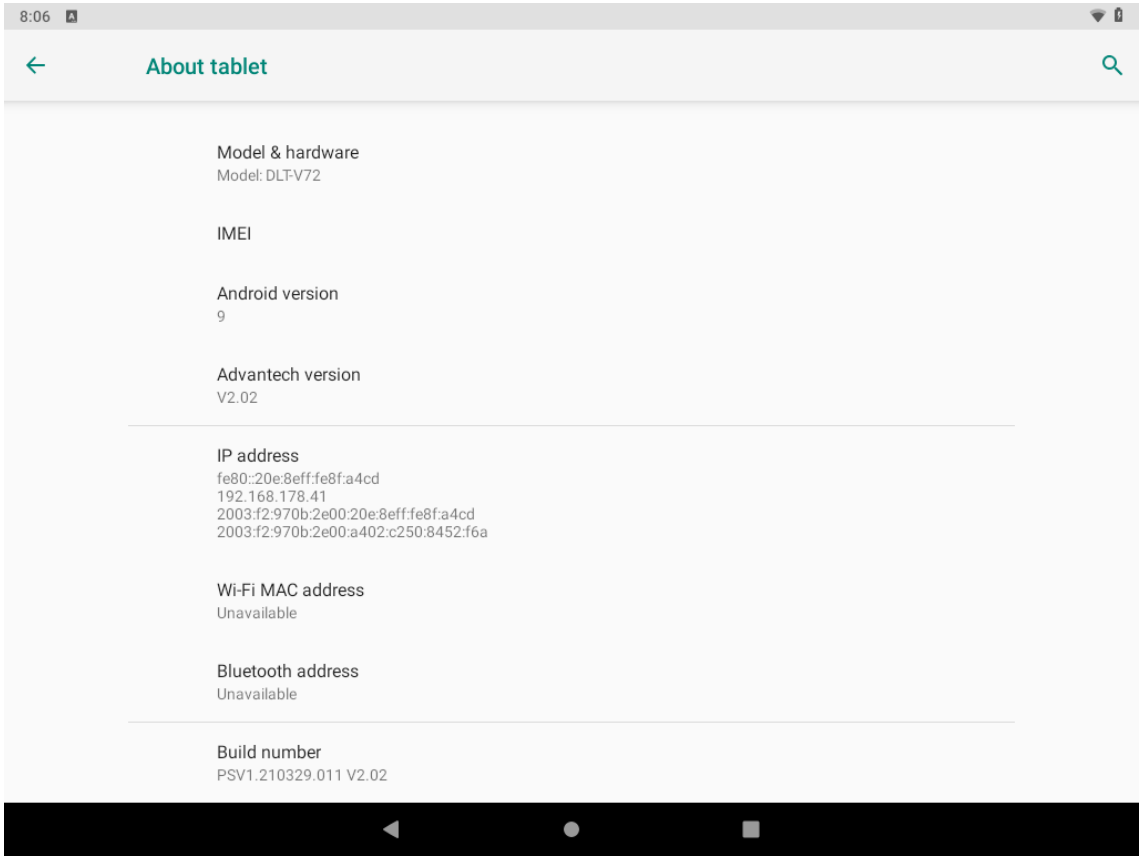


Figure 4.1: Settings – About tablet

Languages & Input

This item allows configuring various input options such as the keyboard language and layouts as well as spelling checking and user dictionaries.

Date & Time

This item displays the current time zone that is set on this device and allows you to adjust the time zone.

Please note that the option to update the time zone via a mobile network is not functional, as Android and the DLT-V72 Facelift do not have mobile network support.

Reset Options

This item allows wiping the device via a factory reset. Details are described in section *6.7 Factory Reset*.

5. MDevice Utility

5.1. Basic safety notes

The MDevice Utility allows changing the configuration of your DLT-V72 Facelift device.

NOTICE ***Prevent system malfunction and property damage.***

Incorrect settings, such as those in the ***Power Settings*** *menu, can disable the functions of your DLT-V72 Facelift.*

Only IT skilled persons (qualified personnel) with a good knowledge of PCs, operating systems and wireless networks are permitted to configure the DLT-V72 Facelift with MDevice.

If improper changes of MDevice are performed by the customer, the releases Advantech Co., Ltd. from all liability for warranty claim.

MDevice should not be whitelisted for all users. It should be only accessible for administrators.

5.2. Start MDevice Utility

By clicking the MDevice icon on the home screen, the user can launch the utility.

Figure 5.1: Launching the MDevice Utility

5.2.1. User and Admin modes

The MDevice Utility differentiates two privilege levels: **User** and **Admin**.

In **User mode**, MDevice can only be used to review system configuration, retrieve device specific information (e.g. serial number, software versions, etc.) and check system health status (e.g. system temperature).

In **Admin Mode**, MDevice provides full access to modifying the configuration and settings of your DLT-V72 Facelift.

When launched, the login screen of MDevice pops up:

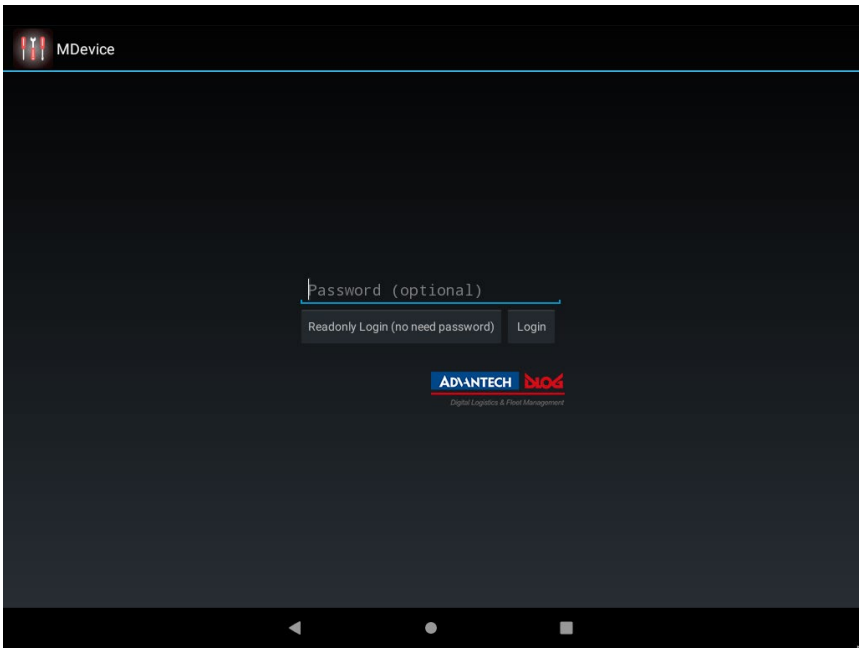


Figure 5.2: MDevice login screen

If you want to login in **User mode**, simply click **Read-only.** A password is not required.

To launch in **Admin mode**, enter the **MDevice** password and click **Login**.

The default MDevice password: “gold“

NOTICE ***Prevent system malfunction and property damage.***

For security reasons it is highly recommend to change the MDevice password when you first login.

To change the password, use the **Config Tool Setting** menu on the left side of the MDevice screen:

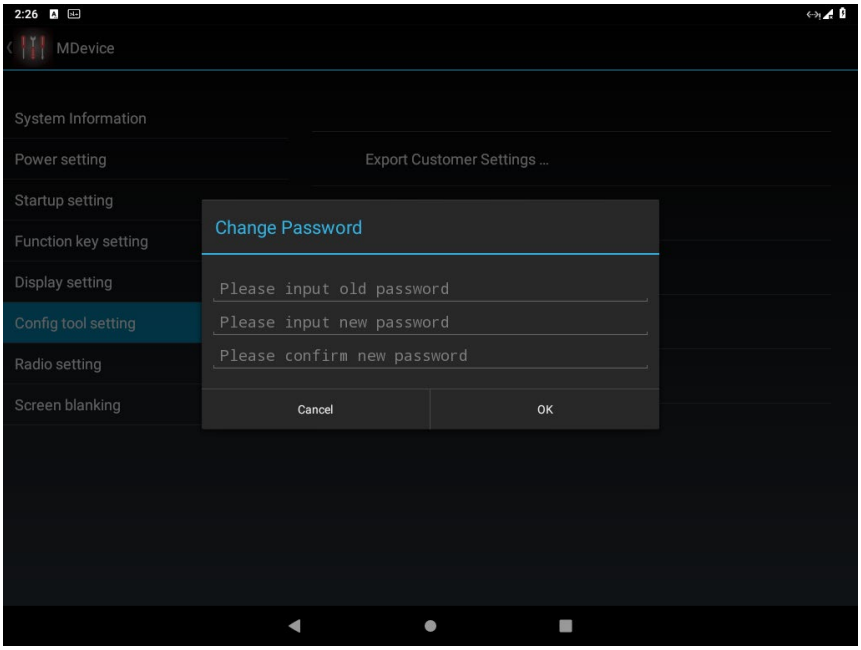


Figure 5.3: Config tool setting – change password

5.3. MDevice Functional overview

NOTE

You need to perform a power cycle of the device to activate the new device settings of MDevice.

Please wait at least 30 seconds after last settings change before power cycle is being initiated

The MDevice menu is on the left side of the MDevice screen.

Click one of the menu items to switch to the corresponding menu.

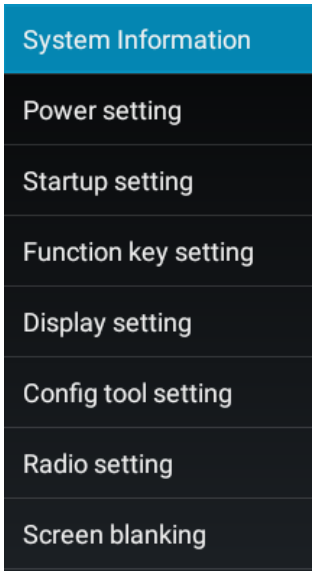


Figure 5.4: MDevice Functional overview

System Information	Displays system specific information and health status (e.g. serial number, system temperature, etc.)
Power setting	Configures the automatic start and shutdown behavior including related parameters
Startup Setting	Configures how the system starts up and which programs are automatically started when booting the device
Function key setting	Allows assigning function keys to the physical special keys on the DLT-V72 Facelift front panel
Display setting	Configures the touch panel, e.g. touch sensitivity and calibration.
Config Tool setting	Configuration of MDevice
Radio setting	To configure (WLAN \ Bluetooth\ GPRS) modules including “internal/external” antenna feature.

Screen blanking	Solution is used to overlay the display of VMTs with a black or a customer-defined image as soon the vehicle is in motion.

5.3.1. System Information

In the **System Information** menu, device system information is displayed. All the items are read-only. Multiple sections are provided. You may need to scroll down and up accordingly.

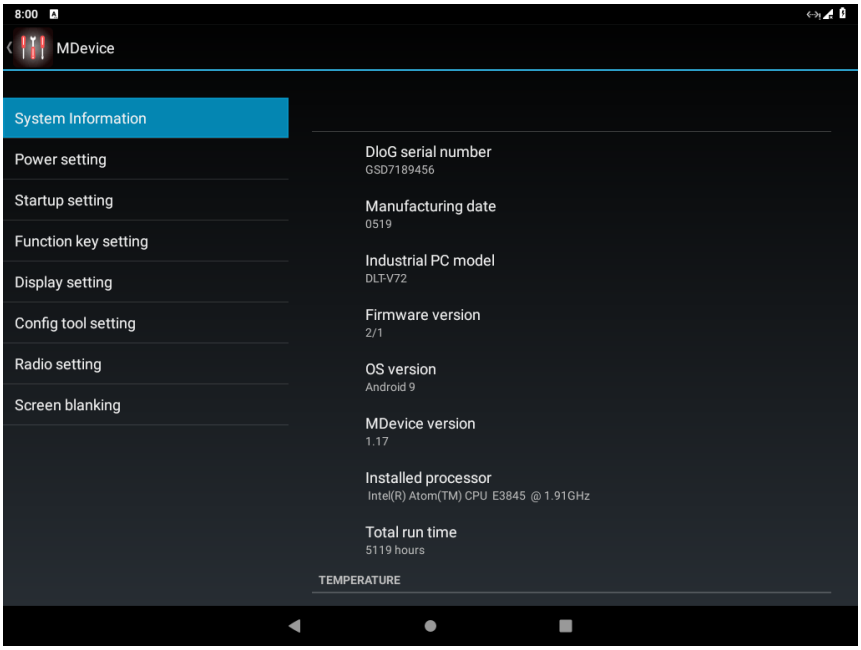


Figure 5.5: MDevice – System information menu, top section

The top section summarizes key system information:

Serial number	Serial number of your DLT-V72 Facelift
Manufacturing date	Calendar week and year
Industrial Computer model	Model number of your DLT-V72 Facelift
Firmware version	Firmware version of the MDevice microcontroller
OS version	Android and versions
MDevice version	Revision of the MDevice utility
Installed processor	ID of the CPU used
Total run time	Aggregate power-on hours of your DLT-V72 Facelift

TEMPERATURE section:

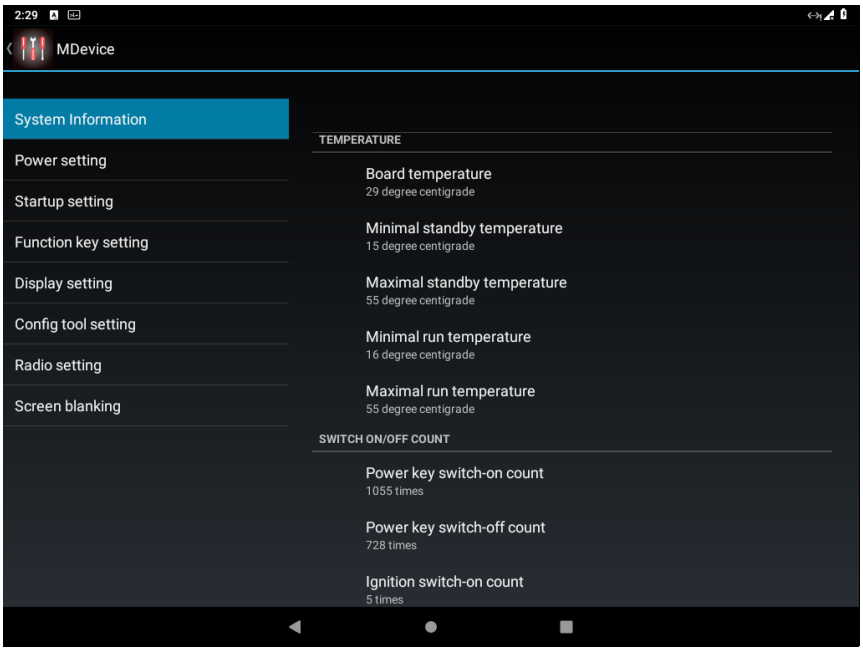


Figure 5.6: MDevice – System information menu, temperature

This section displays temperature information of the system.

Board temperature	The current temperature inside your DLT-V72 Facelift
Minimal standby temperature	The lowest temperature that was logged while your DLT-V72 Facelift was turned off
Maximal standby temperature	The highest temperature that was logged while your DLT-V72 Facelift was turned off
Minimal run temperature	The lowest temperature that was logged while your DLT-V72 Facelift was turned on
Maximal run temperature	The highest temperature that was logged while your DLT-V72 Facelift was turned on

SWITCH ON/OFF COUNT section:

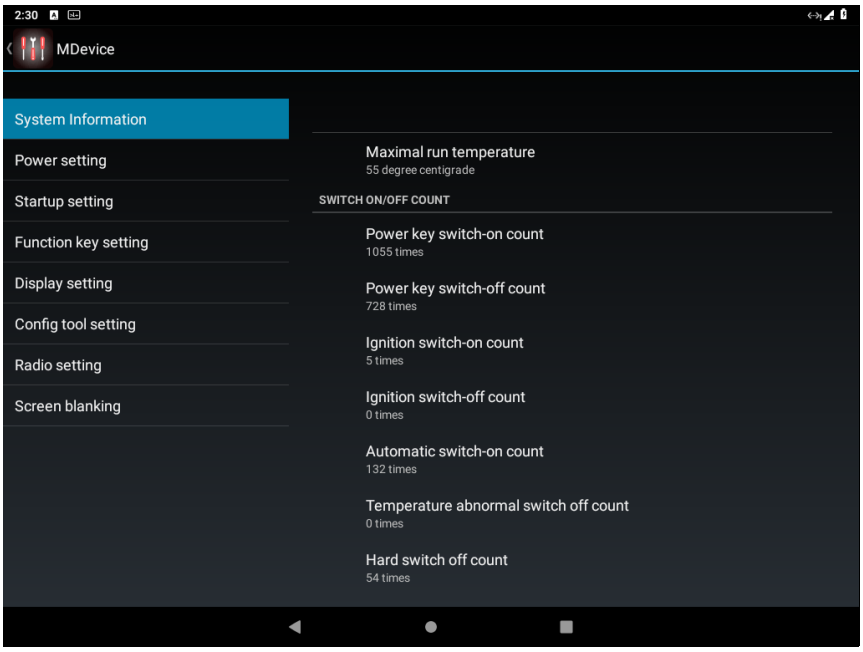


Figure 5.7: MDevice – System information menu, switch on/off count

In this section, power on and off counters are displayed.

Power key switch-on count	Shows how often the computer was turned on with the power key
Power key switch-off count	Shows how often the computer was shut down with the power key
Ignition switch-on count	Shows how often the computer was switched on with the vehicle’s ignition
Ignition switch-off count	Shows how often the computer was shut down with the vehicle’s ignition
Automatic switch-on count	Show how often the computer was switched on via "Operation system Power Manager"
Temperature abnormal switch off count	Shows how often the computer was shut down due to a critical temperature event.
Hard switch off count	Show how often the computer was turned off using "hard" switch-off. Means: How often a device switched-off before the operating system was not successful to shut down.

5.4. Power Setting

The **Power setting** menu allows configuring the power-on and shutdown behavior of your DLT-V72 Facelift and other power related settings.

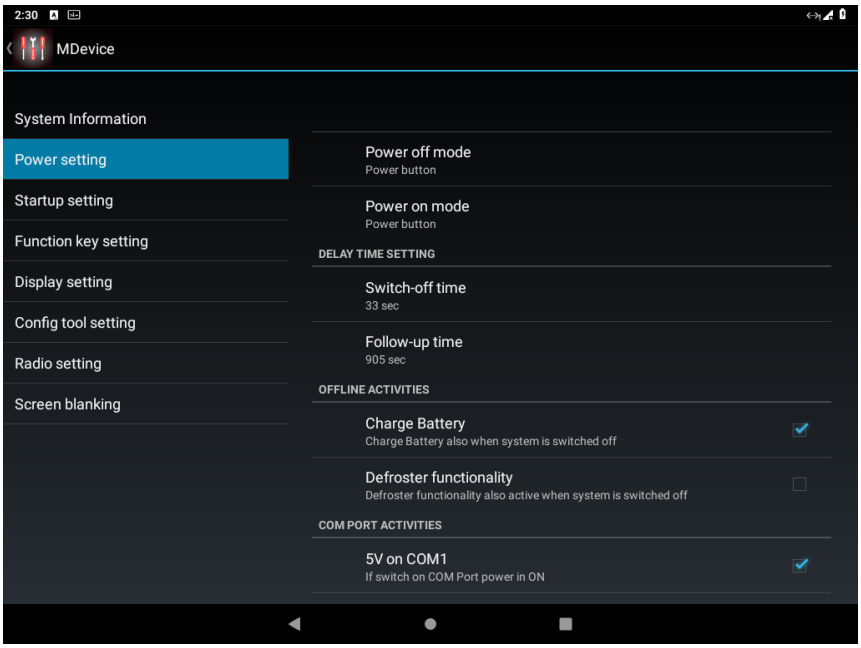


Figure 5.8: MDevice – Power setting menu

Power off mode	To configure which source is allowed to turn off the device.
Power on mode	To configure which source is allowed to turn on the device.
Switch-off time	After switching the device off using the ignition or power key, the system will normally shut down automatically. If it won't for any unforeseen reason, the **MDevice** controller will force a shutdown by removing power after the **Switch-off time** specified here. This will happen in all shutdown modes.
Follow-up time	If you do not want the PC to shut down immediately after switching it off using the ignition or power key, depending how to device is configured, but need to keep it running for some time, specify this time here.
Charge Battery	If checked, the **MDevice** controller will charge the backup (UPS) battery when system is off.
Defroster functionality	If the checkbox is selected, the defroster will be enabled whenever the device is being supplied with power.
5V on COM1	If checked, 5 Volts will be supplied on the COM1 serial port connector for powering peripherals such as a barcode scanner. 5V can be enabled or disabled.

5.5. Startup Setting

The **Startup Setting** menu is used to define the startup behavior of the device.

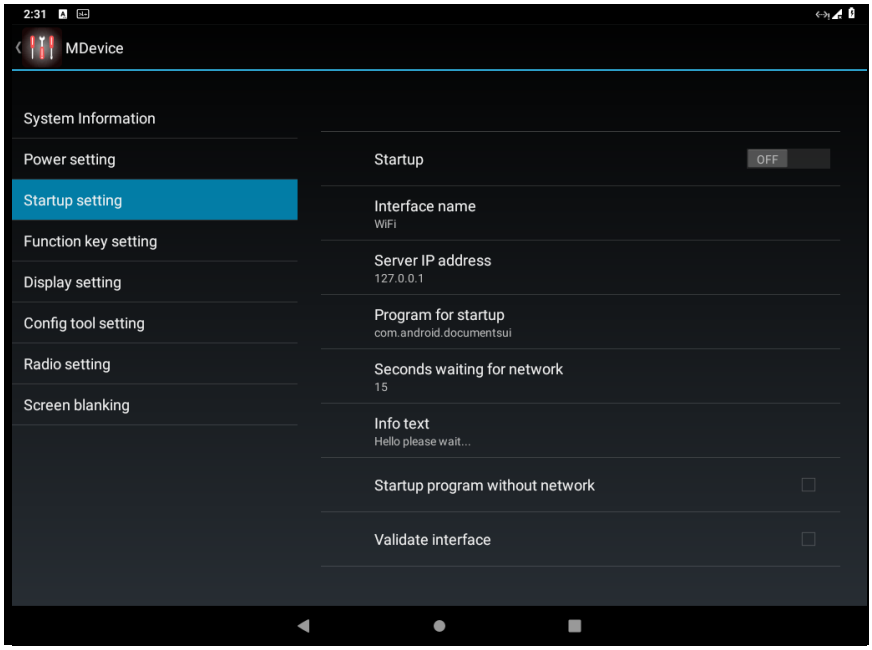


Figure 5.9: MDevice – Startup setting menu

NOTE

If you set up your device in Kiosk Mode, use the Kiosk mode configuration to define startup behavior. The settings and features in this section are tailored for use in Native Mode.

If **Startup** is turned **ON**, the device will try to establish a connection with the server specified over the specified interface. If the connection is successful, the specified application will be launched automatically. If the feature is enabled (i.e. Startup is turned to **ON**), the system will show a full screen page while the server connection status after boot-up.

Startup	If checked, the Startup feature is enabled.
Interface name	Specifies the network interface for connecting to the specified server.
Server IP address	Specifies the server's IP address.

Program for Startup	Specifies one or multiple applications, which will be auto-started. After selecting this menu item, use the startup program list, user can **add program** and **remove program button** to manage the list of applications.
Seconds waiting for network	Timeout in seconds for establishing a connection to the server.
Info text	The string entered here will be displayed while the system is connecting to the server.
Validate interface	If checked, the network adapter related to the specified network will be validated before connecting to the server.
Start programs even without network	If checked, the startup programs will be launched regardless of the connection status to the server.
Validate interface Info text	The string entered here will be displayed while the system is probing the network interface.

5.6. Function Key Setting

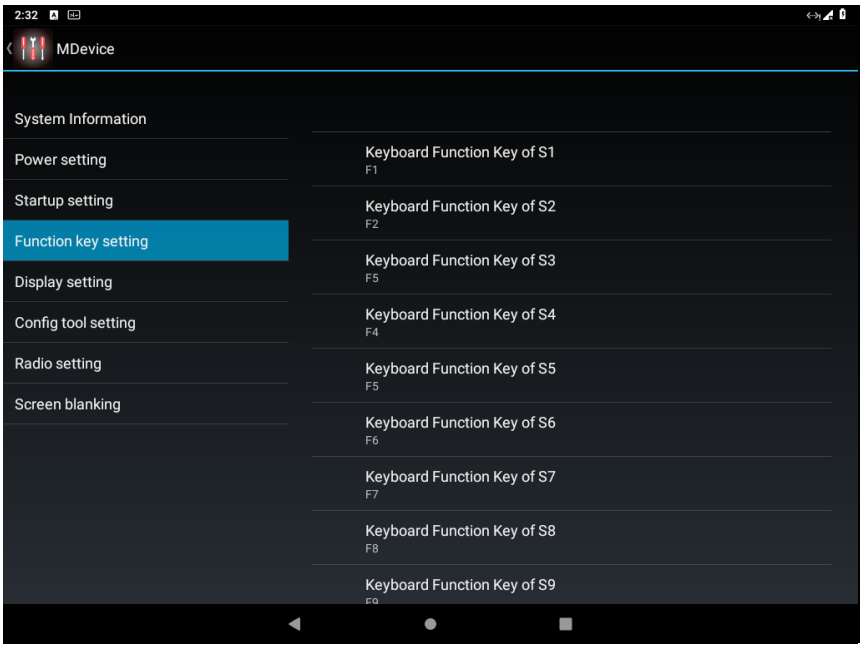


Figure 5.10: MDevice – Function Key Setting menu

In this menu, the physical function keys (also called special function keys) located on the DLT-V72 Facelift Industrial Computer's front panel can be programmed.

Each key can be configured as one of the keyboard function keys (F1~F24), special keystroke combination (ALT + TAB), single characters or even keystroke combinations like (SHIFT + a / CTRL + ALT + DEL) for example.

NOTE

*The physical function keys designed on the DLT-V72 Facelift front are labeled from **Sx** where "x" equals the key numbers. Different models of the DLT-V72 Facelift implement a different number of physical keys. Key labels **Sx** have a 1:1 correspondence with the **Fx** labels used in MDevice, e.g. **S1** physical key is **F1** soft-key in MDevice.*

5.6.1. Assigning special function keys

You can configure the special function keys by the following steps:

Click one of the special function keys in this menu, and the configuration dialog will pop-up.

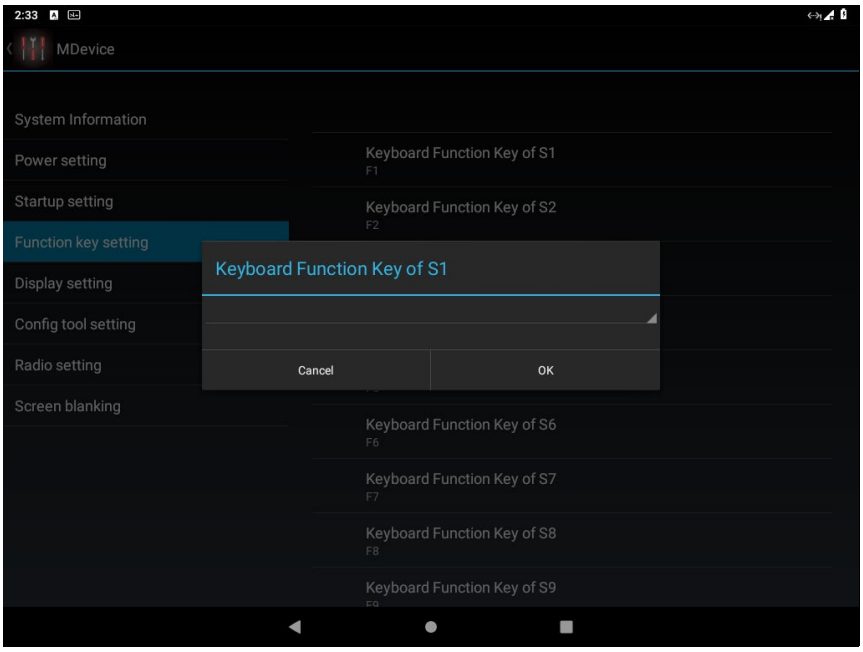


Figure 5.11: MDevice – Assigning special function keys

After clicking on the icon select one of keyboard function keys (F1~F24, ALT + TAB) for this special function key from the list or select **Custom** to program any possible key from an attached USB-keyboard or the ASOP integrated software keyboard.

NOTE

The AOSP software keyboard does not contain all standard keys possible to program so it is recommended to use an USB attached keyboard specially for programming key combinations.

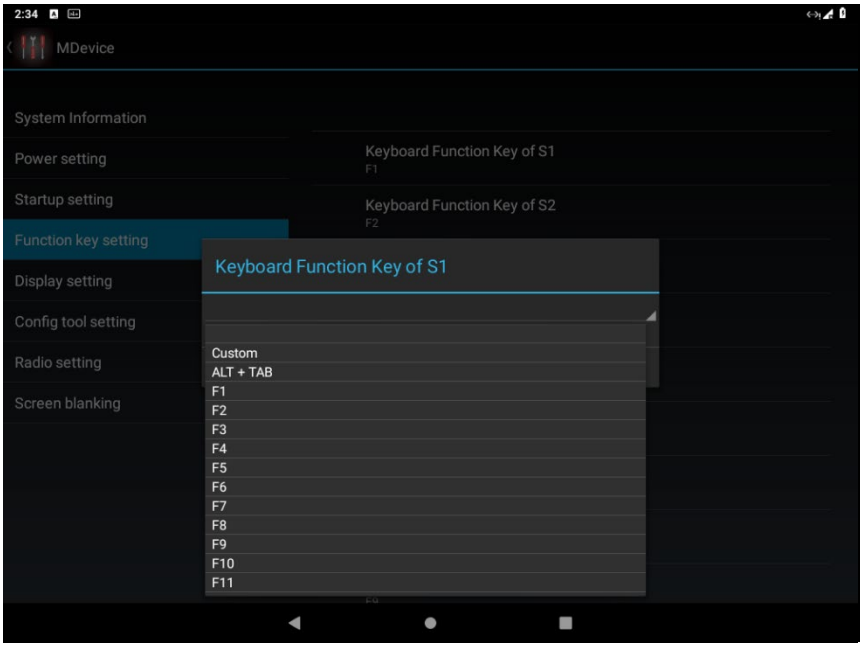


Figure 5.12: MDevice – Assigning special function keys, keyboard function

In case **Custom** was selected, another dialog will open to program the new key assignment:

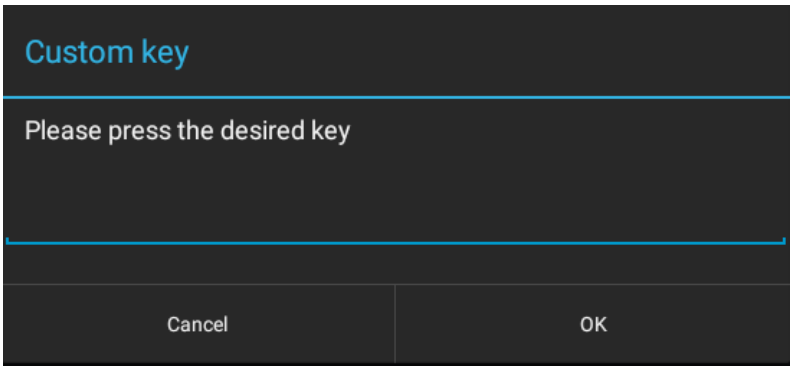


Figure 5.13: MDevice – Assigning special function keys, custom key

Press key or key combination at external connected USB-keyboard for new key assignment. (In the following example Shift + a for uppercase output)

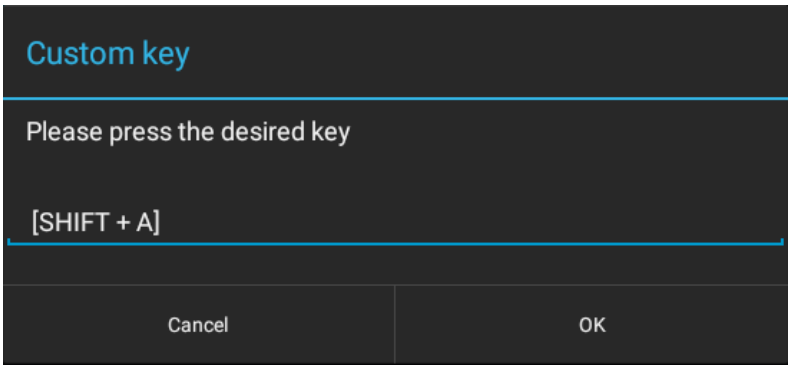


Figure 5.14: MDevice – Assigning special function keys, custom key

Click **OK** to save this change.

The new assignment will be displayed for each function key:

Figure 5.15: MDevice – Assigning special function keys, new assignment

NOTE

With image v2.02, only English US characters are supported to be programmed using this functionality. By changing the keyboard layout to another language the display / output will change to different selected layout. Special keys only available on specific layouts like (AltGr / German layout) are not supported at all and will be interpreted as AltGr r instead.

5.7. Display Setting

The **Display setting** menu provides a capability to configure the touch screen.

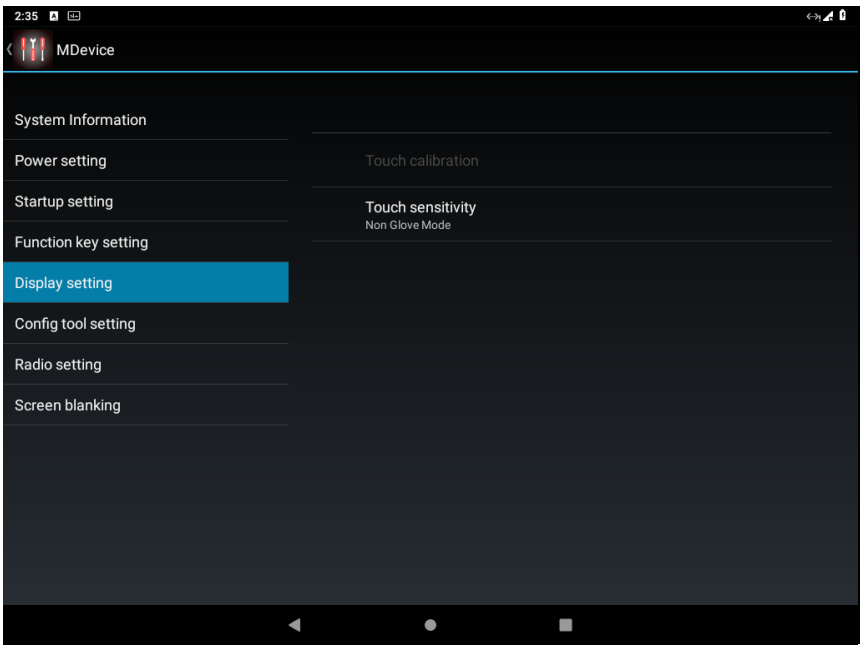


Figure 5.16: MDevice menu Display Setting

If glove mode is selected, the PCT touchscreen sensitivity is enhanced.

***HINT**: This feature needs to be enabled if you want to operate DLT-V72 Facelift with gloves.*

*At DLT-V72 K and DLT-V72 KD (Defroster) version there are three options available to switch between **non glove, glove or thick glove** mode.*

PCAP Sensitivity Enhanced

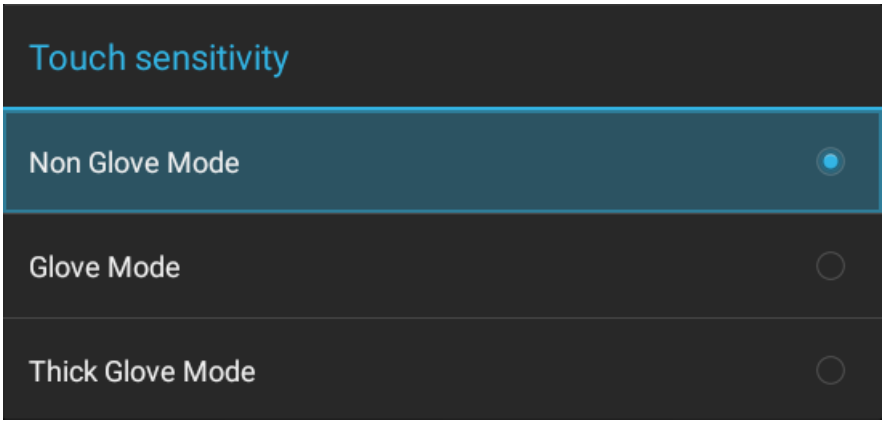


Figure 5.17: MDevice menu Display Setting – Touch sensitivity

5.8. Config tool setting

In the **Config tool setting** menu, the user can configure the **MDevice** utility.

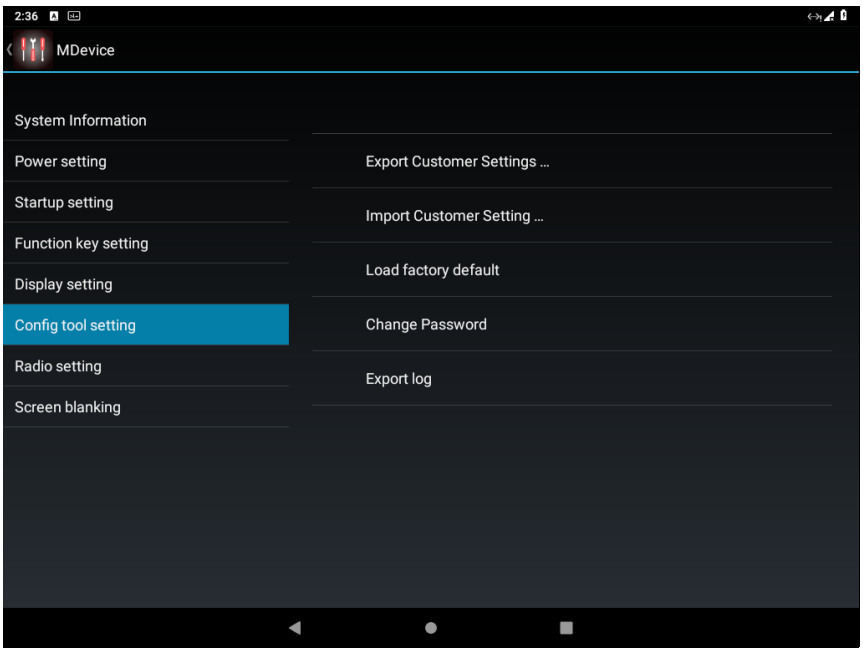


Figure 5.18: MDevice menu Config tool setting

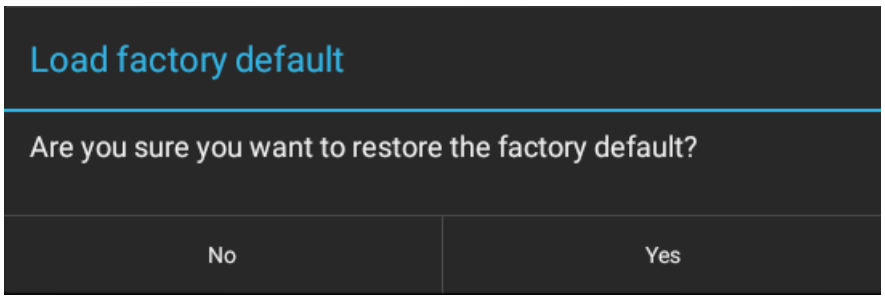
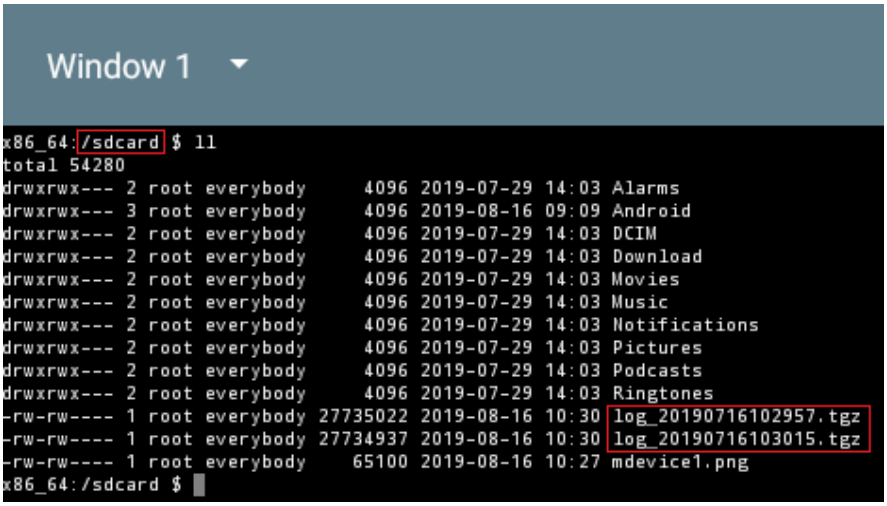
Export Customer Setting	Export current MDevice settings to a file. The exported items include the Power settings, Startup settings and Function key settings.
Import Customer Setting	Import custom **MDevice** settings from a file. The imported items include the **Power settings**, **Startup settings** and **Function key settings.**
Load factory default	Reset the **MDevice** Settings to default factory status after user confirmation.  Affects only the **Power settings**, and Front **Function key settings.**

Figure 5.19: MDevice Config tool setting – load factory default

	Please note that performing this option the key assignment of all front special keys will be reverted to default (F1-F12) depending on available front keys)
Change Password	To change the **MDevice** password.
Export log	This function will create a ".tgz" file that contains system information collected from current session. Please only use this for maintenance purpose requested by engineers from Advantech Service-IoT.  Figure 5.20: MDevice – logfile Under **/SDCARD** as shown above in case of more export processes done multiple files are stored at this location with date and timestamp attached. An USB-Stick or ADB connection can be used to collect these files from the terminal. For USB-Stick file transfer, follow chapter *6.4 USB-Stick (file transfer).* For ADB connection, follow chapter *6.9 ADB over Network*.

5.9. Radio setting

NOTE

Only at DLT-V72 Facelift terminal and installed extension board for (GPRS / GPS) available

MDevice Radio setting menu point is only shown, if additional required HW is detected (similar as Screen blanking).

This module can be used to change module configuration and (internal / external) antenna configuration.

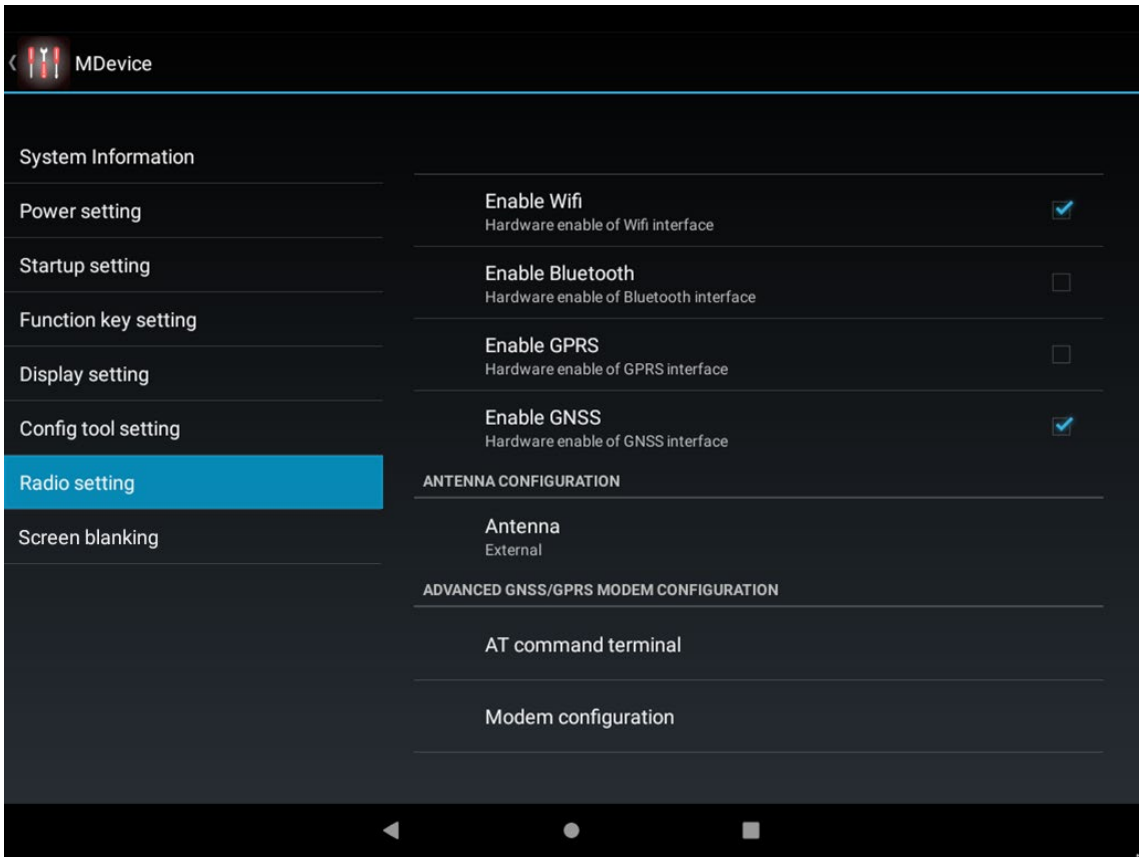
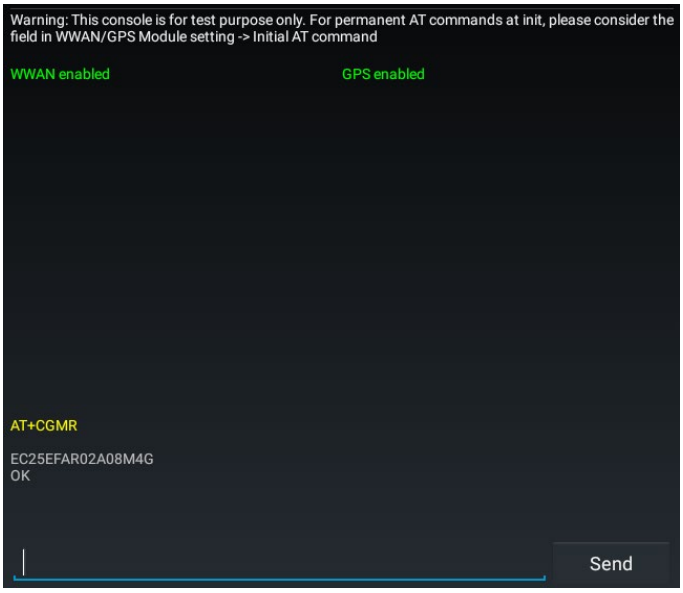


Figure 5.21: MDevice – Radio setting

Enable WiFi	Enable / Disable WLAN module
Enable Bluetooth	Enable / Disable Bluetooth module
Enable GPRS	Enable / Disable GPRS module ***IMPORTANT NOTE:*** *This option can only be changed in case a SIM-card is available and inserted using the defined SIM-card slot located under the upper antenna-cap. Additional*

	information can be found in the DLT-V72 Facelift Hardware manual
Enable GNNS	Enable / Disable GNNS module
Antenna	Select between **Internal** and **External** antenna support. ***IMPORTANT NOTE:*** *Due to 802.11n/ac antenna diversity characteristic of the ADV SIoT WLAN WWAN antenna by selecting **External antenna** both functions (WLAN / GPRS) will be affected by this.*

In case GPRS / GNNS module is available, two additional functionalities are available:

AT command terminal	This feature can be used to send AT commands to the Quectel module. In the following example, the installed firmware of the module will be read out.  Figure 5.22: MDevice – Modem AT terminal ***IMPORTANT NOTE:*** *For available AT command list & additional information please refer to the homepage of module manufacture* *https://www.quectel.com/product/ec25.htm:*

For specific configuration before GPRS connection is being established this function can be used to send commands to the module at every startup.

Please note that the above-described command line should be used for testing because module is reacting with return answers in case the entered command was not ok about syntax or content.

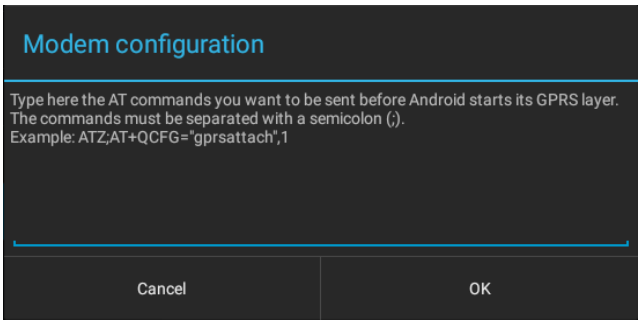


Figure 5.23: MDevice – Modem configuration

Modem configuration

As part of the example text inside the dialog entering more than one commands to be sent to the module requires a Semicolon character as separator in between.

IMPORTANT NOTE:

For available AT command list & additional information please refer to the homepage of module manufacture

https://www.quectel.com/product/ec25.htm:

A prepared script file can also be used to initiate AT commands during system startup. This allows remote update of multiple units at the same time using ADB or MDM (Mobile Device Management) SW (like SOTI®).

More details about script setup and handling are described in chapter *6.3.1 GPRS / GPS script configuration (AT commands).*

5.10. Screen blanking

NOTE

*Only at DLT-V72 Facelift terminal and installed extension board for (GPRS / GPS) or alternative with installed DLT-SA6100 (**D**igital **S**mart **M**otion **S**ensor) USB-Stick available.*

MDevice Screen blanking menu point is only shown, if additional required HW is detected (similar as Radio setting).

Screen blanking option is being used to prevent display content view and terminal access by the user while the vehicle is in motion.

This module can be used to change screen blanking configuration and to enable / disable feature.

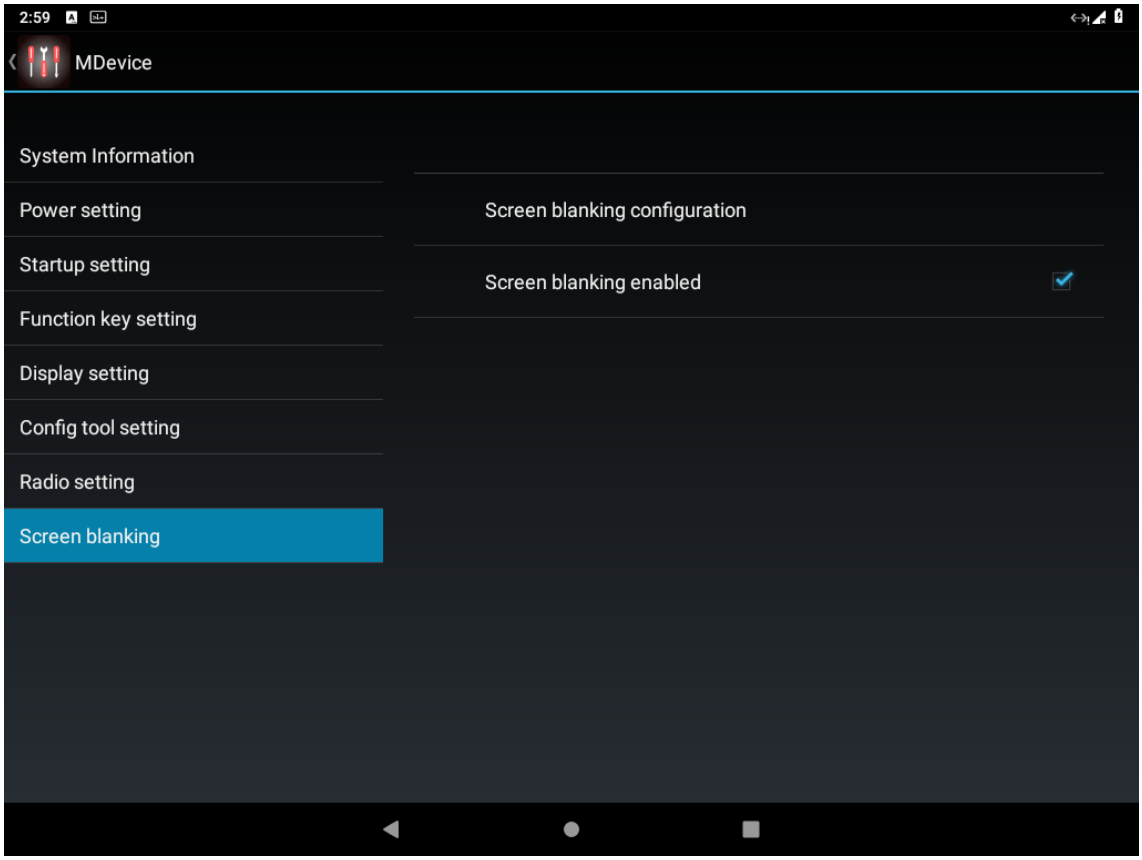


Figure 5.24: MDevice – Screen blanking

Screen blanking enabled	If checked, the Screen blanking feature is enabled.

5.10.1. Sensor Settings: Sensitivity Configuration

The Sensitivity must be defined here so that the DSMS Screen Blanking Solution detects whether or not the vehicle is in motion or stationary. The sliding controller provides five setting levels: **high / medium / low** and two intermediate values (between **high & medium** and between **medium & low).**

The following criteria determine which value should be set:

- Condition and evenness of the ground on which the vehicle is moving.
- Type of vehicle: different vibration strength of electronic vehicles, petrol vehicles, etc.
- Where is the VMT fitted on the vehicle? Vibrations vary depending on the mounting location (console, under the roof, etc.)
- What has been used to mount the VMT to the vehicle? Vibrations vary depending on the mounting type (long or short RAM mounts, ADLoG mounting bracket, etc.).

NOTE

The Sensitivity level that needs to be set for the VMT depends on a wide range of criteria and must be determined on a case by case basis.

*The following information on the **Sensitivity** setting can therefore be regarded as non-binding recommendations.*

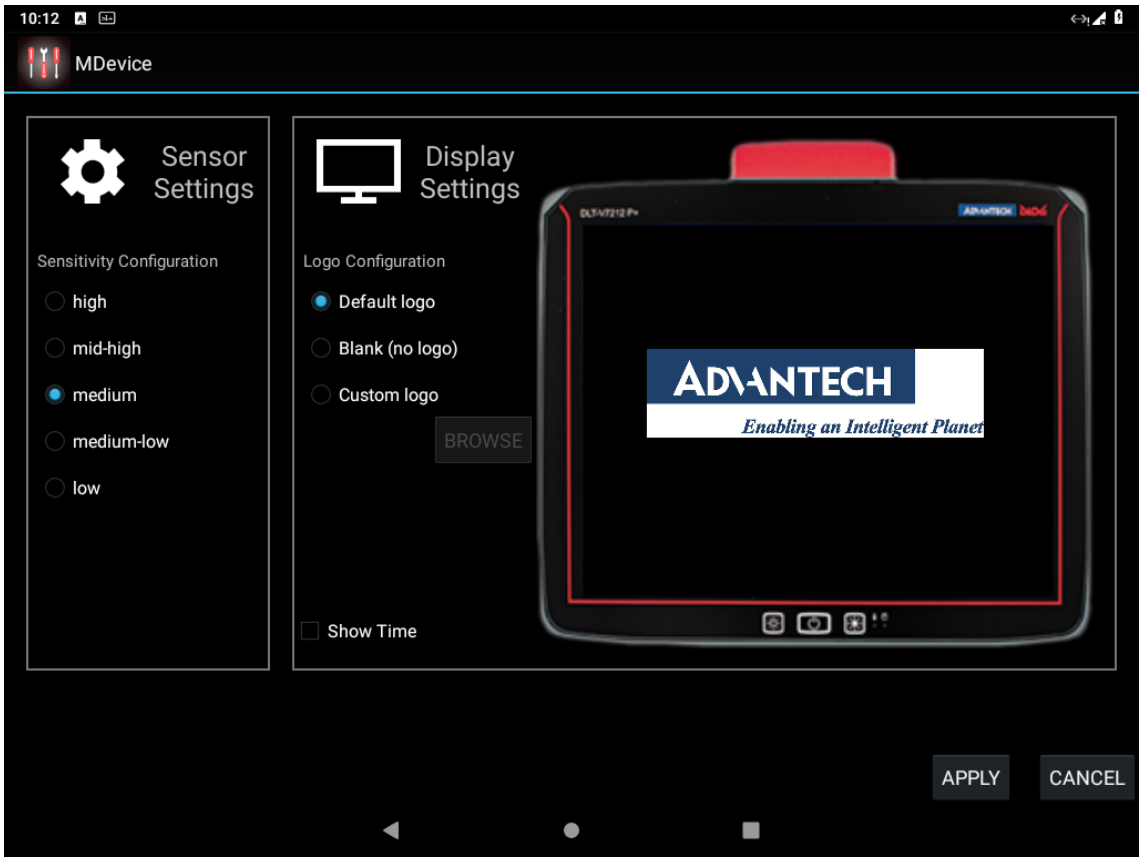


Figure 5.25: Screen blanking configuration

High **Mid High** **Medium**	If the vehicle is smooth running (e.g. electric vehicles) and the ground is relatively level.
Medium Low	
Low	

High	
Mid High	
Medium **Medium Low** **Low**	If the vehicle is vibrating heavily (e.g. petrol vehicles) and the ground is uneven.

5.10.2. Display Settings

Logo configuration

Whether or not a graphic is displayed when the screen is blanked is defined here.

Default logo	The ADLoG logo will be displayed on the blanked screen.
Blank (no logo)	If checked, the Screen blanking feature is enabled.
Custom logo	A customer logo will be displayed on the blanked screen. The logo can be selected by choosing a file that has been copied before to the internal storage. (CFast card) For further information about using file explorer please see section *6.4 USB-Stick (file transfer).* Possible file formats: png, jpg, gif, bmp. The display size of the logo is automatically adjusted to the display size by the Screen Blanking software. The logo is scaled – with fixed aspect ratio – so that the available display area is optimally filled. A frame is only left clear for the optional display of the time.

Show time

This setting specifies whether or not the current time is to be shown on the blanked display.

The time format corresponds to the MS Windows country settings for the ADLoG VMT in question.

Example for the US: hh:mm:ss / AM/PM

6. Advanced

6.1. WLAN Roaming

NOTE *It is mandatory to perform proper configuration of the WLAN parameters under Android to achieve comparable roaming performance to DLT-V72 Facelift Industrial Computers running other Operating Systems such as MS-Windows.*

To configure WLAN roaming parameters, follow the instructions below:

Go to Settings Network & Internet -> WLAN.
Select the target network that the DLT-V72 will be operated in (**CB-TestN** in this example).

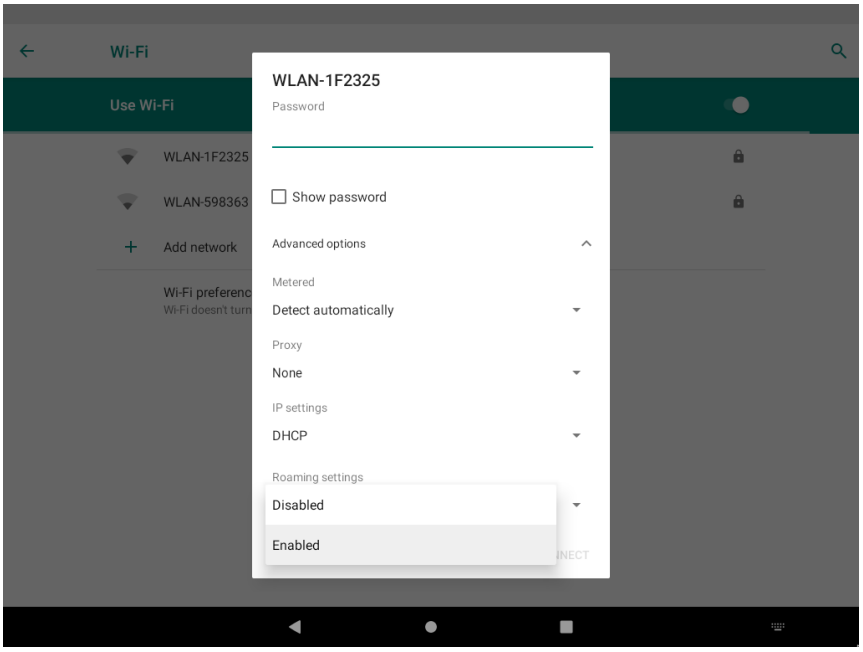


Figure 6.1: WLAN settings network selection

Change Roaming settings from **Disabled** to **Enabled**.
A submenu will pop up for entering the roaming parameters.

Swipe down with finger to see all adjustable items.
Be sure to enter all parameters including **Roaming Settings.**

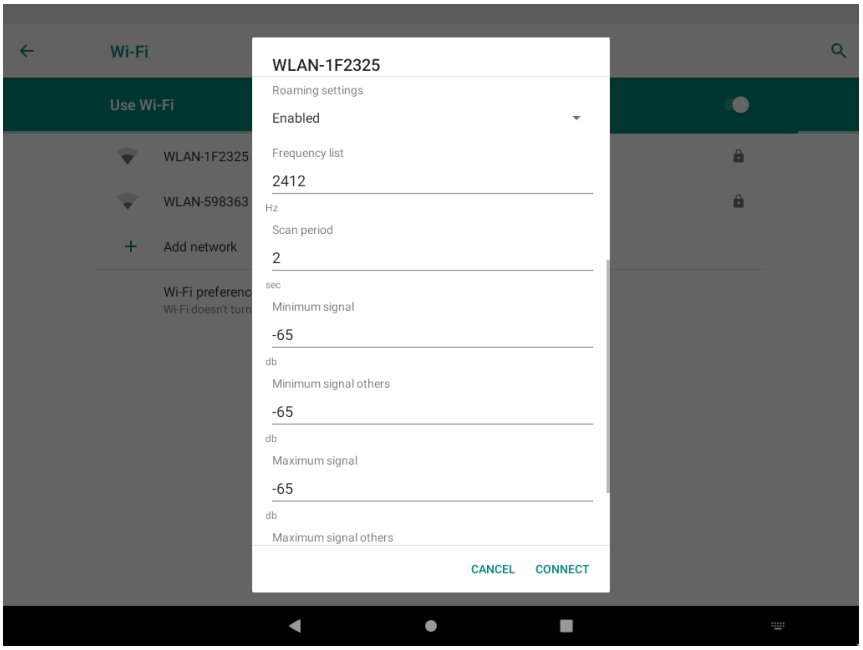


Figure 6.2: WLAN roaming settings (Android image version v2.01.1 or lower)

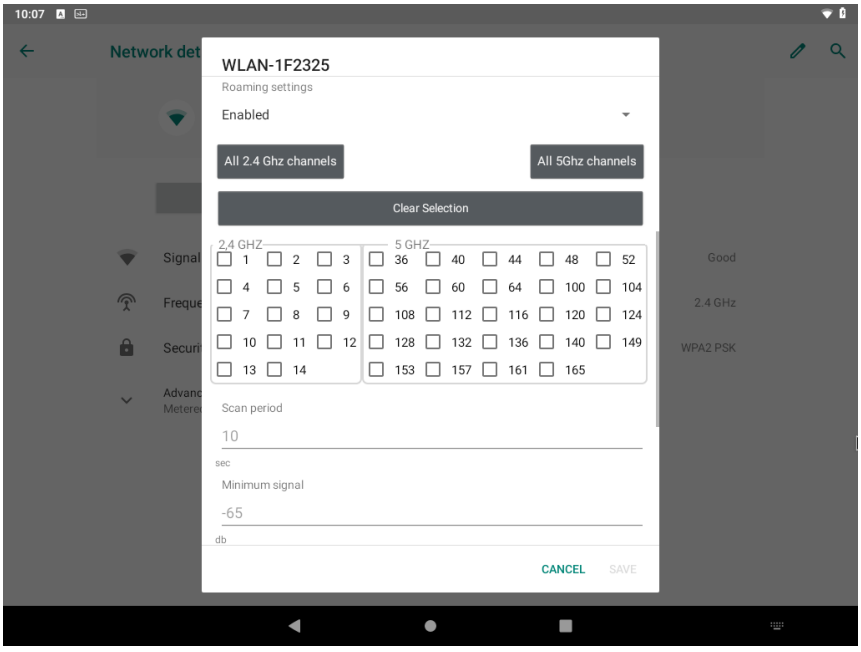


Figure 6.3: WLAN roaming settings (Android image version v2.01.2 or higher)

Frequency list	A list of channels on which the DLT-V72 Facelift should scan for potential AP candidates. Enter all the frequencies you use separated with a whitespace. Use the center frequency from the tables below. ***IMPORTANT NOTE:*** *In case you already have Android9 image version **v2.01.2** installed the channel selection is being done using checkboxes instead of entering channel frequencies.* ***ADDITIONAL NOTE:*** *If only 2.4 or 5GHz channels are configured, no connection is established to access points that do not support the configured frequency range. To support both frequency ranges in parallel, please configure all 2.4 and 5GHz channels that are used by the access points.*
Scan period	Corresponding to the number of channels used for the SSID, you need to calculate a suitable timer in working environment. Hints on such calculation can be found in the note below.
Minimum and maximum signal	The signal strength with currently connected access point. The terminal is triggered to roam when the current signal strength is weaker than the setting value and the new visible access point has certain higher signal strength. (defined in **minimum and maximum signal others**). We recommend starting your device integration test with **-65** for all the different signals.
Minimum and maximum signal others	The signal strength of the new visible candidates. The terminal is triggered to roam when the current signal strength is weaker than **Min/Max signal** and the new visible access point has certain higher signal strength than Min/Max signal others. Proper difference could avoid unnecessary roaming frequency. We recommend setting difference larger than 5 dBm.

6.1.1. Center frequencies 2.4 GHz band

For the 2.4 GHz band, center frequencies for the channels can be found in the table below:

CHANNEL NUMBER	CENTER FREQUENCY MHZ
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472
14	2484

6.1.2. Center frequencies 5 GHz band

For the 5 GHz band, center frequencies for the channels can be found in the table below:

CHANNEL NUMBER	CENTER FREQUENCY MHZ
36	5180
40	5200
44	5220
48	5240
52	5260
56	5280
60	5300
64	5320
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700
149	5745
153	5765
157	5785
161	5805
165	5825

CAUTION ***HF Radiation***

WLAN channel usage depends on individual country regulatory and restrictions. Depending on destination country the DLT-V72 Facelift terminal are being used, please select and configure WLAN channels accordingly.

Observe all applicable regulations for your deployment location/country with regard to operating channels, radio frequencies and the maximum permissible transmitting power. Responsibility for this lies with the company operating the DLT-V72 Facelift Android System. The regulatory authorities in the relevant country can provide information on this.

Setting scan_period

Setting a proper value for **scan period** requires the consideration of various aspects:

Shorter scan periods yield higher possibility to trigger faster roaming behavior.

However, practical limits apply for reducing the scan period while maintaining a reliable roaming behavior:

A scan on one channel is taking 300 milliseconds.

E.g. when using three channels, the aggregate scan time sums to 900 ms.

On top of that, plus system and infrastructure overhead.

I.e. Scanning every 2 seconds is preferred. However, other parameters such as the WLAN-controller, WLAN access point configuration, and driving speed of the vehicle hosting the DLT-V72 Facelift would differ the optimal value for scanning period from different application scenarios.

Thresholds

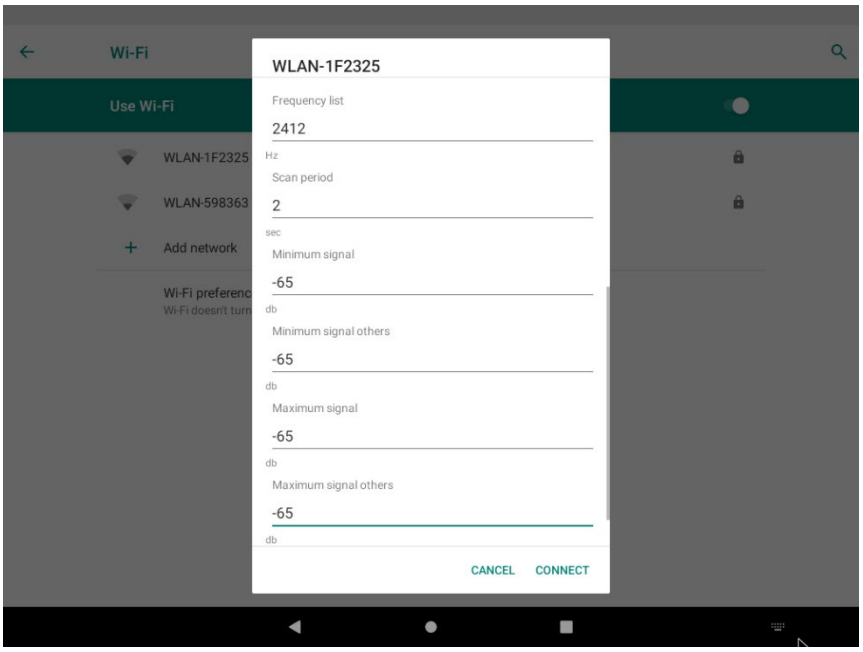


Figure 6.4: WLAN thresholds

6.2. Ethernet settings

To configure Ethernet parameters, follow the instructions below:

NOTE *By default, Ethernet is configured to DHCP. Ethernet settings dialog is being used to set static IP address configuration including Gateway and DNS server*

Go to Settings Network & Internet -> Ethernet

Use **Ethernet IP mode** to switch between **static** and **DHCP**. By activating **static** all other fields (IP address, netmask, etc.) getting active as shown below

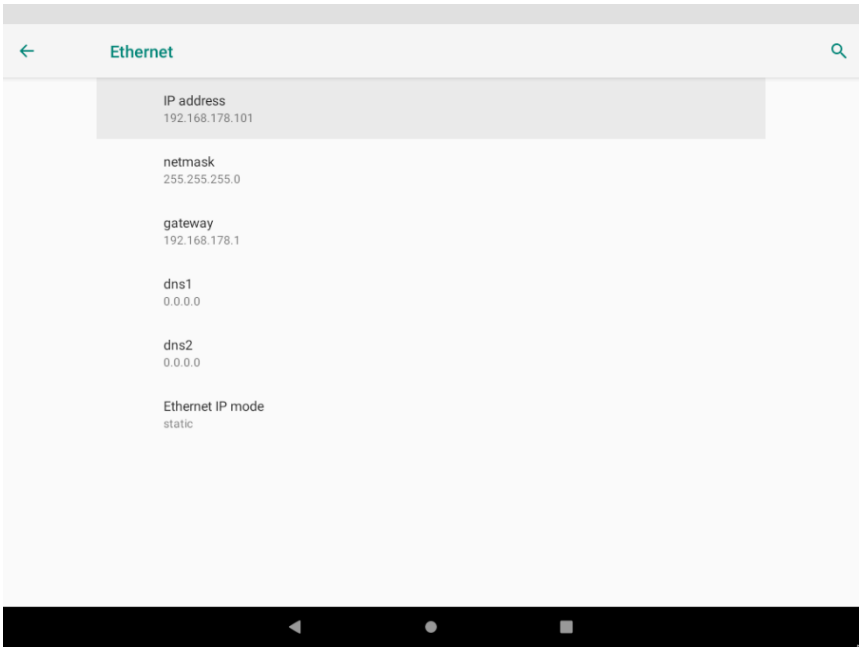


Figure 6.5: Ethernet settings

Individual fields can be clicked to be updated

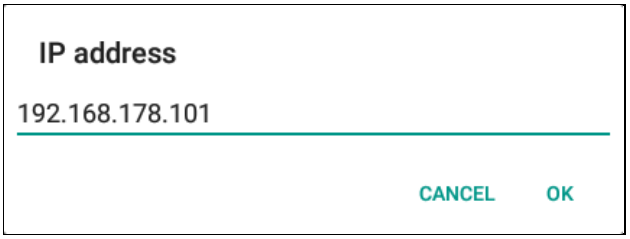


Figure 6.6: Ethernet settings – set IP address

6.3. GPRS / GPS settings

At DLT-V72 Facelift terminals GPRS / GPS settings are available as optional feature.

For GPS no additional settings are required.

The GPSR settings can be changed inside Settings **Network & Internet.**

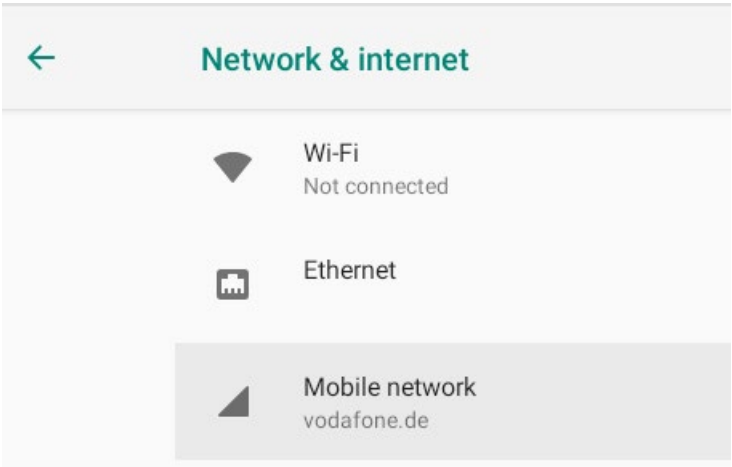


Figure 6.7: GPSR settings

Choose option **Mobile network**.

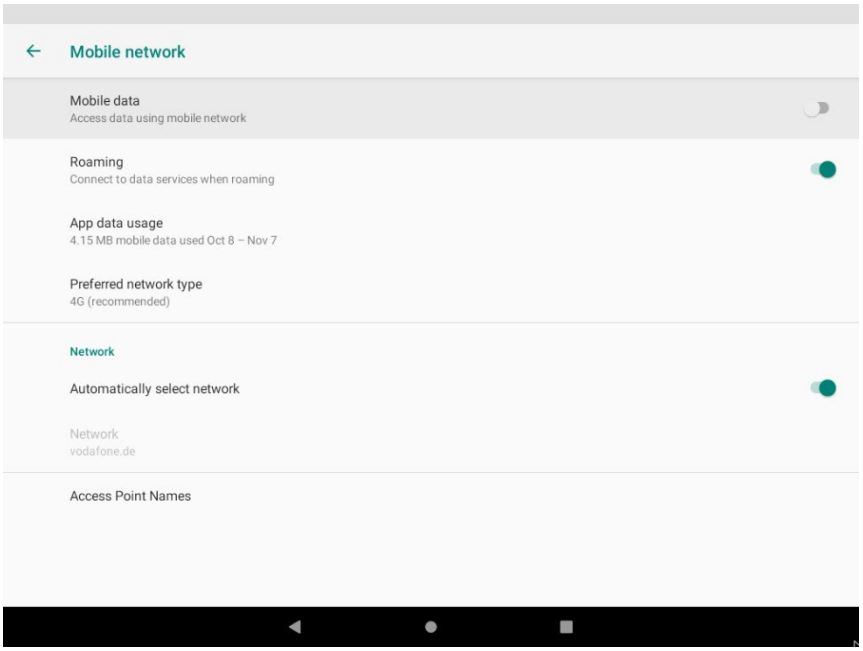


Figure 6.8: GPSR settings – Mobile network settings

Mobile Data	Enable / Disable access data using mobile network (GPRS)
Roaming	Enable / Disable data services when roaming
App data usage	Shows actual mobile date used
Preferred network type	Select one of the following (depends on installed SIM-card) • 4G (recommended) • 3G • 2G
Automatically select network	While disabled, choose a network operator (Depends on SIM-card attached to the terminal)
Access Point Names	Select provider (depends on installed SIM-card)

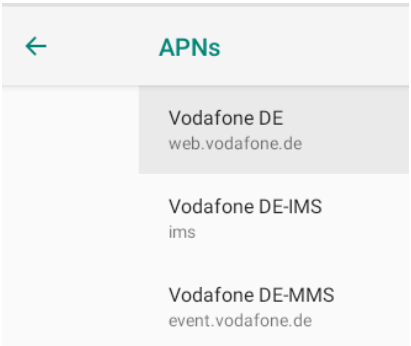


Figure 6.9: GPRS connection – Select provider

6.3.1. GPRS / GPS script configuration (AT commands)

Next to the MDevice option to add new AT commands manually there is a script possible to call allowing to setup multiple devices at the same time using ADB / MDM (Mobile Device Management) SW (like SOTI®).

Purpose of the script is to update the MDevice AT command list that will be sent to the module at each system startup.

To do this perform the following steps in order:

Create a text file with the name → **atcommands_startup.conf**

The content must be formatted like this: (single line)

At_Cmds_For_Customer_Initialize=%AT_command_1%;%AT_command_2%

Use the semicolon character as separator to add additional AT commands if required.

The following example configures GPS to be started automatically including continuously NMEA data stream output:

At_Cmds_For_Customer_Initialize=AT+QGPSCFG="autogps",1;AT+QGPS=1

After definition of AT commands save the file and place in location **/SDCARD/atcommands_startup.conf**

Perform a system reboot.

MDevice will look for the file at next startup and updates the AT commands to be sent to the terminal. Note that former placed commands will be overwritten with the new ones and configuration file is automatically deleted from **/SDCARD** folder.

While using MDevice afterwards the AT commands can be reviewed and changed at any time again.

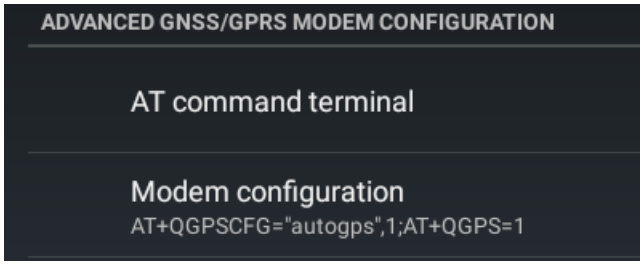


Figure 6.10: MDevice – Modem configuration (AT GPS commands)

6.4. USB-Stick (file transfer)

To use an USB-Stick at Android for file transfer you can follow the next chapter with instructions.

Attach an USB-Stick (FAT32 formatted) at DLT-V72 terminal.

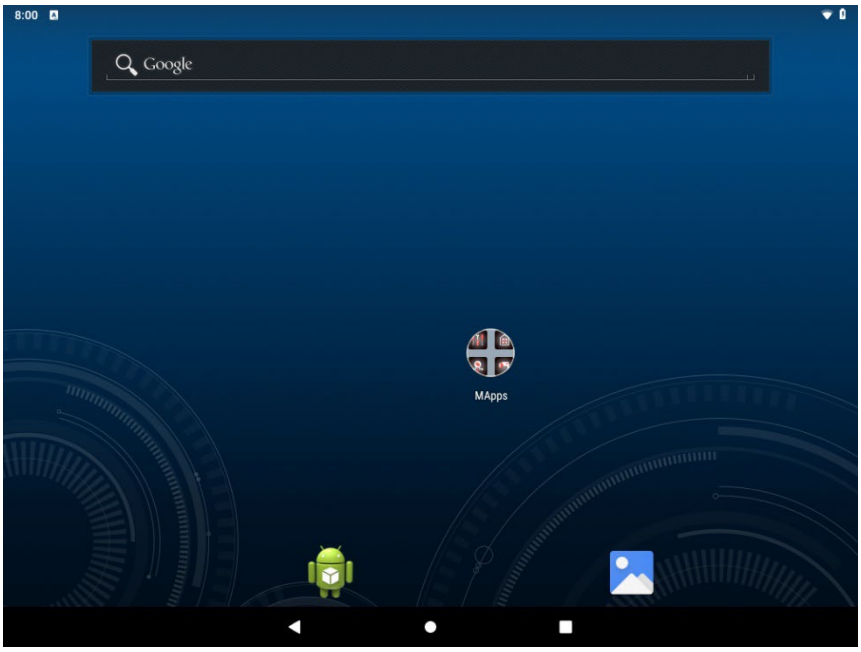


Figure 6.11: Use an USB-Stick at Android for file transfer

At **Home** screen, swipe down notification bar.

Select as below shown the **Setup** option beneath the **USB drive** list entry to configure the attached USB-Stick.

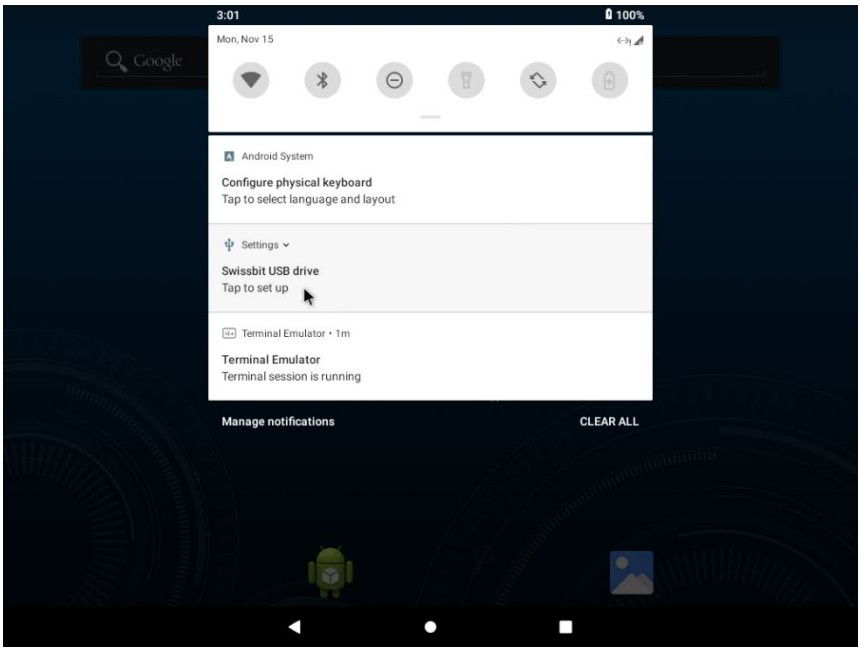


Figure 6.12: Setup option beneath the General USB drive list entry

Select option Use as portable storage and continue with Portable storage.

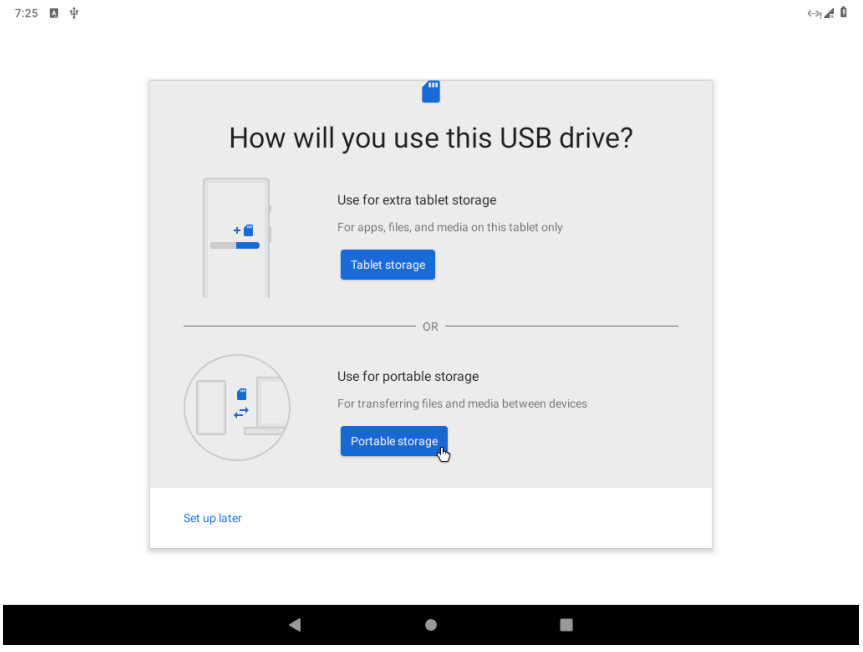


Figure 6.13: General USB drive – Option Use as portable storage

Close setup dialog by pressing **DONE** button.

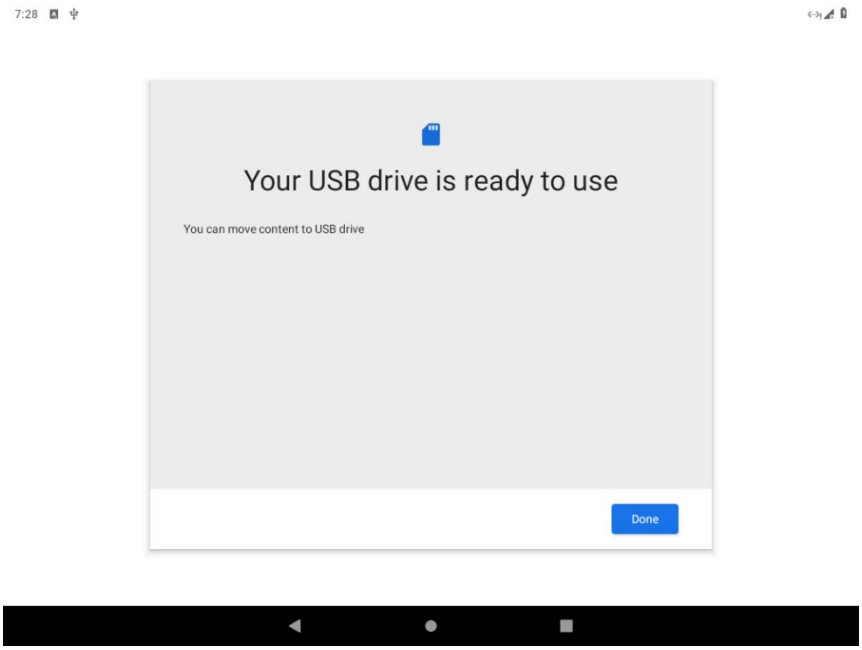


Figure 6.14: General USB drive is ready

After initial required setup click on right corner again and click **USB drive.**

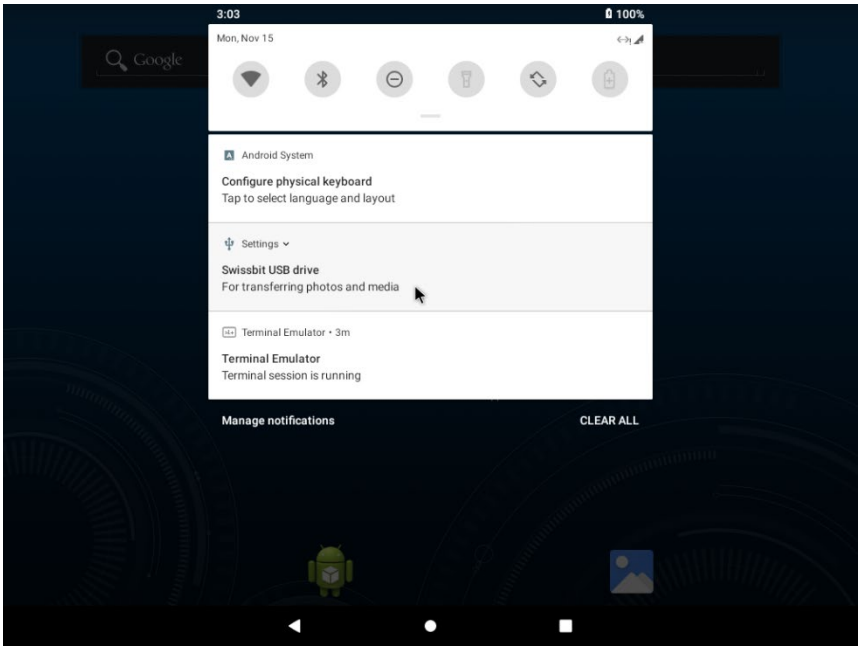


Figure 6.15: General USB drive setup finished

At right corner click on options  and select **Show internal storage**.

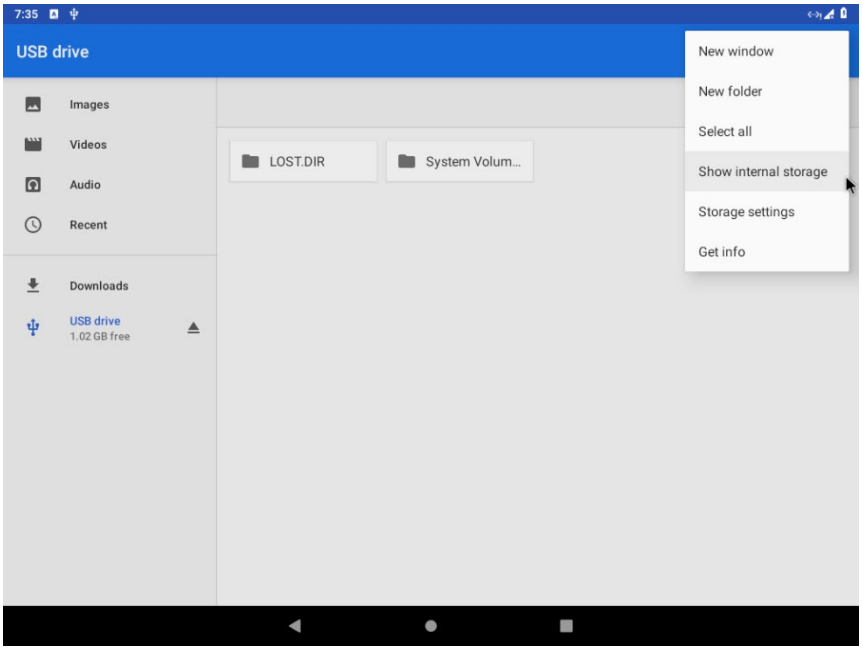


Figure 6.16: USB – Show internal storage

The **DLT-V72** stands for internal storage.

After clicking at left side on **DLT-V72** by default the **\SDCARD** folder content will be displayed.

As shown in the next picture as an example a “log_%” file (or more, in case MDevice export was done multiple times before) can be selected.

At right corner, select options  and then **Copy to…**

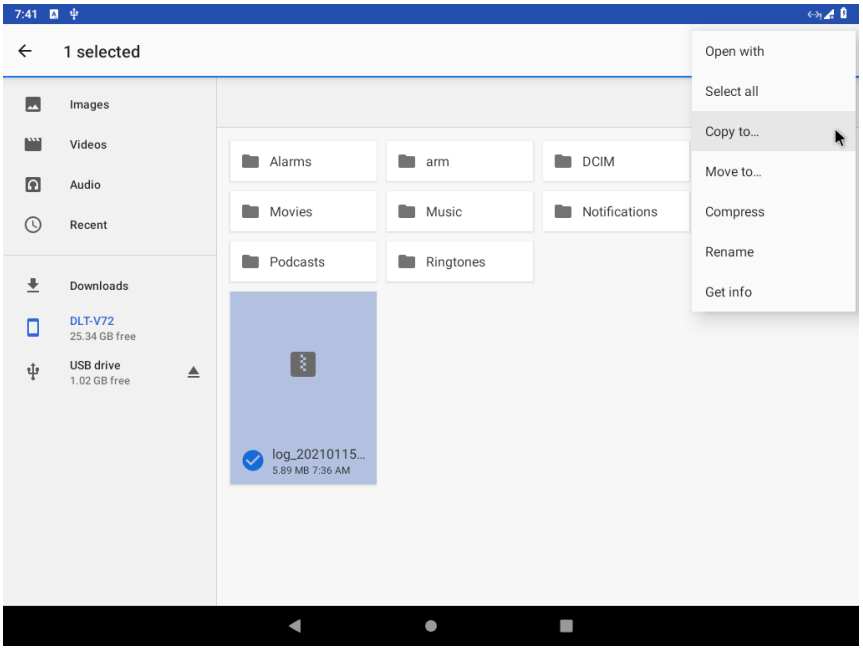


Figure 6.17: DLT-V72 stands for internal storage

Select **usb drive** and then after **right click** performed select option **Paste.**

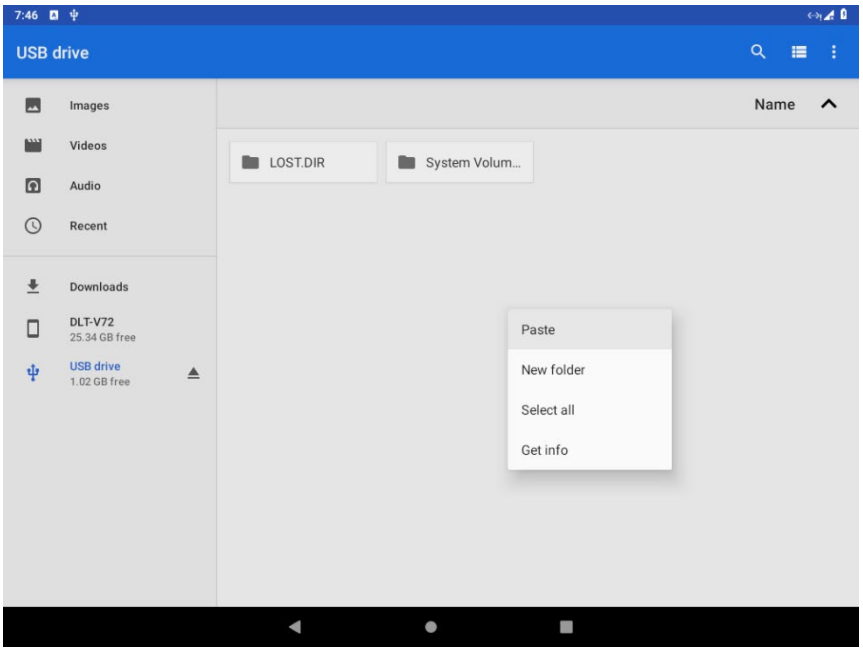


Figure 6.18: USB-Stick (file transfer) - Paste

The copied log file is now part of USB-Stick content.

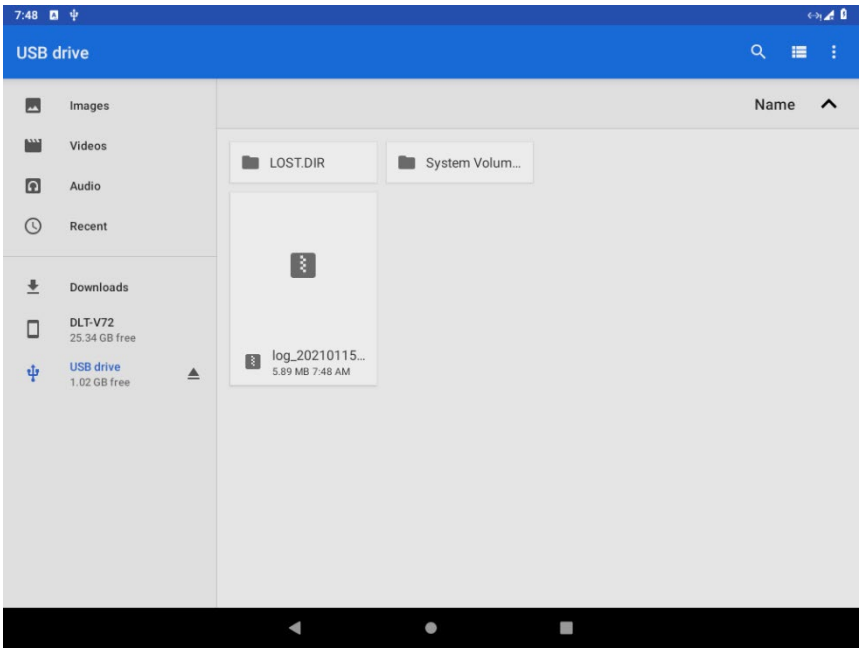


Figure 6.19: USB-Stick (file transfer) – Copied log file

Close application and press once again at right corner to open **USB Settings** and **Eject** as shown in the example picture above the USB-Stick.

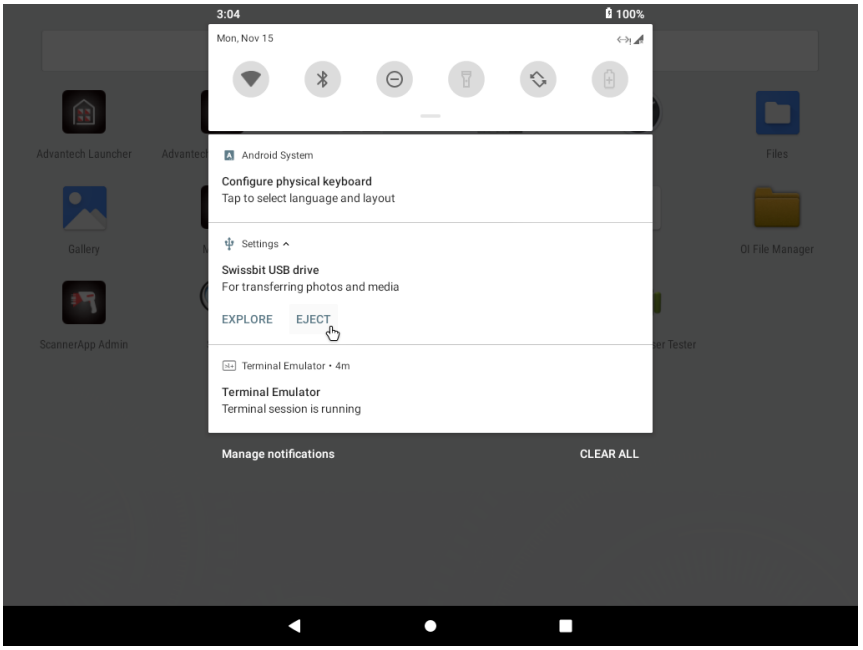


Figure 6.20: USB-Stick (file transfer) – USB Settings - Eject

Afterwards the USB-Stick can be removed from DLT-V72 terminal.

6.5. File Manager

OI File Manager is used to install applications onto the device without connecting to an app store.

NOTE

Due to the security policies integrated with the Security Enhanced Linux Kernel (SEL) underlying Android, USB storage devices have to be enabled on Android before first use. This includes device formatting. To perform the related actions, follow the instructions of the USB storage menu. To access this menu, drag down the notification bar after inserting the USB storage device and click on the USB icon.

6.5.1. APK Installation

To install applications using **OI File Manager** follow the steps below:

Copy the package of the application you wish to install (".apk" format) to a USB storage device.

On the DLT-V72 Facelift enable unknown sources under **Settings -> Security**.

Open **OI File Manager** and click **USB storage** with your APK.

Click on ".apk" file to start the installation process.

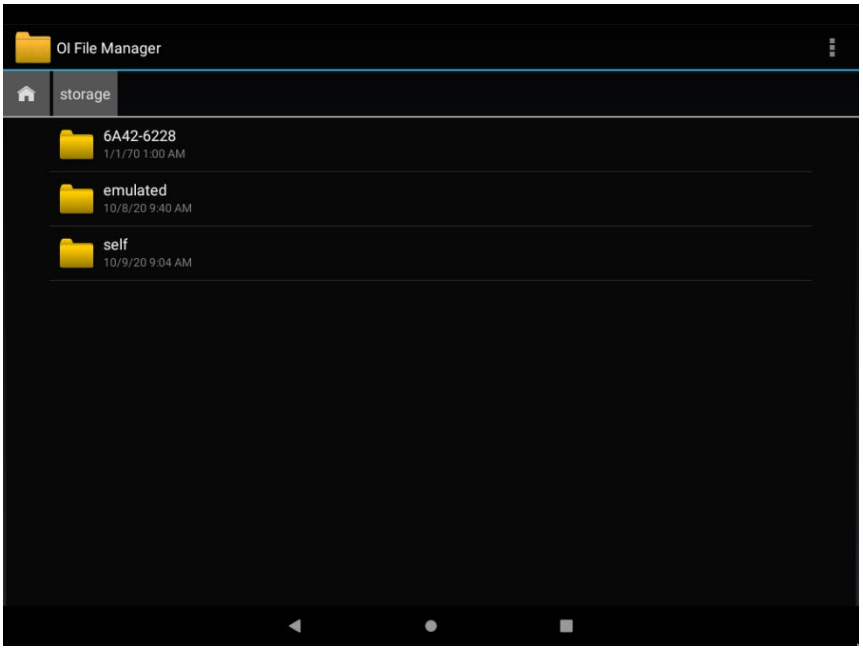


Figure 6.21: OI File Manager

6.6. System Shutdown

User can shut down or reset the system via the **Power** button if enabled by MDevice.

To shut down the device long-press the **Power** button on the front panel

6.7. Factory Reset

User can reset the device configuration via software menu.

All the passwords, settings will be set to default except for MDevice.

See section *0*

Config tool setting for resetting MDevice Configuration

To reset the device to factory defaults:

Go to Settings -> System -> Advanced -> Reset options.

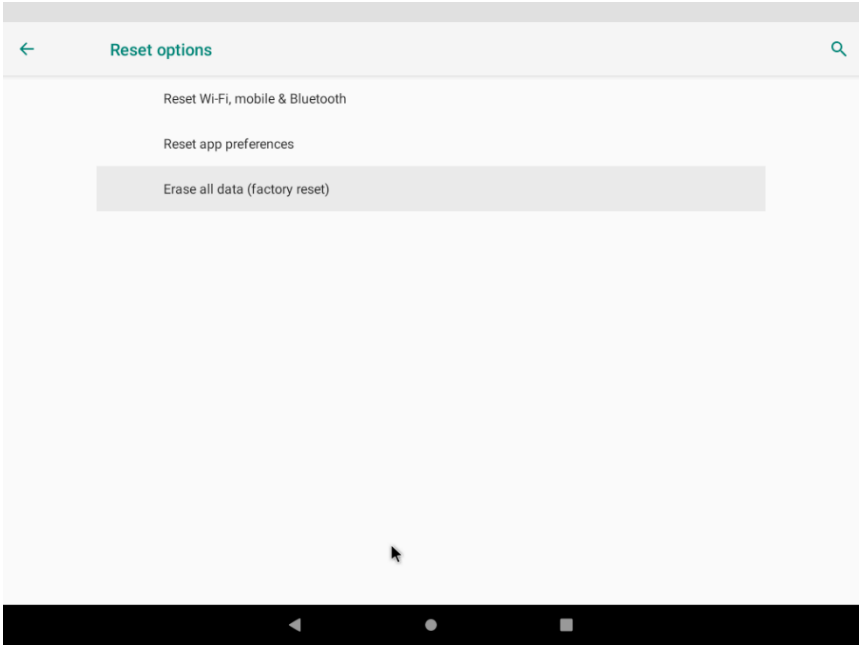


Figure 6.22: Settings menu – Backup and reset

Click Erase all data (factory reset).

It will erase all data on the DLT-V72 Facelift, including system and app data and settings, downloaded apps and other user data.

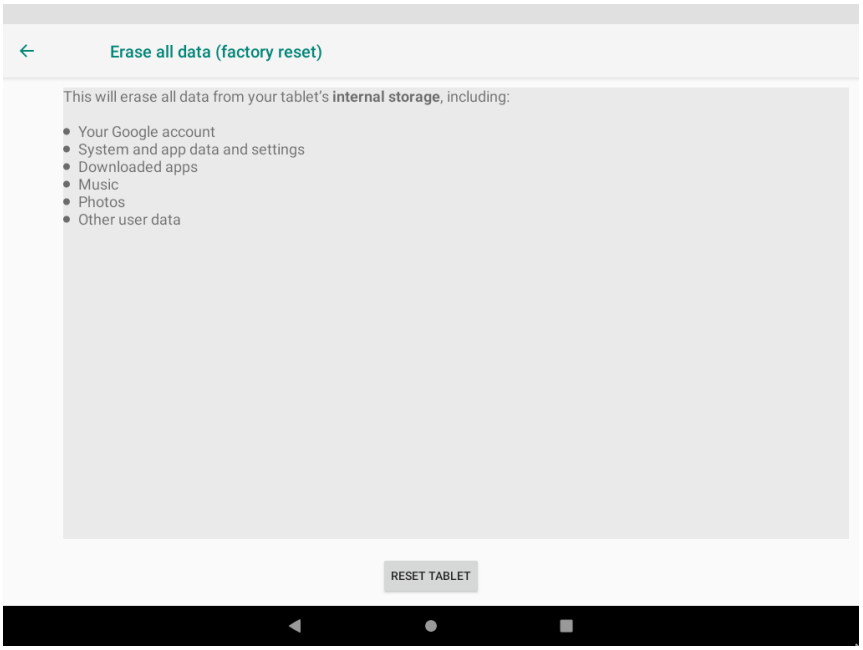


Figure 6.23: Factory data reset

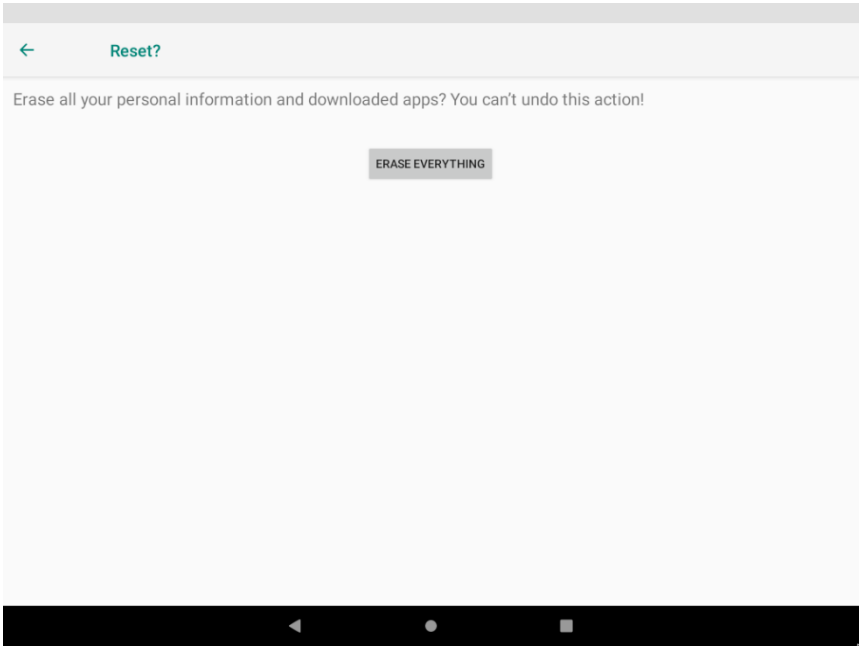


Figure 6.24: Factory data reset – warning note

You will get the fresh Android welcome screen again.

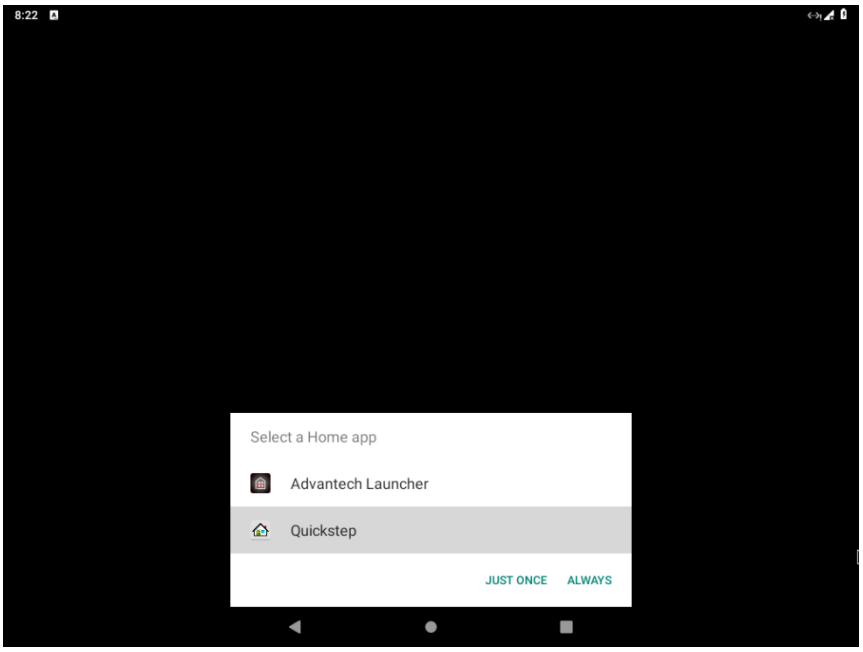


Figure 6.25: Android welcome screen

6.8. Multiple Users

Android is supporting multiple user profiles on the same device. Administrators can use this feature in Native Mode to set up distinct profiles for operators and normal users. Follow the steps below to add new User.

NOTE

Multiple user profiles should only be used in Native Mode. Kiosk Mode and the Advantech Launcher have been optimized for devices with a single user profile.

Add a New user profile in Settings -> System -> Advanced -> Multiple Users.

Click the **Add user** item.

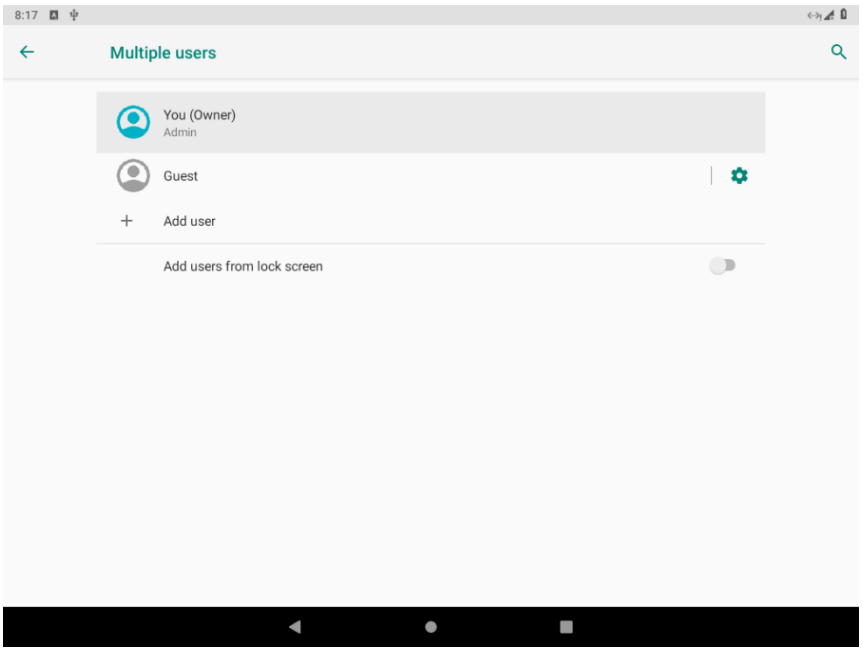


Figure 6.26: Settings – users menu

Confirm the upcoming message with **OK.**

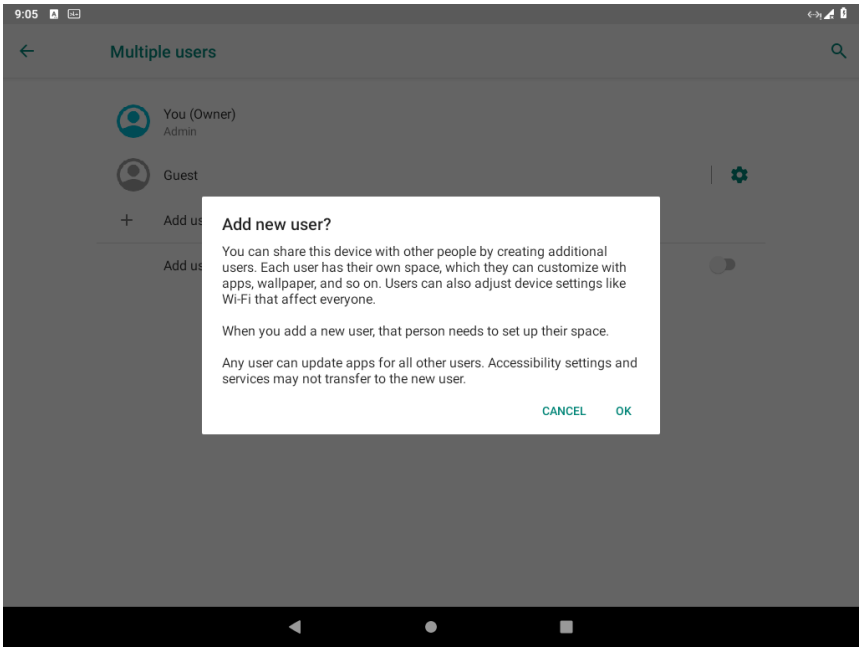


Figure 6.27: Settings – user menu – add new user confirmation request

Select at next request **NOT NOW.**

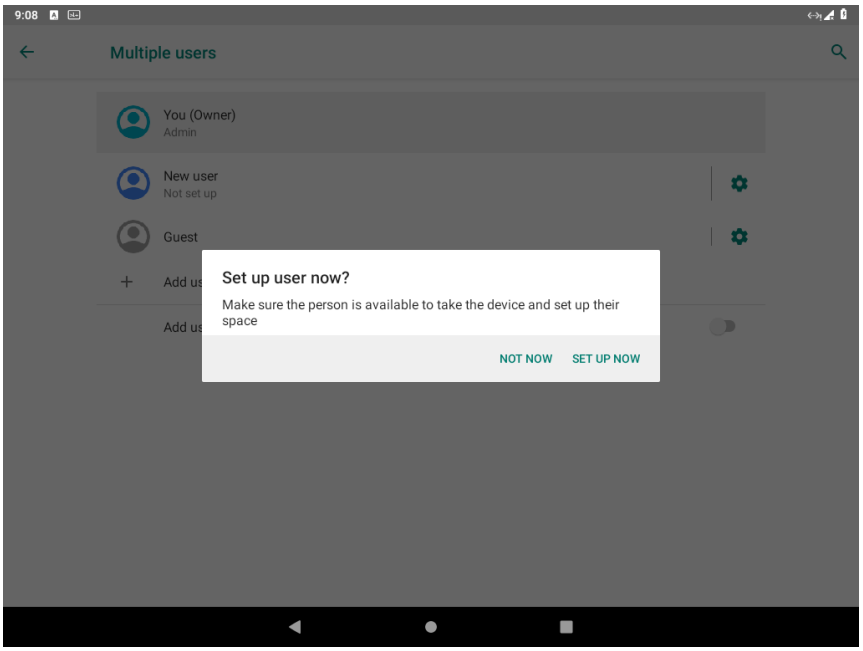


Figure 6.28 Settings – user menu – setup new user now request

A new User **New user** is created.

From the **User's** menu, click on the **Settings** icon…  **twice** to return to main menu.

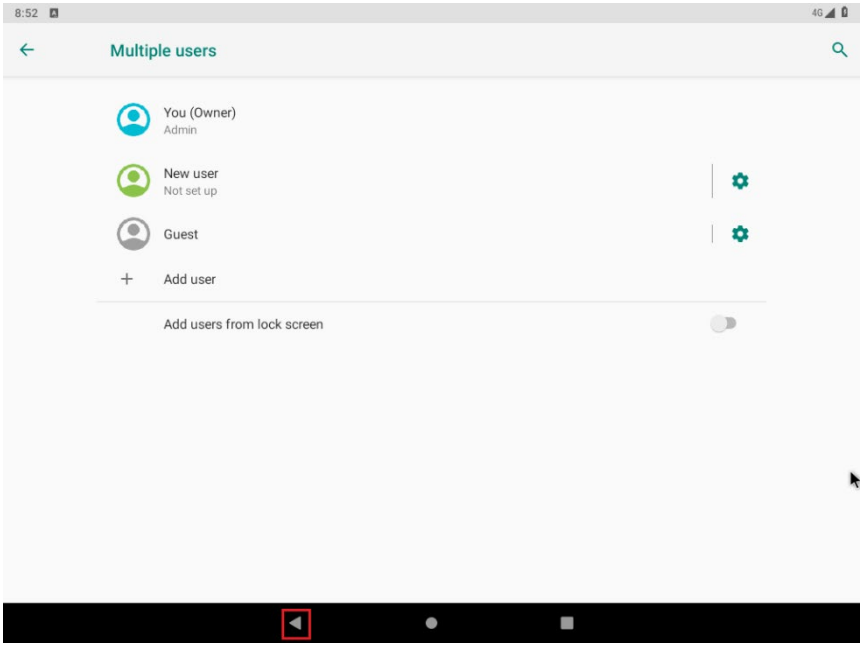


Figure 6.29: Settings – users menu – select launcher for new user

Click at option **Secure your phone.**

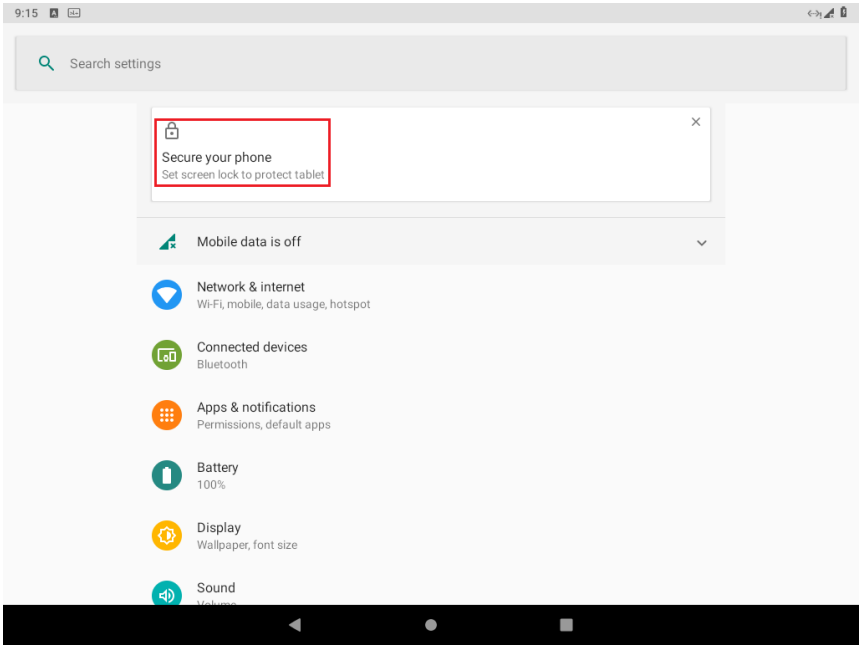


Figure 6.30: Settings – Secure your phone

The following dialog is shown on the screen:

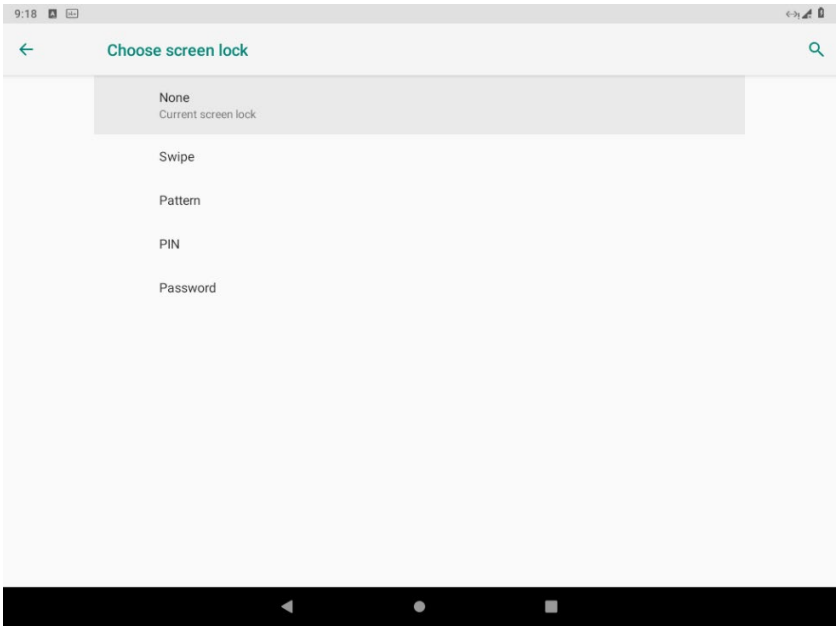


Figure 6.31: Settings menu – set screen lock

Select **PIN** and choose one:

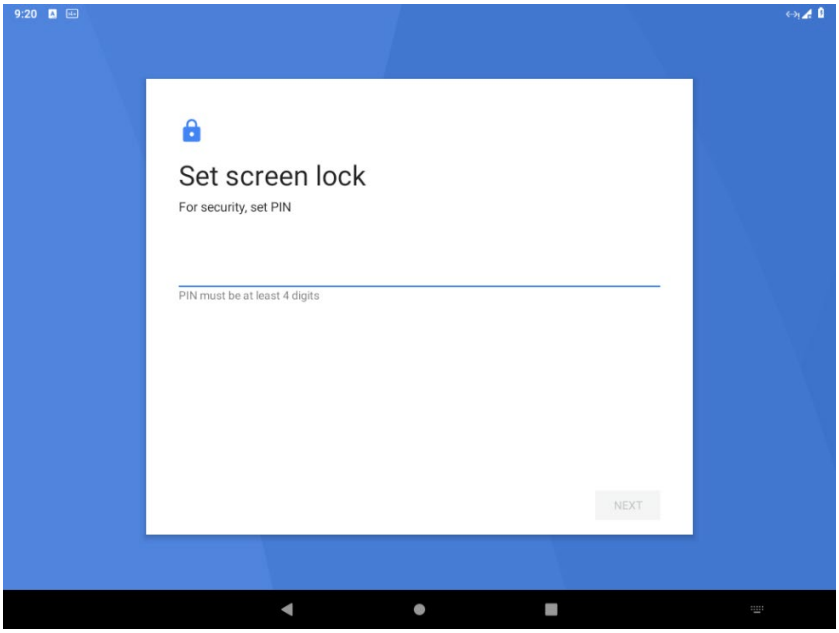


Figure 6.32: Settings menu – set screen lock - Choose your PIN

After the above configuration is done, shut down the system with the **POWER** key.

Power it again.

It will show up the lock screen with multiple user option.

Click on the right corner to choose a different user to login.

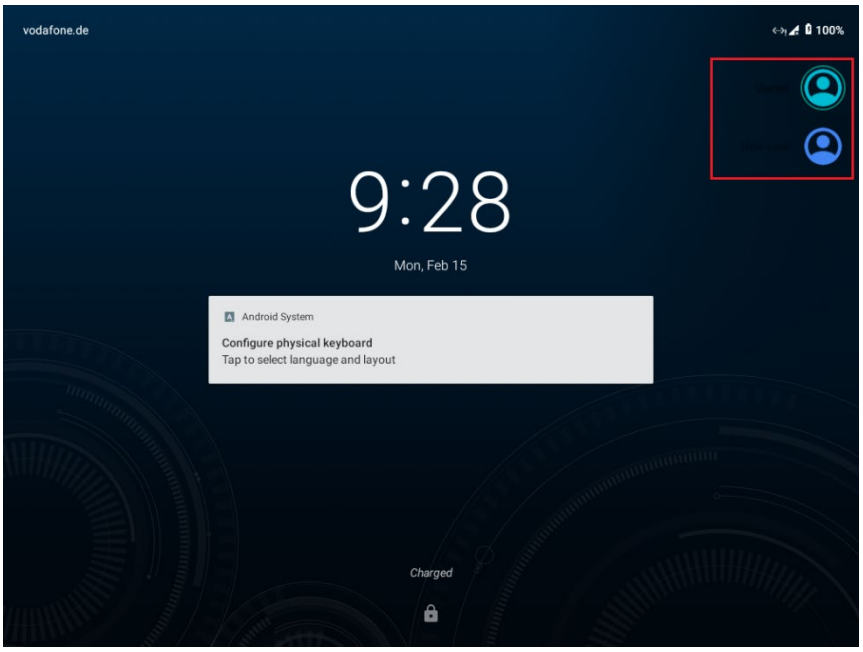


Figure 6.33: Lock screen with multiple user option

6.9. ADB over Network

NOTICE ***Prevent system malfunction.***

<u>The use of ADB requires in-depth knowledge of the Android system. It's only intended to be used by Android experts for advanced troubleshooting and maintenance. Advantech Co., Ltd. expressly disclaims any warranty or liability related to the use of ADB.</u>

Android supports ADB over Ethernet. ADB over USB is not supported. ADB is disabled by default for security reasons and needs to be enabled before the first use.

Step 1: Check the device's IP address

Go to Settings -> System -> About tablet.

Check the **IP address**.

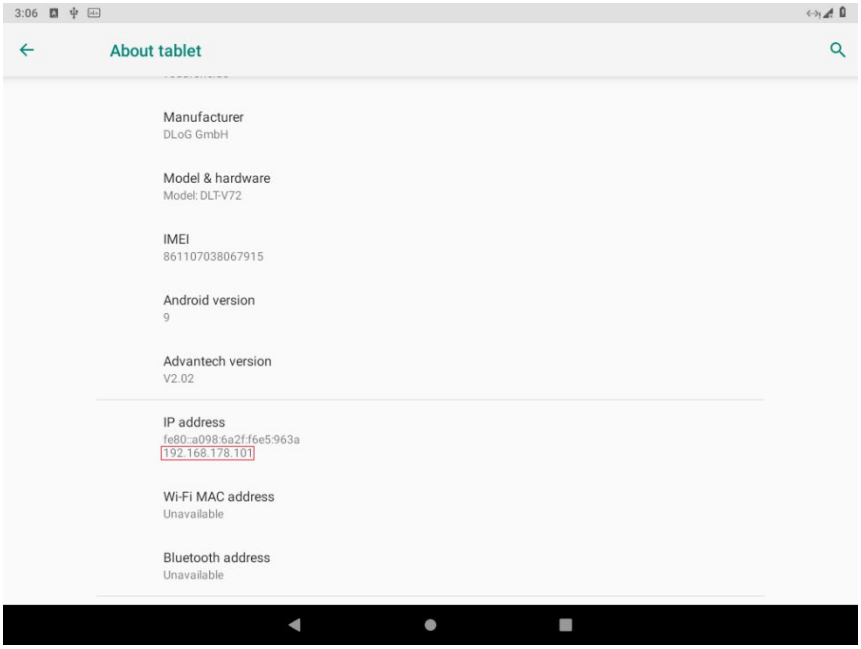


Figure 6.34: Check IP address

Step 2: Input the command on Linux PC to connect target device

```
$ adb connect 192.168.178.101
$ adb shell
```

Step 3: Exit and disconnect

```
$ exit
$ adb disconnect
```

Refer the link http://developer.android.com/tools/help/adb.html for more ADB commands.

6.9.1. Screen Capture using ADB

It is used to create to capture screenshots of Android.

Use ADB over Ethernet to connect target device via remote PC by following the previous section.

Capture screen and save to a local USB stick.

```
$ adb shell screencap –p /storage/usbdisk/sc1.png
```

Copy the picture to Server

```
$ adb pull /storage/usbdisk/sc1.png
```

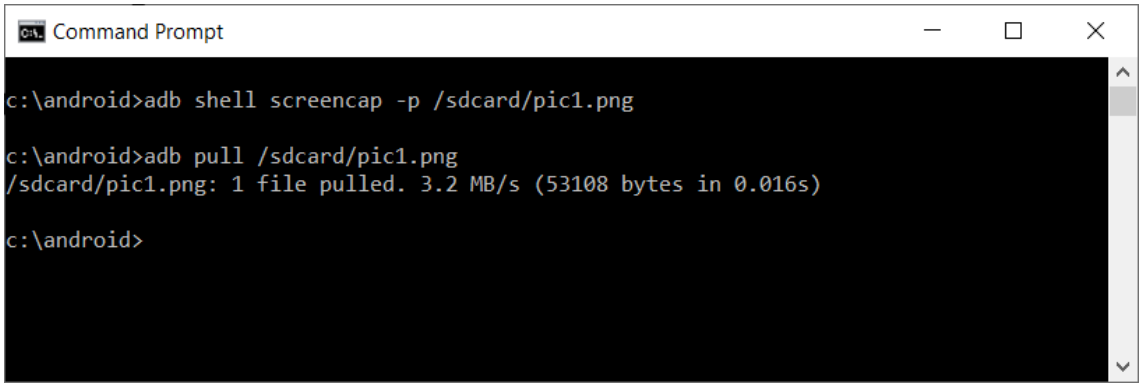


Figure 6.35: Capture Screen with ADB

6.10. SOTI support

This chapter contains general information for SOTI support at Android.

NOTE

SOTI client software is provided by external partner. Software functionality and support can be changed due to SOTI client software releases. For a detailed instruction about latest available SOTI client including feature list please refer to manufacture homepage.

Installation requirements

The following SW version (or newer) is required to support SOTI at Android 9 for ADLoG DLT-V72:

MC: v14.4.1.1064

Additionally it is recommended to get the latest available SOTI MobiControl Device Agent for new installation available for DLT-V72 (OS 9.0) from the following SOTI webpage:

https://docs.soti.net/mobicontrolagentdownloads

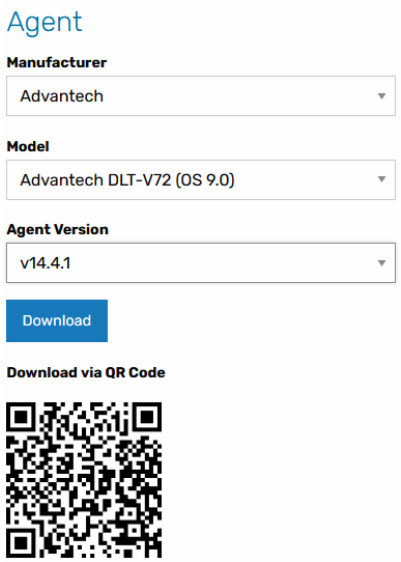


Figure 6.36: SOTI MobiControl Device Agent download site

6.11. DeviceOn/iService support

Advantech's DeviceOn/iService is a next-generation unified device management solution based on the WISE-DeviceOn platform. Designed to enable centralized monitoring and remote management, DeviceOn/iService supports Advantech devices equipped with Windows, Linux, or Android operating systems. The software also supports the management of applications and integrated peripherals, such as a barcode scanner, card reader, camera, and printer. Users can remotely access and control connected devices, take screenshots, rollout OTA updates, and use remote desktop capabilities for troubleshooting from any location at any time.

The main features of Advantech's DeviceOn/iService reads:

- Device runtime status overview dashboard
- Real-time alarm and notifications features
- Device grouping and management
- Remote real-time device runtime status monitoring
- Over-the-air (OTA) software updates (app and OS)
- Remote desktop features
- Kiosk mode settings

Moreover, DeviceOn/iService supports batch operations to facilitate the management of multiple devices simultaneously for easy and convenient device configuration and deployment.

Installation requirements

The following Android OS version (or newer) is required to support Advantech's DeviceOn/iService at Android 9 for ADLoG DLT-V72:

Android9 Image version **v2.01.2**

More information about Advantech's DeviceOn/iService can be reviewed at official Homepage:

https://www.advantech.com/campaign/DeviceOn-iService

7. OTA Updates

7.1. Functional description

Starting with Android 9 OS support at DLT-V72 (Facelift) there are two types of OTA updates possible to use:

1. “Full” → Major build of a standard Android 9 image release for DLT-V72
2. “Incremental” → small update designed for an specific major build release

Both types of updates can be applied using integrated standard utilities and GUI extensions as described in detail as part of this chapter.

NOTE

For initial installation, please use the USB-Stick once described in section 3.3 Installing Android (USB-Stick).

7.2. Image Versioning / Release policy

With each of new image release, a unique version number can be read out using the **Settings -> System -> About tablet** feature:

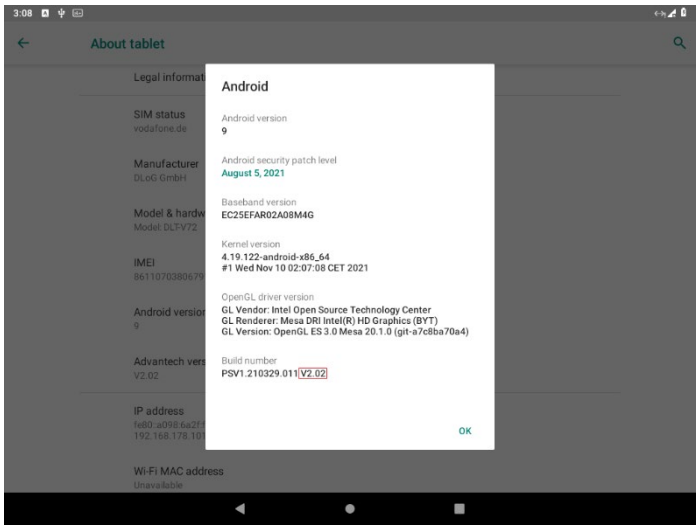


Figure 7.1: Settings - About tablet

Major build version are always as **V2.xx** named.

After applying, the first **incremental** update for a major build release the number will change as shown in above picture like **V2.xx.x.**

The fourth digit is telling last installed **incremental** update level. At every image release (full / incremental), the image version is updated accordingly.

7.3. Version update / downgrade information

To keep better control of image update / downgrade possibilities the following simple rules exist in general:

1. At **full** image updates, there is no limitation from down- or upgrading to earlier / newer available images using OTA. During this process the full image content **(keeping user space untouched with installed programs and settings)** the system partition is being completely overwritten with new content.

2. At **incremental** updates the following more specific rules are being used:

    a. **Incremental** update must be **compatible** with current installed **major build release** (for example v2.01 → v2.01.1)

    b. A **downgrade** of **incremental** updates is not designed to work unless receiving an ADV prepared special file allowing this.

    c. Changing from one major build release to next one using **incremental** update the latest available incremental update for current major build release **needs to be installed first** before switching. (for example: v2.00.1 → v2.01.6 → v2.02. A direct update from v2.00.1 to v2.02 is not allowed because missing features from releases v2.00.2 – v2.00.6 in between.

    d. At later stage when more than one **incremental** update comes available for a major build release new update packs are created by ADV, that allows updating to latest state containing all “incremental” level SW changes in between. Using this method there is no need to install each “incremental” update one by one instead of installing a bigger package to update the missed updates in between at one time. (for example v2.00.1 → v2.00.5)

NOTE

In dependency of used space and amount of changes, each major build release ADV will not state the total amount of incremental updates for future release.

This depends on changes being performed and individual cases between major build image releases.

7.4. Different ways to perform OTA updates

In general, there are four different ways available how to apply OTA updates (full / incremental) at Android9 for DLT-V72 (Facelift):

1. System (GUI) → Advanced → System updates
2. Using a ADB connection
3. Using of ADV library call as part of own third party JAVA applications
4. Using an MDM (Mobile Device Management) SW (like SOTI®)

7.4.1. Way1: System (GUI)

A System GUI extension has been prepared to allow updating the Android9 system by selecting a file during the process.

The System Updates can be found in: **Settings → System → Advanced → System updates**

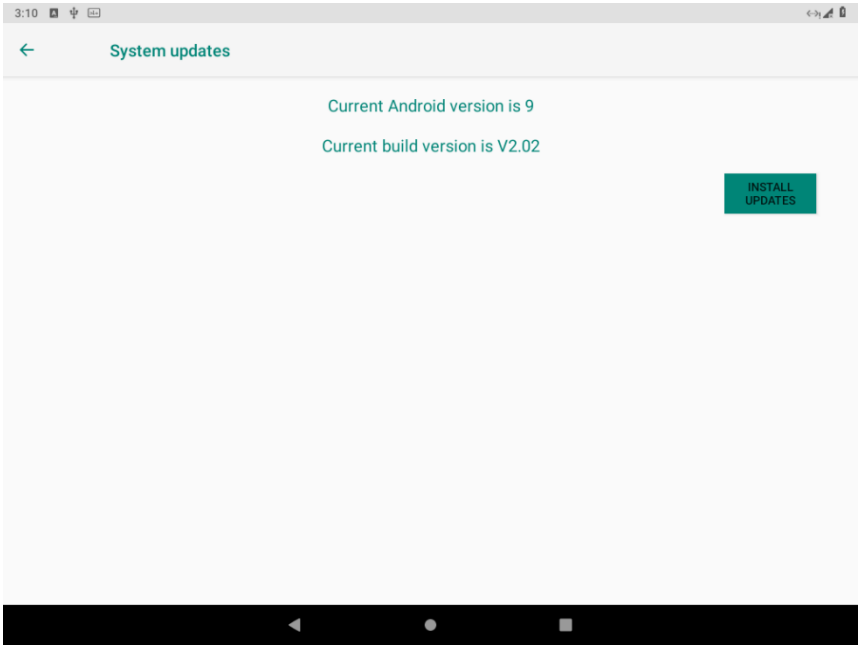


Figure 7.2: Settings – System updates

Click on button **Install updates** to select an OTA file.

In case, **Recent** file selection is displayed click on icon ☰ once.

Choose an OTA file from local storage or an attached USB-Stick.

At request, confirm upcoming message with **Apply.**

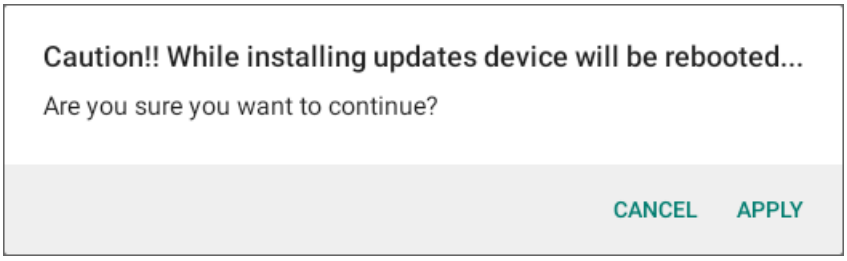


Figure 7.3: Settings – System update – Initiate OTA update request

NOTE

*After selecting an OTA **incremental** update file a self-check of current installed major build release and OTA file planned to be installed will be performed.*

In case all requirements are correct, the OTA will be performed automatically.

In case an incompatible file was being selected by the user a message will show at lower part of screen (OTA incompatible to detected major build release, etc.)

*This self-check is skipped by OTA **full** update allowing down and upgrade without further requirements.*

When OTA update file is compatible, the update will be performed automatically.

During this process user will be informed accordingly.

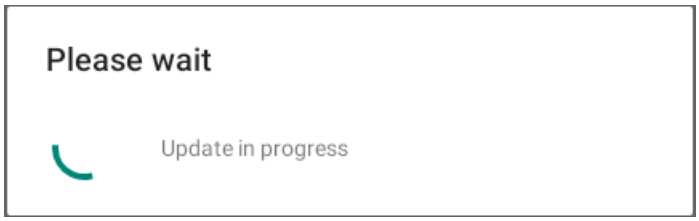


Figure 7.4: Settings – System update – OTA update in progress

The system will perform the OTA update at first reboot followed by a second reboot loading the new updated image for the first time.

NOTE

*As described **user partition is not changed or deleted** during this process allows direct IP communication with terminal again after finished process using ADB or an MDM SW.*

7.4.2. Way2: ADB Connection

An integrated script can be called from ADB connection to transfer and initiate an OTA update by remote.

By using this method no manual interaction is required at terminal to perform OTA updates from a centralized location.

The following example will demonstrate OTA update using ADB ETH connection. For MDM SW update for example using SOTI® agent the file upload and script call can be implemented as part of third party SW functionality.

Only requirement is to have IP address of terminal available that should receive the OTA update file.

For general ADB connection and setup please see section *6.9 ADB over Network* first.

After connection established start copying the file to terminal using adb **push** command:
adb push dltv72-user-V2.00.10.tar.gz /sdcard/ (filename example)

Figure 7.5: OTA update using script – transfer file to terminal from remote location

Perform the OTA update using the following adb shell command:
adb shell install_ota.sh /sdcard/dltv72-user-V2.00.10.tar.gz (filename example)

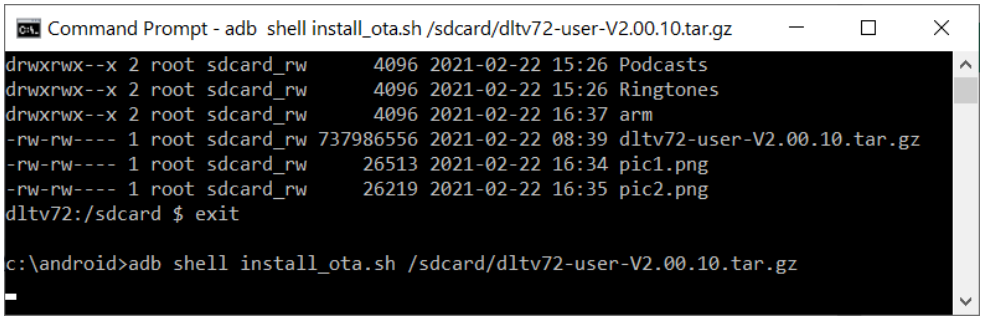


Figure 7.6: OTA update using script – perform OTA update from remote location

The terminal will do an automatic reboot after file preparation and ADB connection can be re-established after OTA update has been performed successfully. The OTA file

placed in **/sdcard** folder will not be deleted automatically. Needs to be removed manually in case not required anymore.

7.4.2.1. ADB AM Sent Intent

In case Android9 image version **v2.01.4** has already been installed ADB AM command can be used to initiate an OTA update process after copying the file to the terminal.

Syntax reads:

```
adb shell am broadcast -a com.advantech.intent.action.MSG_SEND_API_1_0_COMMAND --es
'json_rpc_object'
'{"method":"installOTA","params":{"ota_downloadPath":"/sdcard/full.tar.gz"},"id":0,"jsonrpc":"2.0"
}' -t 'text/plain'
```

The example path and file name read **/sdcard/full.tar.gz** and needs to be adjusted.

7.4.3. Way3: ADV library

Advantech is providing at request a library that external third Party SW supplier can use our internal functions to call an OTA update directly.

To receive support and latest available ADV library please contact ADV helpdesk.

7.4.4. Way4: SOTI® (Send Intent)

SOTI® MDM (Mobile Device Management) offers functionality to send a script to the terminal including Send Intent commands to perform as an example OTA update at DLT-V72.

Please note that the following description can be changed by SW vendor in future and might be slightly different in usage as described.

1. Create a new **Legacy** script:

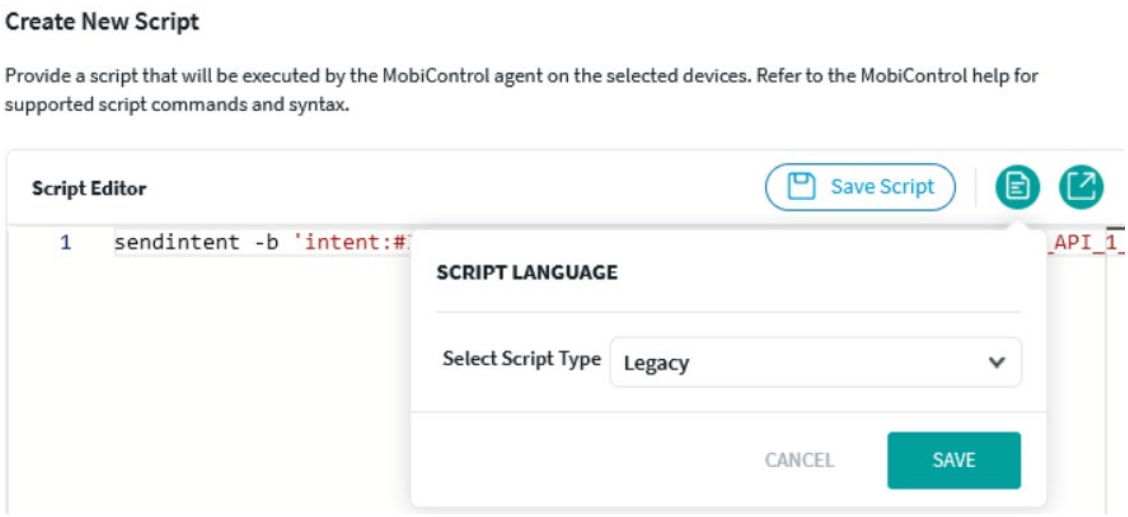


Figure 7.7: OTA update using SOTI® script – create new Legacy script

2. In the Script Editor enter the following text:

sendintent -b 'intent:#Intent;action=com.advantech.intent.action.MSG_SEND_API_1_0_COMMAND;S.json_rpc_object={"method":"installOTA","params":{"ota_downloadPath":"/sdcard/full.tar.gz"},"id":0,"jsonrpc":"2.0"};end'

The example path and file name read **/sdcard/full.tar.gz** and needs to be adjusted.

3. Afterwards, the dialog should look like this:

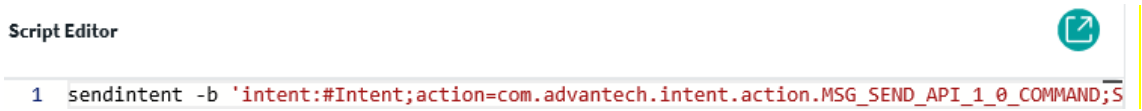


Figure 7.8: OTA update using SOTI® script – Script Editor content

4. Save the script file with a name. The example reads **systemintent performOTA update.**

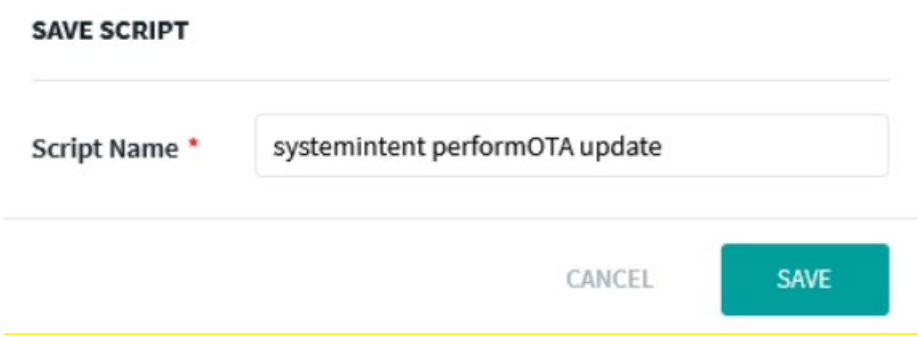


Figure 7.9: OTA update using SOTI® script – set script name and save

5. Next copy the OTA update file to the client you want to perform the update using SOTI® Packages functionality.

6. Afterwards the newly created script file can be sent to the SOTI® agent installed at the DLT-V72.

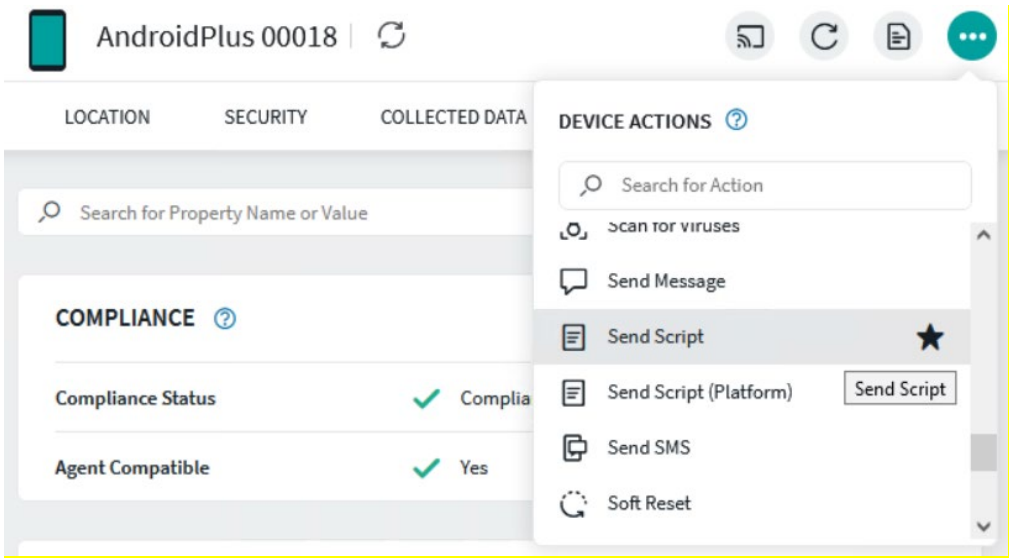


Figure 7.10: OTA update using SOTI® script – Device Actions – Selection dialog

7. Select the newly created script.

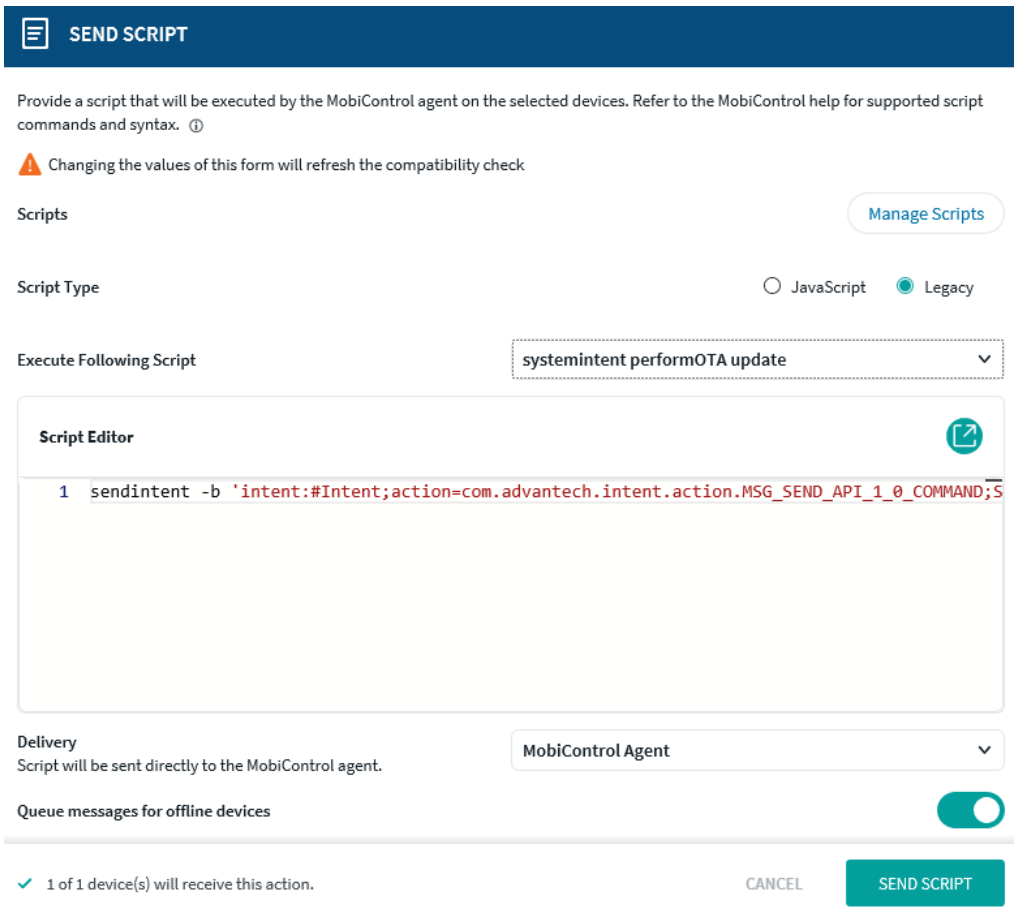


Figure 7.11: OTA update using SOTI® script – device actions – send script

8. Execute at selected terminal by clicking **SEND SCRIPT** button.

The terminal will reboot automatically when the file name and folder is correctly detected, and OTA update initiated.

After the update is done a second reboot will be done loading the new installed Android image version for the first time.

8. Android Scanner Wedge

8.1. Functional description

The Android Scanner Wedge (short: Scanner Wedge) is a software utility to transfer scanner data into the Android OS from external connected scanners attached to the DLT-V72 Facelift via the COM1 serial port.

The software contains two items:

- A Background Service that is responsible to transfer the incoming scanner data into the Android OS.
- A User Settings app that allows user to update the settings for attached serial scanner and software setup.

NOTICE ***Prevent system malfunction.***

Incorrect settings of the Scanner Wedge can interfere with or interrupt the function of the system.

Scanner Wedge settings may therefore only be made by skilled personnel such as IT administrators with professional experience in software handling.

Improper changes to the Scanner Wedge settings will void any warranty of the Advantech Co., Ltd.

8.1.1. Scanner Wedge configuration

To change the Scanner Wedge settings, launch the **ScannerApp** application.

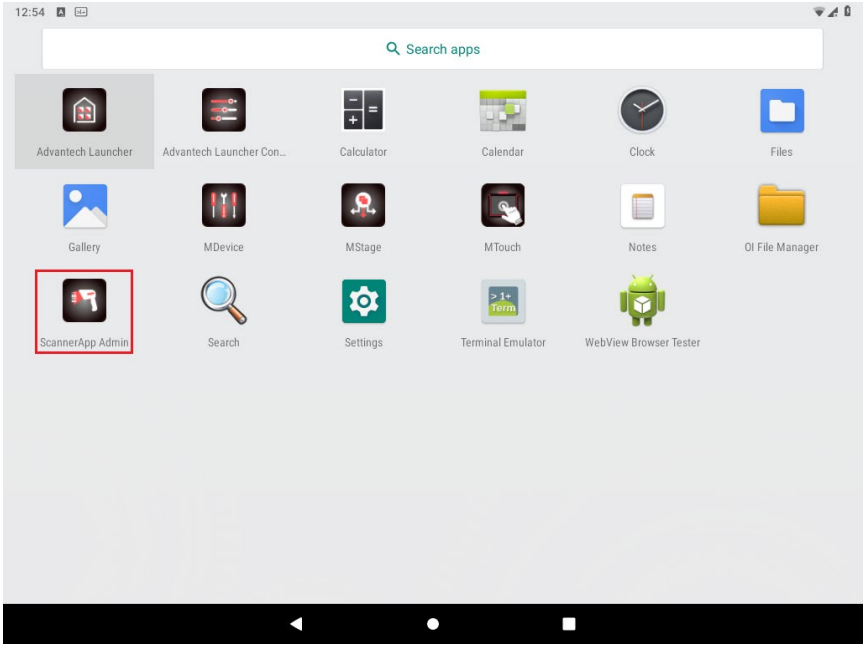


Figure 8.1: Apps Screen → ScannerApp

8.1.2. ScannerApp (Serial)

The first section **Serial** contains serial port parameters:

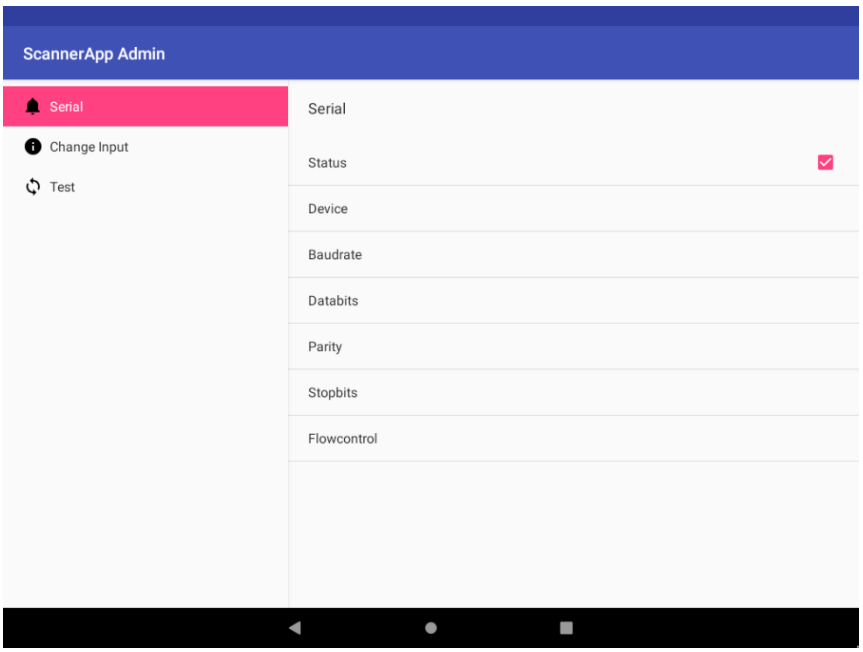


Figure 8.2: ScannerApp (Serial) serial port parameters

The following settings depend on current attached serial scanner configuration.

NOTE *Please refer to the scanner manufacturer manual for further information how to setup.*

Status	Option to enable / disable the Scanner Wedge. COM1 port will be available for other programs while status reads “Disabled”.
Device	Android only supports the COM1 port (5 V support). The related operating system level device is “/dev/ttyS0”. ***IMPORTANT NOTE**: Do not make any changes to this entry.*
BaudRate	BaudRate to be used. Possible values to select from are 1200 to 230400 Baud. Default value: 9600

Databits	Databits to be used. Possible values to select from are 5 to 8 bit. Default value: 8
Parity	Parity to be used. Possible values to select from are none / odd / even / mark / space. Default value: none
Stopbits	Stopbits to be used. Possible values to select from are 1 / 2. Default value: 1
Flowcontrol	Flowcontrol to be used. Possible values to select from are none / RTS-CTS / Xon-Xoff / RS485-HalfDuplex (RTS). Default value: none

The settings will be auto-saved when closing the app.

8.1.3. Scanner App (Change Input)

In this section, incoming scanner data format can be manipulated.

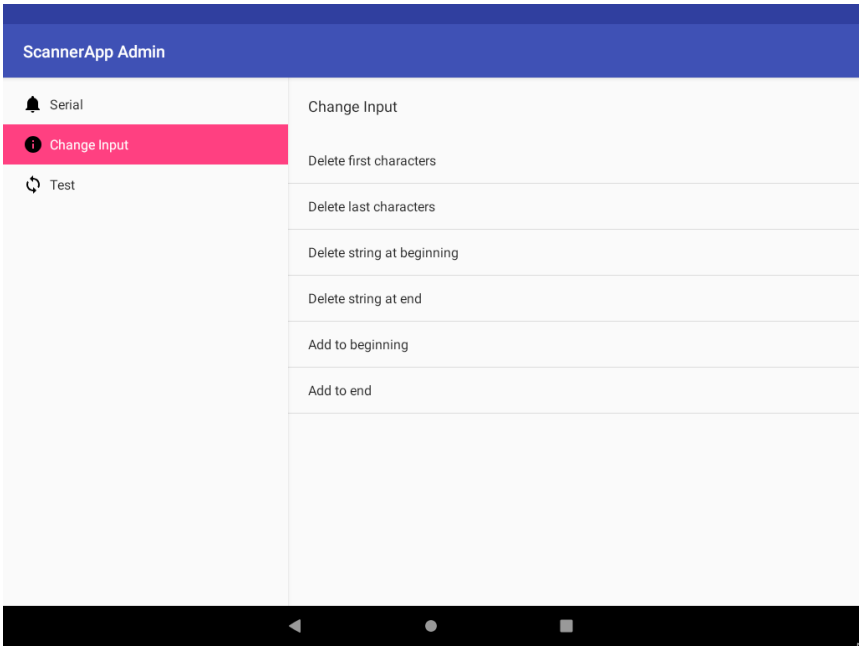


Figure 8.3: Scanner App (Change Input)

By default configuration, the scanner data is transferred to the Android OS without modification. The following settings are available:

Delete first characters	Defines the amount of characters to be deleted at the start of the string received from the scanner before sending to the Android OS. ***IMPORTANT NOTE**: Do not leave this entry blank. A blank entry will lead to software malfunction!*
Delete last characters	Defines the amount of characters to be truncated from the end of the string received from the scanner before sending to the Android OS. ***IMPORTANT NOTE**: Do not leave this entry blank. A blank entry will lead to software malfunction!*
Delete string at beginning	A static string to be removed from the beginning of each string received from the scanner can be defined in this section. ***IMPORTANT NOTE**: The string defined here must be identical to incoming data from the scanner to be removed successfully before sending to Android OS.*

Delete string at end	A static string to be removed from the end of each string received from the scanner can be defined in this section. ***IMPORTANT NOTE**: The string defined here must be identical to incoming data from the scanner to be removed successfully before sending to Android OS.*
Add to beginning	Defines a string that will be added in front of the string received from the scanner before sending to Android OS.
Add to end	Defines a string that will be appended to the string received from the scanner before sending to Android OS.

It is possible to use pre-defined control codes when entering the parameters **Add to beginning** and **Add to end:**

\t	Tab
\r	Return(returns the cursor to position 1 on the current line)
\n	New line

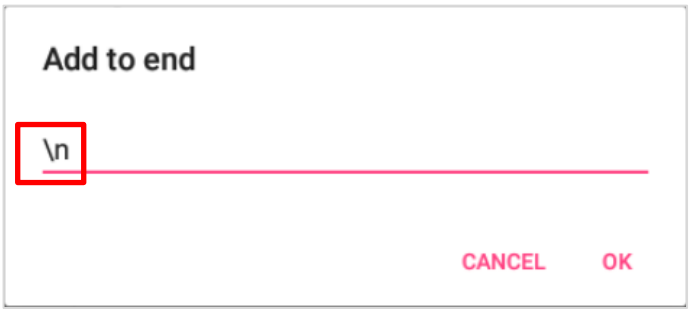


Figure 8.4: Example: Add “New Line” to end of string

8.1.4. Scanner App (Test)

This dialog text field can be used to test the current settings.

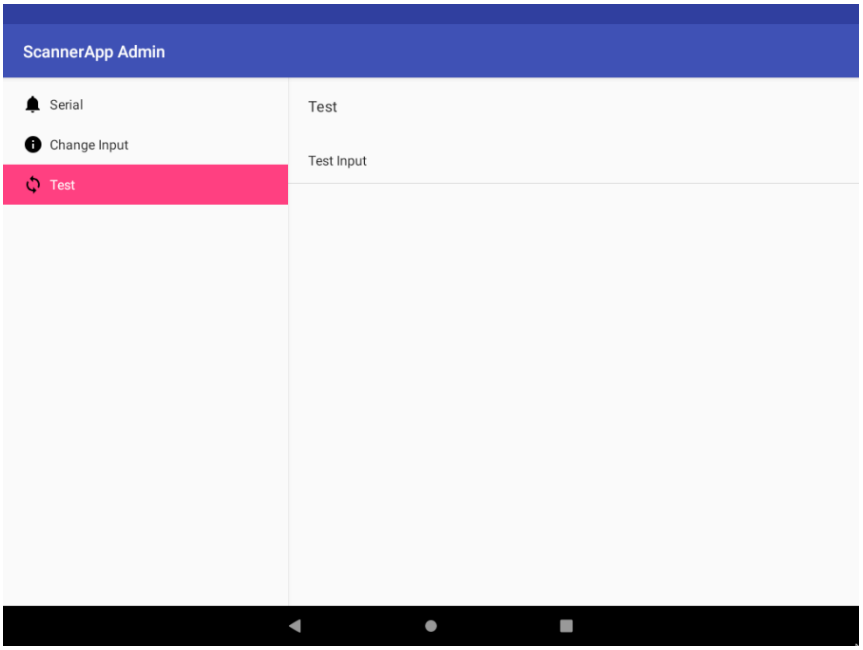


Figure 8.5: Scanner App (Test)

Perform a double click on the Text field called **Test Input** to begin a test scan.

The string received from the scanner will be shown in the **Test Input** pop up window. In the screenshot below this is the text with pink background fill

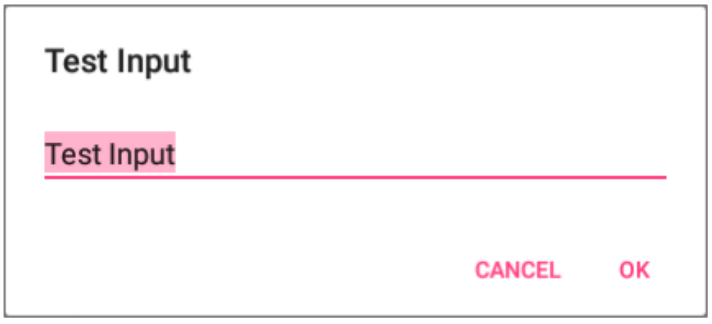


Figure 8.6: Test input

Press button **X** to close the ScannerApp application.

Parameters will be auto-saved on exit.

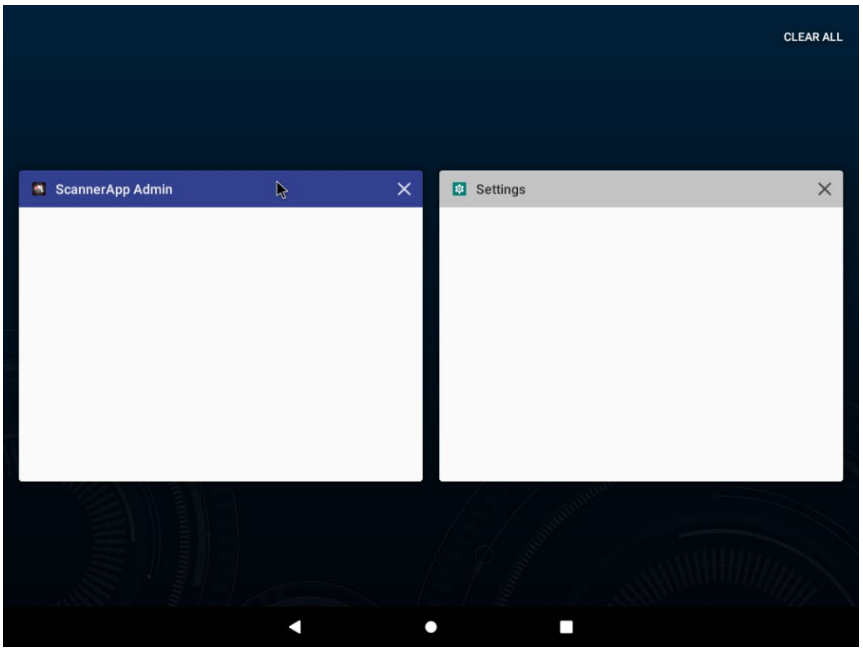


Figure 8.7: Close the ScannerApp Android OS 9

9. MStage

9.1. MStage

MStage is a software utility by Advantech to create and restore encrypted archive files including terminal application configuration to allow easy installation method for other terminals in “factory” condition.

The software contains two items:

- Staging service: A Background Service that is responsible to collect and restore the selected configuration data
- Application: A User Settings app that allows selecting application settings to be part of archives and to restore them.

The following description is based on initial software release of MStage v1.1.5.

Against other Advantech applications part of Android core image like MDevice, MStage is designed as an .apk installation file that allows upgrading to newer version as the come available in future.

NOTICE ***Prevent system malfunction.***

Incorrect settings of the MStage application can interfere with or interrupt the function of the system.

MStage settings may therefore only be made by skilled personnel such as IT administrators with professional experience in software handling.

Improper changes to the MStage application settings will void any warranty of the Advantech Co., Ltd.

9.1.1. MStage configuration

To create / restore archive files using MStage, launch the **MStage (MS)** application.

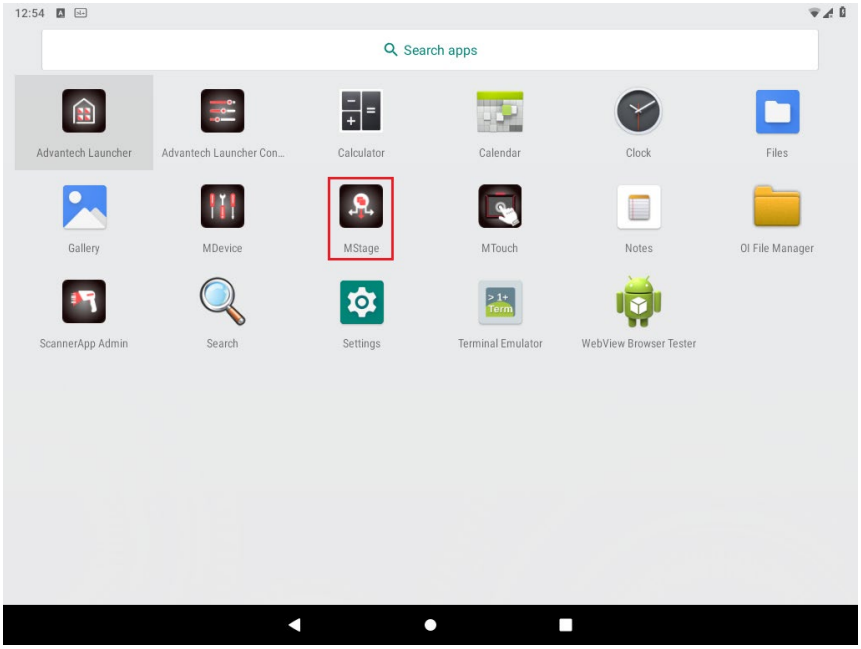


Figure 9.1: Apps Screen → MStage

9.1.2. MStage – Create Archive

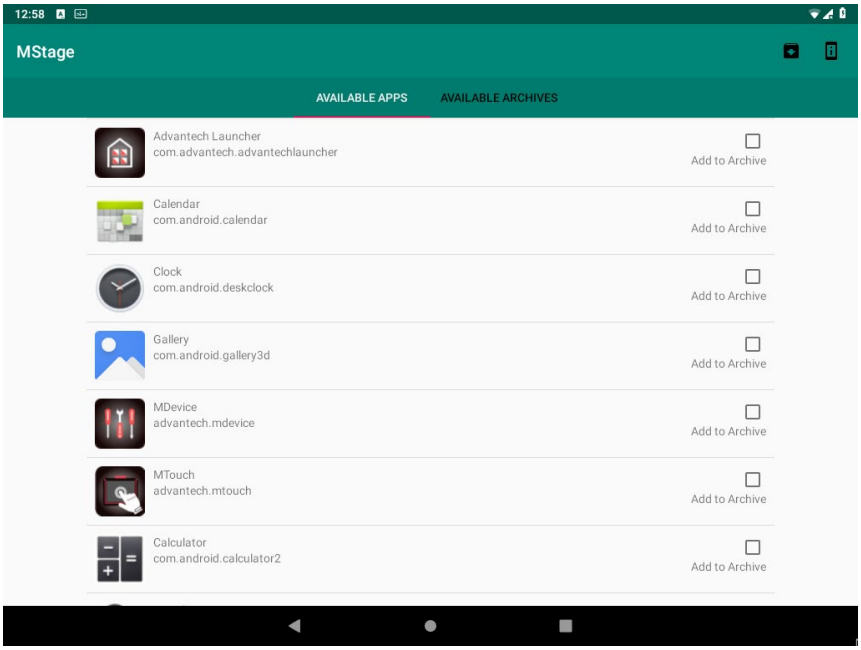


Figure 9.2: Apps Screen → MStage → Available Apps

This dialog is used to select settings being part of archive to be created. In most cases, this will include one of the following major functionalities:

- MDevice
- Advantech Launcher
- Scanner App
- Wi-Fi

After selecting the applications using the checkboxes located at right side next to application name, click icon  to continue.

NOTE

At least one application needs to be selected to create a new MStage archive file. In case no application was selected the following user message will appear:

"Selection.

Please select at least 1 App to Export"

As shown in the example below, enter an archive name including a specific password that is required in case the archive is being restored to a terminal using MStage.

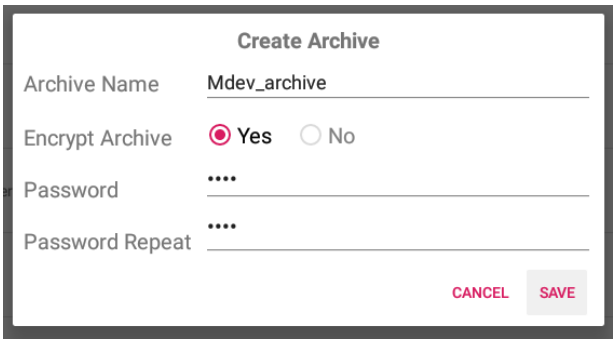


Figure 9.3: MStage archive file

NOTE

Option Encrypt Archive is always preconfigured to "Yes" to be sure that all sensitive content like Wi-Fi access passwords are securely encrypted.

Press button **Save**, the following dialog will be shown:

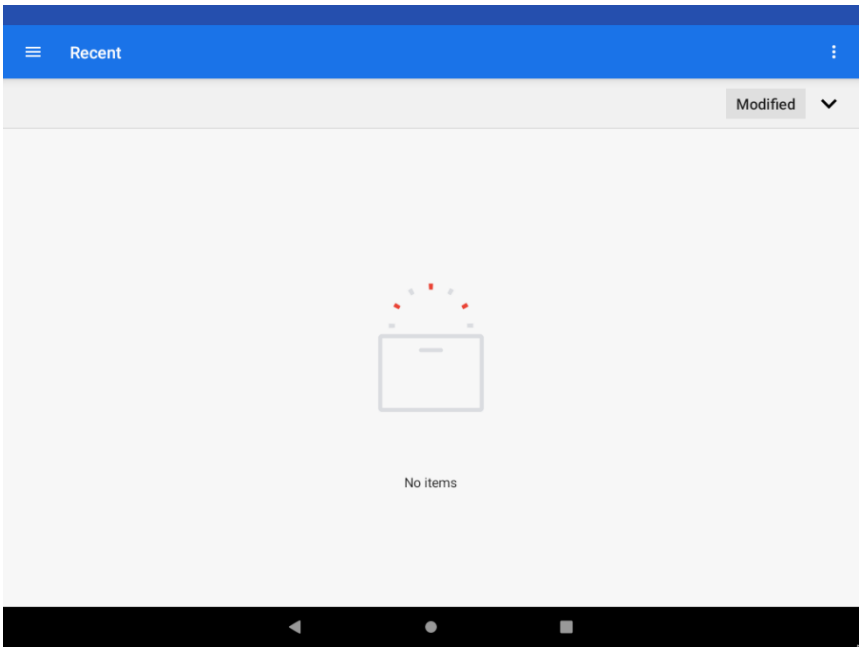


Figure 9.4: MStage archive file

In general, there are two possibilities to save the archive:

- Use an external USB-Stick (recommended way, no network access required)
- Use the internal storage area (requires adb connection + network access already working)

Example

Following example will use an attached USB-Stick method.

Attach an USB-Stick to one of the available USB-ports (for example service USB- located under the antenna cap).

Open Settings – Files.

In case, **Recent** file selection is displayed click on icon  once.

The USB-Stick will be displayed as follows:

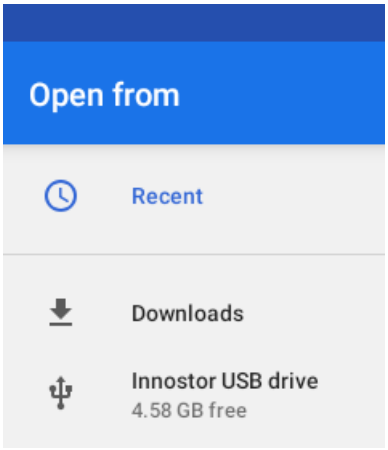


Figure 9.5: MStage archive file – USB stick

Click on the **usb** icon and select a location to create the MStage archive file.

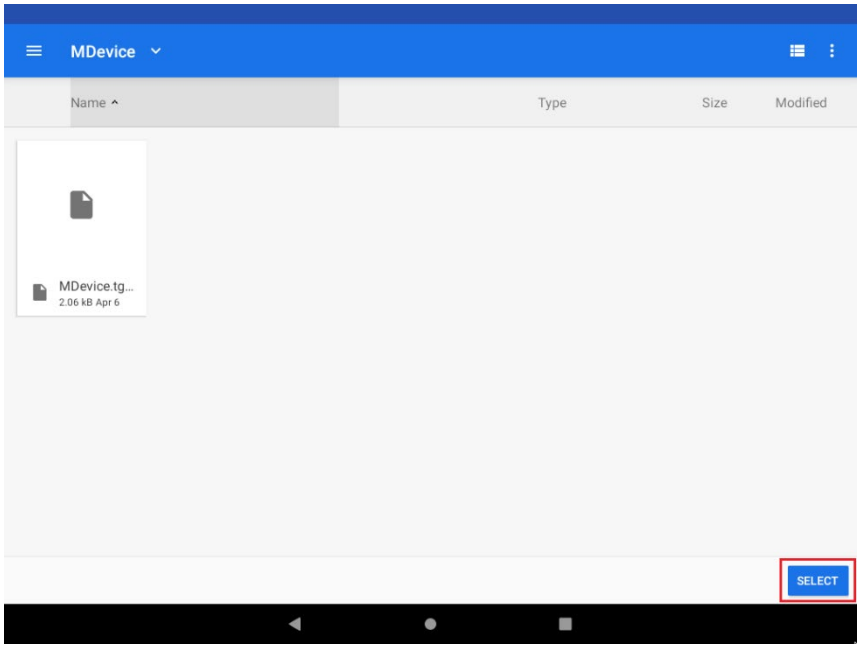


Figure 9.6: MStage archive file – create the MStage archive file

Press after location setup the button **SELECT** to create and save the MStage archive file.

A success message will appear after the finished process:

Figure 9.7: MStage archive file – Archive successfully created

Close dialog with **OK** button.

You will find the newly created MStage archive file on the USB-Stick at prior selected location:

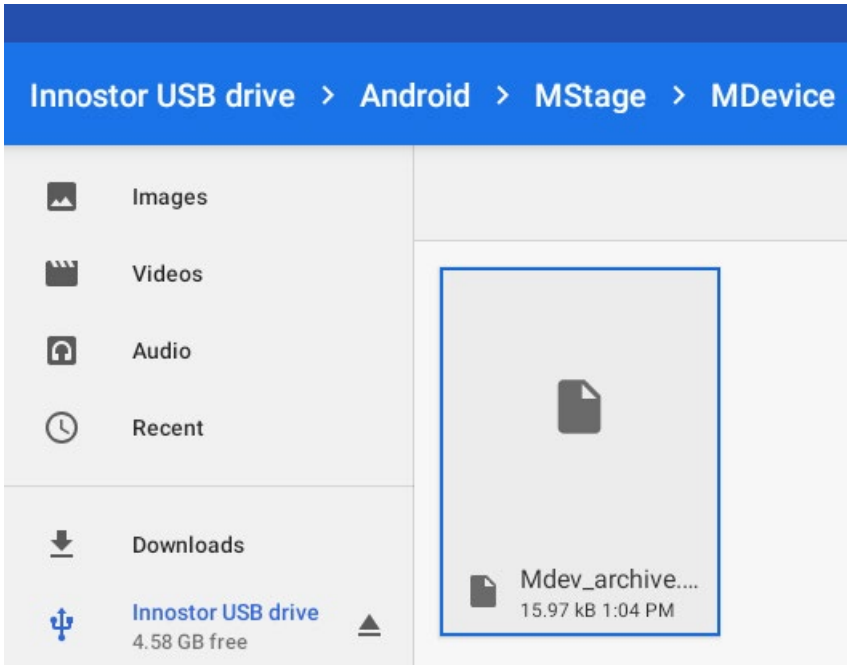


Figure 9.8: MStage archive file on the USB stick

NOTE

To avoid data corruption of created archive, please be sure to use EJECT functionality of Android before removing the USB-Stick from system

Figure 9.9: EJECT functionality of Android

9.1.3. MStage – Apply Archive

Open MStage application and change dialog view to **Available Archives**:

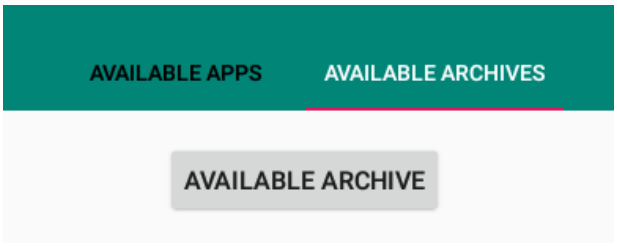


Figure 9.10: MStage – Available Archives

Press button **Available Archive** to select a former created MStage archive file.

Figure 9.11: MStage – Available Archives message

Confirm the upcoming message with **Continue**. System reboot will be done automatically after applying the archive file.

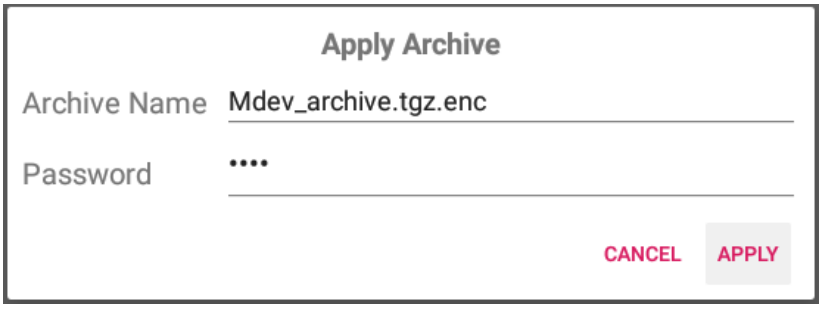


Figure 9.12: MStage – Apply Archive

Enter the password (must match the one used during creating archive process) and confirm with **APPLY**.

In case everything works as expected, the archive will be extracted and all application settings information added to terminal followed by an automatic reboot.

NOTE *In case the entered password does not match the expected password part of MStage archive file or an incompatible file has been selected the following message will appear:*

Figure 9.13: MStage – Password, response error

9.1.4. MStage – Version information

The version information (service & application) of MStage can be viewed clicking on the icon

Figure 9.14: MStage – Version information

9.2. MStage – Application specific information

This chapter will contain extended information for specific applications you can select as part of MStage application.

9.2.1. MStage – Advantech Launcher

Before creating MStage archive including **Advantech Launcher settings** for the first time, please use **Advantech Launcher Configuration** option to setup the required configuration file.

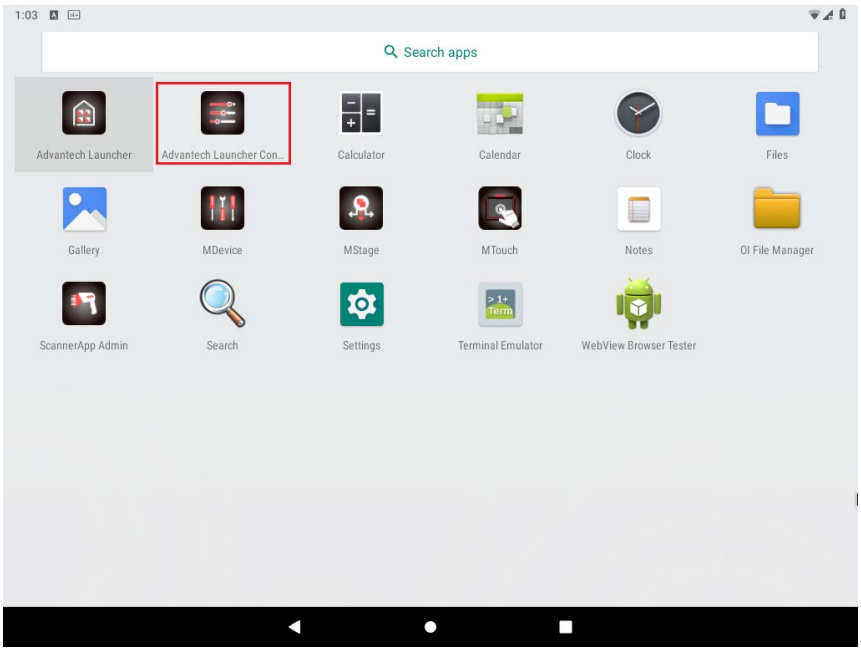


Figure 9.15: MStage – Advantech Launcher

9.2.2. MStage – Wi-Fi Settings

For Wi-Fi based settings the following types of configuration & encryption levels have been tested successfully:

- Open-Encryption
- WEP-40
- WEP-128
- WPA2-PSK
- EAP-PEAP
- EAP-TTLS
- EAP-TLS

NOTES

EAP-TLS encryption requires to have installed user + root certificate next to applied MStage archive file.

Android installed credential storage information is not part of created archives and must be installed separately.

While apply of EAP-TLS based MStage archive Wi-Fi settings please follow the upcoming procedure to install in parallel the required user and root certificates

9.2.3. MStage – Wi-Fi settings – EAP-TLS setup

To allow EAP-TLS to work correctly after restoring an MStage archive file containing the Wi-Fi settings, do the following additional installation of required certificates:

Open Settings -> Security & locations.

Scroll down to **Encryption & credentials** and perform a click.

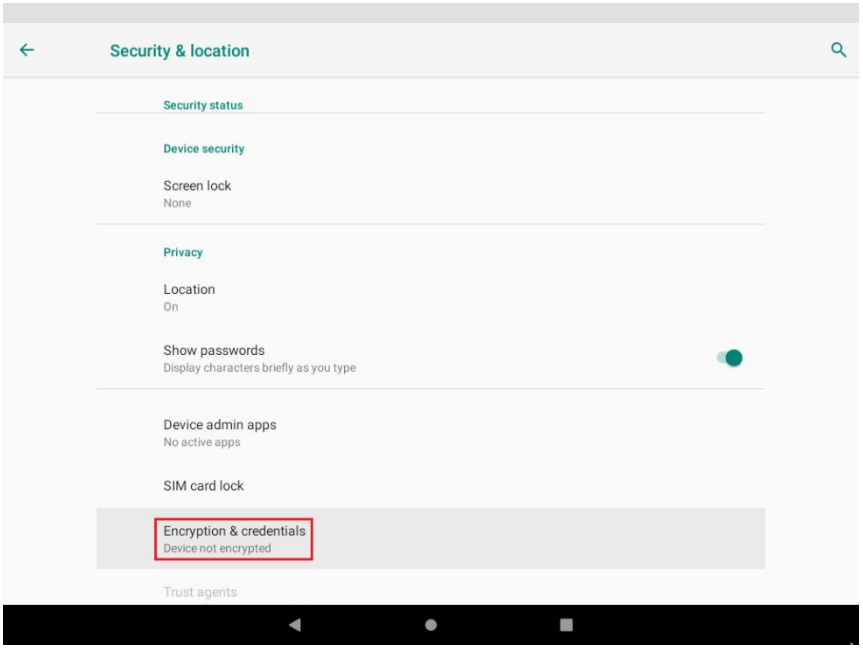


Figure 9.16: MStage – Wi-Fi settings, EAP-TLS setup

Attach an USB-Stick containing the (root (**ca.pem**) and user (**client,p12**) certificate files and choose option **Install from SD Card.**

Change to folder containing the files and select first **ca.pem.**

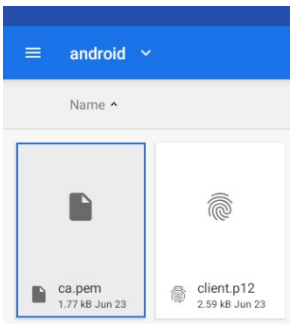


Figure 9.17: MStage – Wi-Fi settings, EAP-TLS setup, ca.pem

Perform double click to install

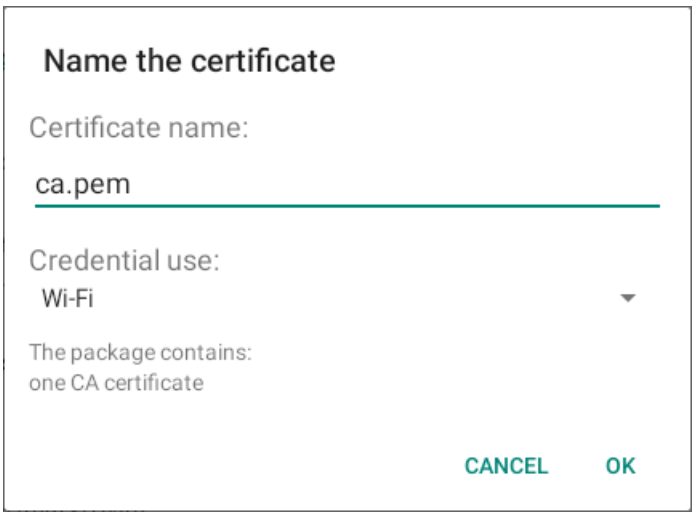


Figure 9.18: MStage – Wi-Fi settings, EAP-TLS setup, ca.pem

Enter name (can differ from original file name) and select **Wi-Fi** as part of **Credential use** selection followed by **OK** button.

Next by security reason of Android installing additional certificates into credential storage a PIN has to be defined.

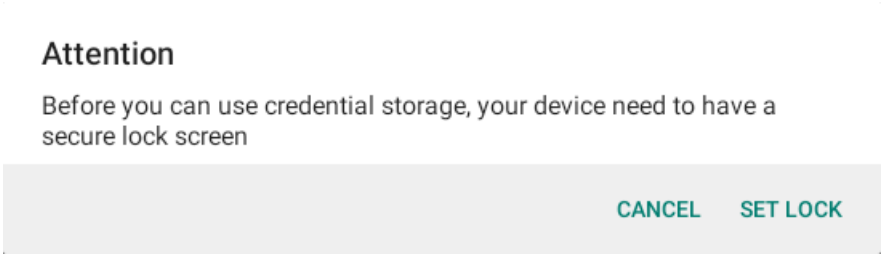


Figure 9.19: MStage – Wi-Fi settings, PIN warning

Continue with **OK**.

Select item **PIN** to define a new one.

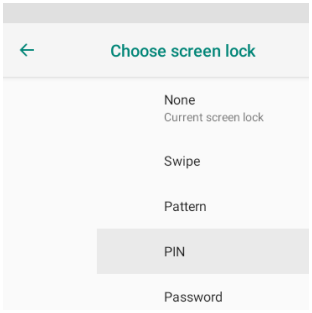


Figure 9.20: MStage – Define a PIN

Following dialog will be displayed

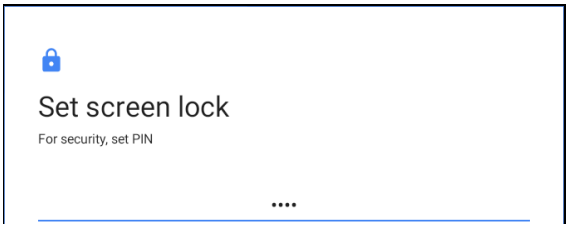


Figure 9.21: MStage – Define a PIN

Enter new **PIN** followed by **Continue** (Confirm the new PIN afterwards).

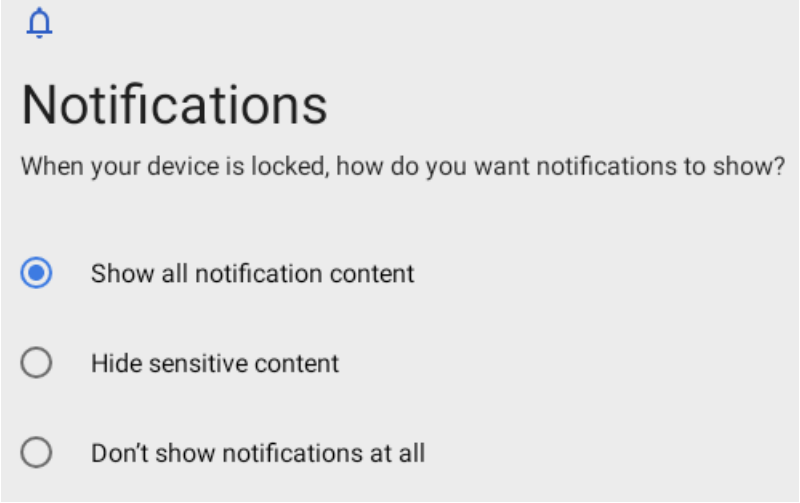


Figure 9.22: MStage – Define a PIN

Select a Notification level and close dialog with **DONE**.

Perform the “Install from SD card” option again with personal certificate.

Install from SD card.

Select client.p12.

Enter required password to add personal certificate information.

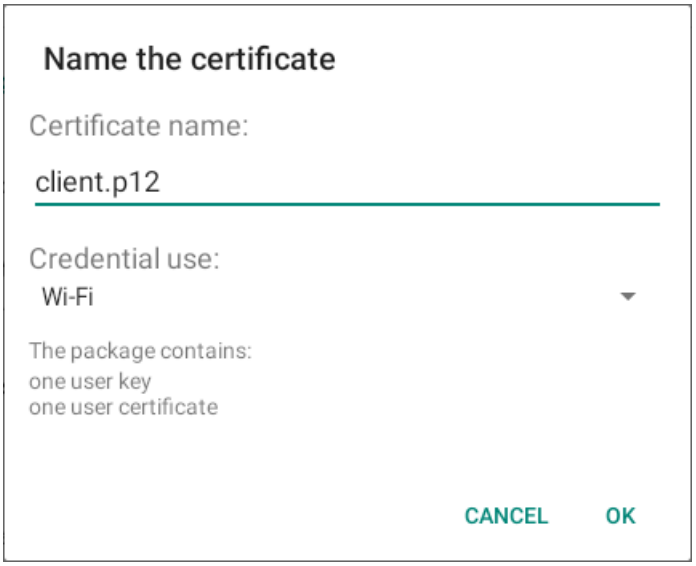


Figure 9.23: MStage – Name the certificate

Enter name and select as **Credential use** again **Wi-Fi**.

Close dialog with **OK** button

After the required certificate installation, configure the Wi-Fi profile inside the **Settings** (**Network & Internet -> Wi-Fi**) configuration at initial setup process or use MStage to apply a former saved Wi-Fi settings profile using EAP-TLS already.

Example view of EAP-TLS configuration:

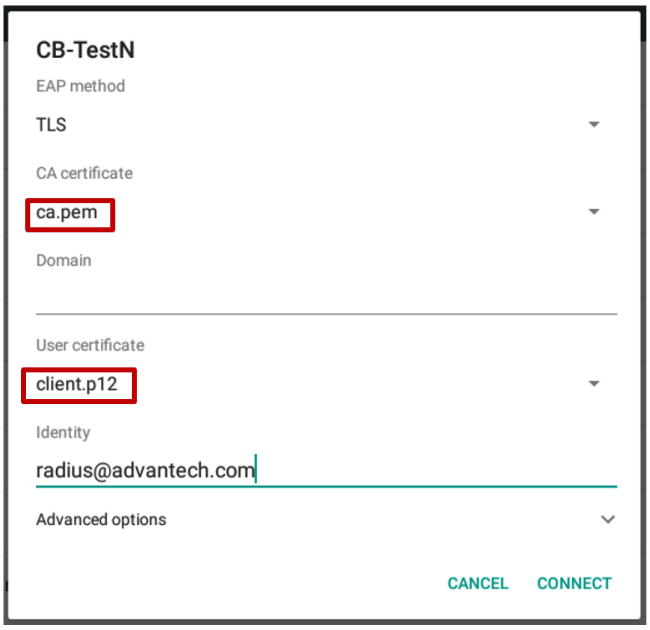


Figure 9.24: MStage – Example view of EAP-TLS configuration

NOTE

For additional required settings, especially the Roaming settings configuration required, please see manual section 6.1 WLAN roaming.

After required CA and User certificate setup, press button **CONNECT** to enable setup WLAN-profile.

10. MTouch

10.1. MTouch

MTouch is a software utility provided by Advantech to allow users during normal operation to change the PCAP touch sensitivity setting between different modes for glove usage without the need to have Administrator rights.

By default, the permanent value of this settings is normally set by the Administrator inside the Advantech MDevice utility and will be automatically restored during an OS boot up.

For further information about general configuration of PCAP touch sensitivity level please check the following chapter *5.7 Display Setting.*

NOTES

Changes done for PCAP touch sensitivity setting using MTouch application are not permanent saved.

The original set value inside MDevice utility will always be restored at an OS boot up.

To permanently change, enable or disable the PCAP touch sensitivity level can only be done by a system Administrator inside MDevice utility.

*The DLT-V72 P, P+ terminal support two **(non glove and glove)** sensitivity modes.*

*The DLT-V72 K and DLT-V72 KD (Defroster) supports three **(non glove, glove and thick glove)** sensitivity modes.*

10.1.1. MTouch application

To change the PCAP touch sensitivity level using MTouch, launch the MTouch application from Apps Screen.

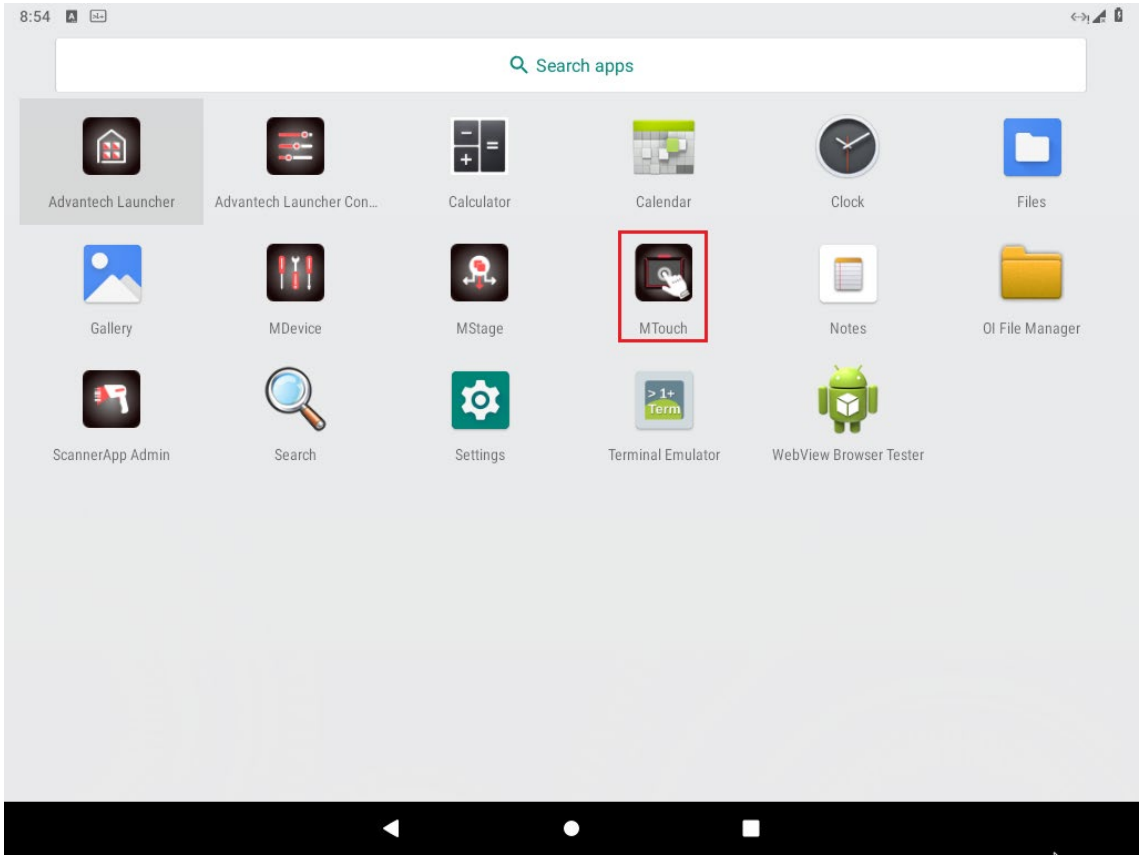


Figure 10.1: Apps Screen → MTouch

10.1.2. MTouch – (DLT-V72 P, P+)

At DLT-V72 P, P+ terminal configuration the utility will allow switching between two sensitivity settings:

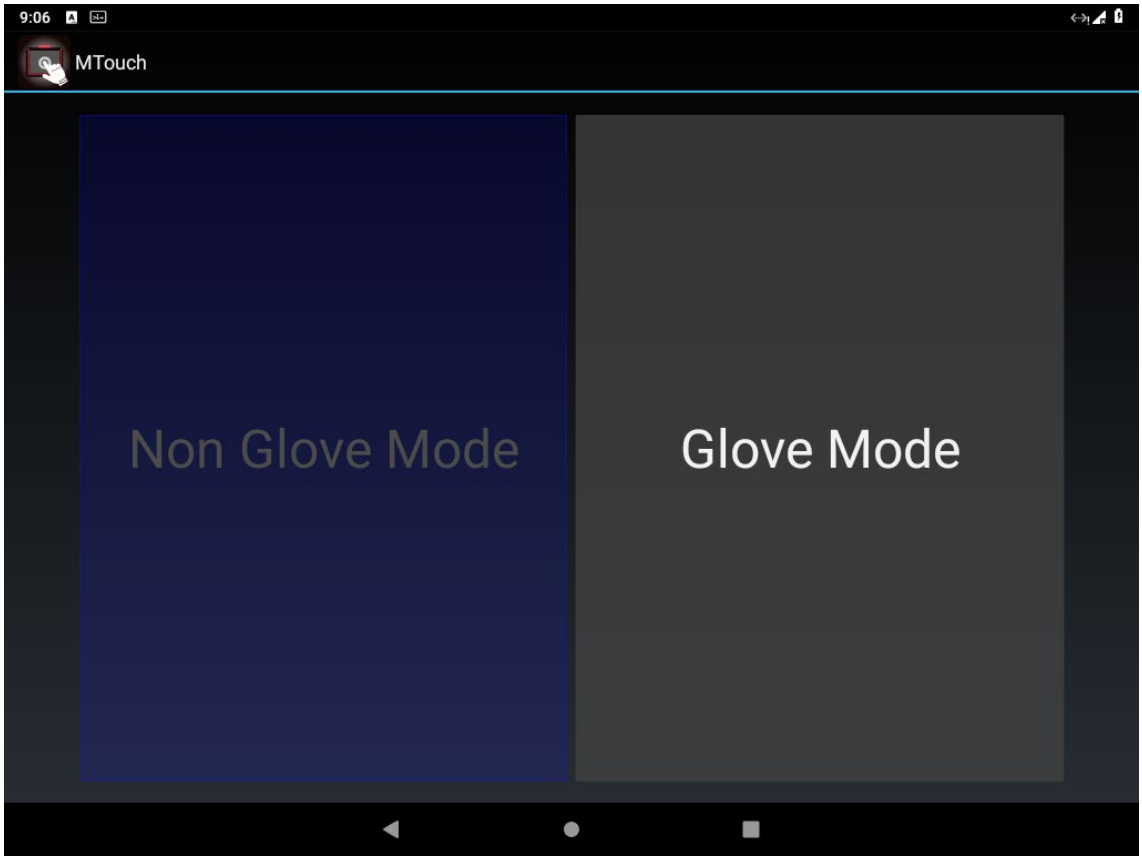


Figure 10.2: MTouch – (DLT-V72 P, P+)

10.1.3. MTouch – (DLT-V72 K, KD)

At DLT-V72 K and DLT-V72 KD (Defroster) terminal configuration MTouch utility will allow switching between three sensitivity settings:

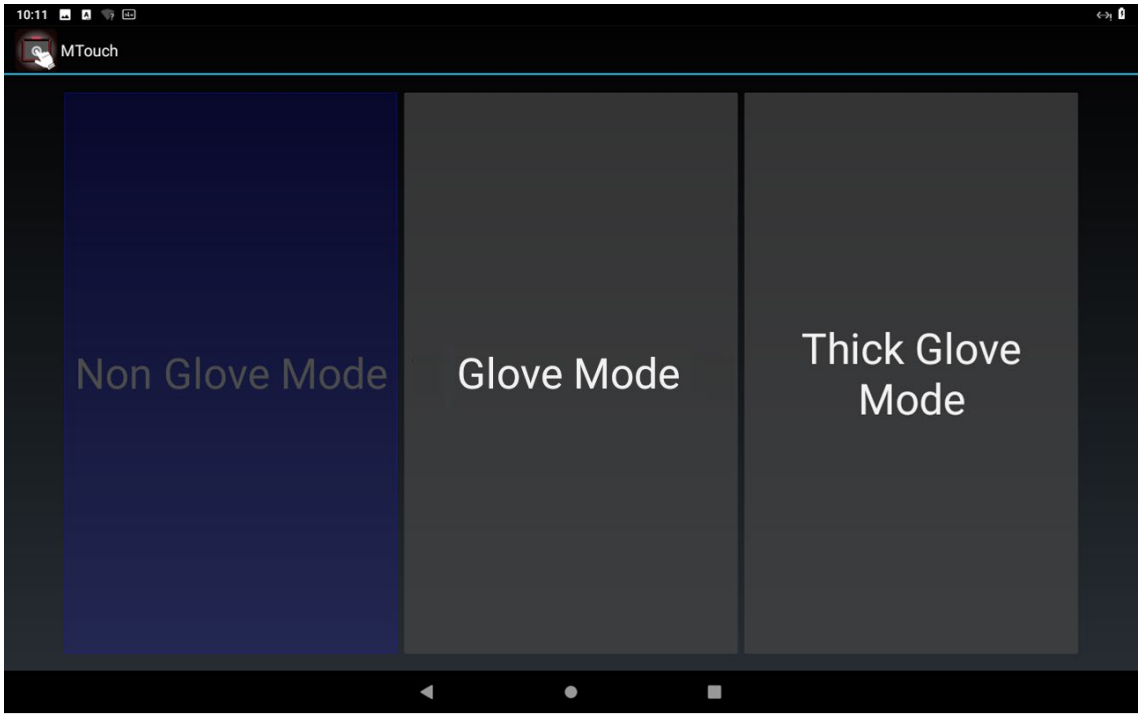


Figure 10.3: MTouch – (DLT-V72 K, KD)

11. List of figures