

Run external applications in TS8 quick reference guide

Introduction

This document provides quick reference to execution of applications from memory card in TS8 mobile data terminal.

This reference guide uses demo application `demoApp`, but any other application, compiled for TS8 can be executed via this method.

TS8 firmware developers, system administrators and system integrators are the quick reference guide target audience.

User running external applications shall be familiar with linux command line interface usage, shell scripts development and have good knowledge of TS8 firmware and development adapter usage.

Prerequisites

Hardware prerequisites:

- Working TS8 mobile barcode and RFID scanner
- TS8-RBOR0 development adapter
- memory card compatible with TS8
- host PC to get TS8 console access and transfer files to the memory card

Software prerequisites:

- TS8 firmware built with TS8 firmware development kit including start-up applications and init scripts.
- demoApp downloaded from [Vecly website](#)
- terminal emulator application (e.g. screen or Putty) in host PC.

Preparations

- Prepare memory card as instructed in TS8 firmware update quick reference guide
- Install development adapter as instructed in TS8-RBOR0 development adapter user manual
- Configure host PC to get connected with development adapter as instructed in TS8-RBOR0 development adapter user manual
- Connect TS8 USB host port with host PC and ensure that memory card can be mounted in host PC.

TS8 boot mode change with development adapter

Normally TS8 runs automatically an application from file system. Boot behaviour is controlled via U-Boot environment variable. See TS8 PLE firmware specification for boot process and bootloader environment variables description.

- Switch TS8 off
- Connect host PC terminal emulator application with development adapter. Port settings are `115200 8-N-1`. Following command can be used with screen:

```
# screen /dev/ttyUSB0 115200
```

When serial port can not be opened, check that `LED 3` in development adapter is lit. and your user is in `dialout` group in linux systems.

- Switch TS8 on and press a key really quickly (because initial boot delay is 0 seconds) to obtain bootloader prompt.

Bootloader prompt looks similar to following:

```
U-Boot 1.1.5 (Mar  4 2011 - 17:16:27)

DRAM:  32 MB
Flash: 16 MB
In:    serial
Out:   serial
Err:   serial
Bootscript NOT found in SDRAM.
Hit any key to stop autoboot:  0
>
```

- Disable watchdog timer by entering following command to the bootloader prompt.
- Enter command to disable watchdog timer:

```
# wdt dis
```

quickly or watchdog timer will start the boot process.

- Set boot mode to execute startup script from memory card

```
# setenv test 7001
```

Validate changes via printing all variables:

```
# printenv
```

Output shall be similar with following:

```
baudrate=115200
bootcmd=bootm 0x10080000
bootargs=mtddparts=physmap-flash.0:16M@0x00000000(flash),128K@0x00000000(u-boot),128K@0x00020000(con
f),256K@0x00040000(splash),1536K@0x00080000(kernel),13696k@0x00200000(rootfs),640k@0x00F60000(conf
s)root=/dev/mtdblock5 ro rootfstype=jffs2 console=null
serial=XXXX
ft=ple
model=TS8
hwrev=7
mfdate=XXXX
cmttype=1
bootdelay=0
test=7001
stdin=serial
stdout=serial
stderr=serial
```

- Save changed variables with command:

```
# saveenv
```

At this point normal boot process is changed and your device will not run the default application any more.

To set normal boot mode. use following command to set it in bootloader prompt

```
# setenv test 0
```

- Switch off the device by removing battery.

Boot behaviour via script in memory card

After changing `test` value boot behaviour via `etc/init.d/startup` in TS8 file system is following:

```
echo 'L80' > /dev/oled
mount -t vfat $MMCdev /mnt/mmc
/sbin/getty -n -i -l /mnt/mmc/_ts8-service/startup -L ttyAT0 115200 vt100
```

It means that TS8 will mount memory card to the `/mnt/mmc` and executes `/mnt/mmc/_ts8-service/startup`.

When startup script is not found following is print to the TS8 console and device boot hangs. **TS8 does not switch off any more but remains in that state until battery is empty.**

```
## Booting image at 10080000 ...
Image Name:
Image Type:  ARM Linux Kernel Image (uncompressed)
Data Size:   1523712 Bytes =  1.5 MB
Load Address: 20008000
Entry Point: 20008000
Verifying Checksum ... OK
OK

Starting kernel ...

Uncompressing Linux... done, booting the kernel.

getty: ttyAT0: can't exec /mnt/mmc/_ts8-service/startup
```

Prepare startup script

Prepare startup script `startup` in host PC and save it to memory card folder `_ts8-service/`.

Following example script runs PLE terminal as it is in normal boot mode.

```
#!/bin/sh
echo "Running terminal application via memory card startup script" > /dev/ttyAT0
runapp
```

If startup script was prepared correctly following is print to the TS8 console and PLE terminal starts.

```
"Running terminal application via memory card startup script"
```

NB! Memory card shall be inserted or removed from TS8 only if device is completely off. Also USB host cable (not development adapter cable) shall be removed.

Run demoApp from memory card

- Download demoApp from Vecly website
- See demoApp Readme.txt for usage instruction