



How to manage OpenSTLinux project in STM32CubeIDE



This article explains how to import OpenSTLinux projects into STM32CubeIDE from version 1.4.0 on Linux workstation.



Contents

1 Overview	3
2 OpenSTLinux project structure	4
3 Linux project	5
4 Other Projects	8

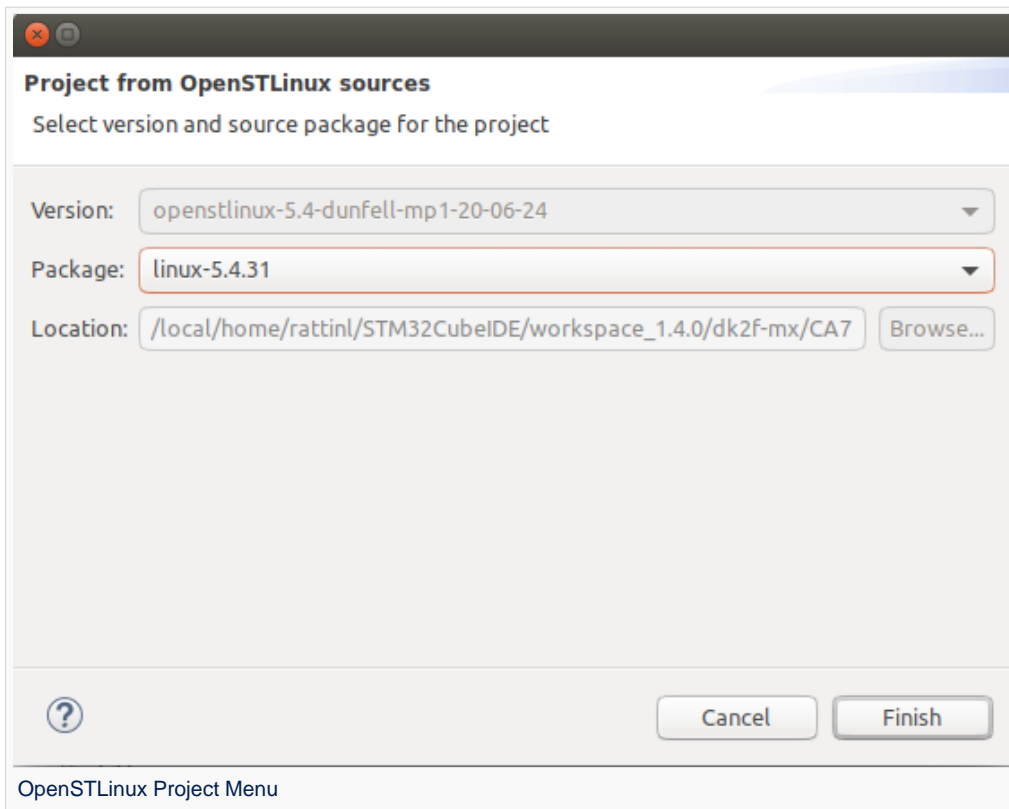


1 Overview

It is possible to import into an existing STM32MP15 Project some OpenSTLinux projects:

- *STM32CubeIDE 1.5.0 provides support for ecosystem release v2.1.0* 
- *STM32CubeIDE 1.4.0 provides support for ecosystem release v2.0.0* 

This is done thanks to **Import an OpenSTLinux project...** Cortex-A hierarchical project contextual menu.

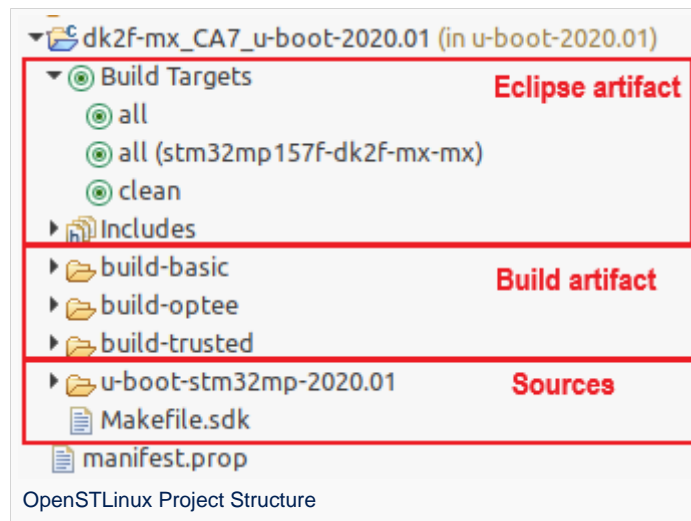




2 OpenSTLinux project structure

All the OpenSTLinux projects follow the same project structure approach with three main parts:

- Eclipse artifact, in order to ease project usage,
- build artifact, identifying clearly the project output,
- sources, as they appear in Yocto environment



Device trees generated by STM32CubeMX into *DeviceTree/* directory of Cortex-A hierarchical project, are automatically included inside the corresponding OpenSTLinux project with:

- source file links,
- dedicated *Build target* .



3 Linux project

Several *Build targets* are proposed for Linux project addressing device trees, module and kernel. Double click on *Build target* launches the corresponding compilation with associated Yocto SDK.

The screenshot displays the STM32CubeIDE interface. On the left, the project tree shows the following structure:

- dk2f-mx
 - Common
 - dk2f-mx_CA7 (in CA7)
 - DeviceTree
 - dk2f-mx_CA7_linux-5.4.31 (in linux-5.4.31)
 - Build Targets
 - all
 - clean
 - dtb (stm32mp157f-dk2f-mx-dtb) **(Selected)**
 - dtbs
 - INSTALL_MOD_PATH=install_artifact modules_install
 - modules
 - ulmage LOADADDR=0xC2000040
 - vmlinux
 - Binaries
 - Includes
 - build
 - linux-5.4.31
 - dk2f-mx_CA7_optee_os-3.9.0 (in optee_os-3.9.0)
 - dk2f-mx_CA7_tf-a-2.2 (in tf-a-2.2)
 - dk2f-mx_CA7_tf-a-ssp-2.2 (in tf-a-ssp-2.2)

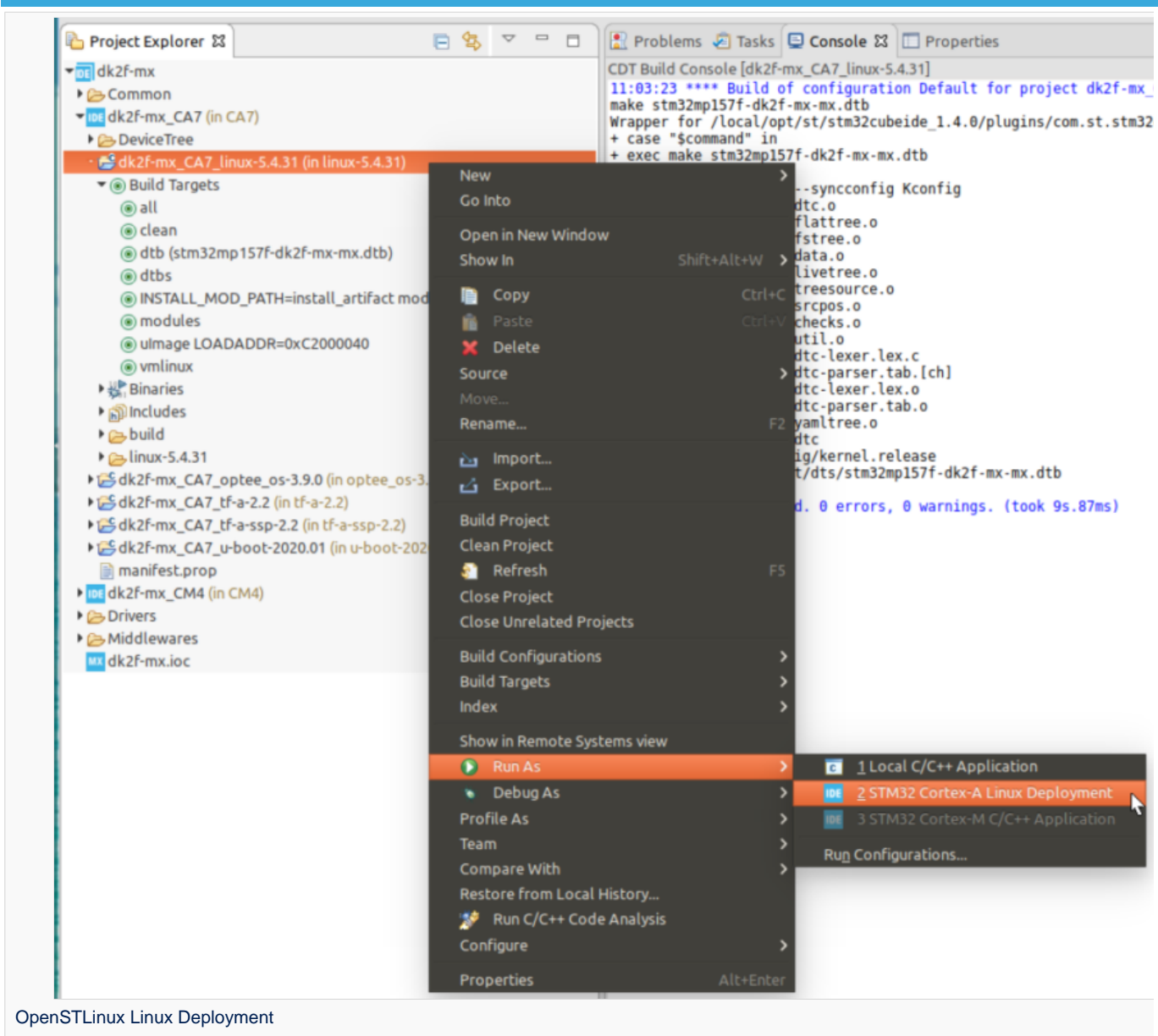
On the right, the CDT Build Console shows the following output:

```

CDT Build Console [dk2f-mx_CA7_linux-5.4.31]
11:03:23 **** Build of configuration Default for project dk2f-mx_CA7_linux-5.4.31 ****
make stm32mp157f-dk2f-mx-mx.dtb
Wrapper for /local/opt/st/stm32cubeide_1.4.0/plugins/com.st.stm32cube.ide.mpu.linux.toolchain_1.4.0.202007081209/
+ case "$command" in
+ exec make stm32mp157f-dk2f-mx-mx.dtb
GEN      Makefile
scripts/kconfig/conf --syncconfig Kconfig
HOSTCC  scripts/dtc/dtc.o
HOSTCC  scripts/dtc/flattree.o
HOSTCC  scripts/dtc/fstree.o
HOSTCC  scripts/dtc/data.o
HOSTCC  scripts/dtc/livetree.o
HOSTCC  scripts/dtc/treesource.o
HOSTCC  scripts/dtc/scp.o
HOSTCC  scripts/dtc/checks.o
HOSTCC  scripts/dtc/util.o
LEX      scripts/dtc/dtc-lexer.lex.c
YACC    scripts/dtc/dtc-parser.tab.[ch]
HOSTCC  scripts/dtc/dtc-lexer.lex.o
HOSTCC  scripts/dtc/dtc-parser.tab.o
HOSTCC  scripts/dtc/yamltree.o
HOSTLD  scripts/dtc/dtc
UPD     include/config/kernel.release
DTC     arch/arm/boot/dts/stm32mp157f-dk2f-mx-mx.dtb
11:03:32 Build Finished. 0 errors, 0 warnings. (took 9s.87ms)
  
```

OpenSTLinux Linux Device Tree MX Build

It is then possible to update the running STM32MP15 target with the new build artifacts using the *STM32 Cortex-A Linux Deployment Run Configuration* menu.



OpenSTLinux Linux Deployment

In this dedicated *Run Configuration* menu, build artifact (device tree binary, module, kernel..) is added using *Add...* button and giving:

- Local path, on the Linux workstation (en.FLASH-stm32mp1-openstlinux-5-4-dunfell-mp1-20-11-12.tar.xz ; here build/arch/arm/boot/dts/stm32mp157-dk2f-mx-mx.dtb)
- Remote path, browsing the remote target file system

For a new device tree, it is possible to update *extlinux.conf* target file in order to take it into account on the next target reboot, see *Actions* sub-window.



To get correct support please select the *extlinux.conf* file corresponding to your board browsing onto the target!



Add/Edit item

Project:

Local path:

Remote path:

Actions

Update extlinux:

OpenSTLinux Linux Deployment Menu

After download of build artifacts to the STM32MP15 board:

- a script can be executed (optional)
- STM32MP15 board is rebooted (default)

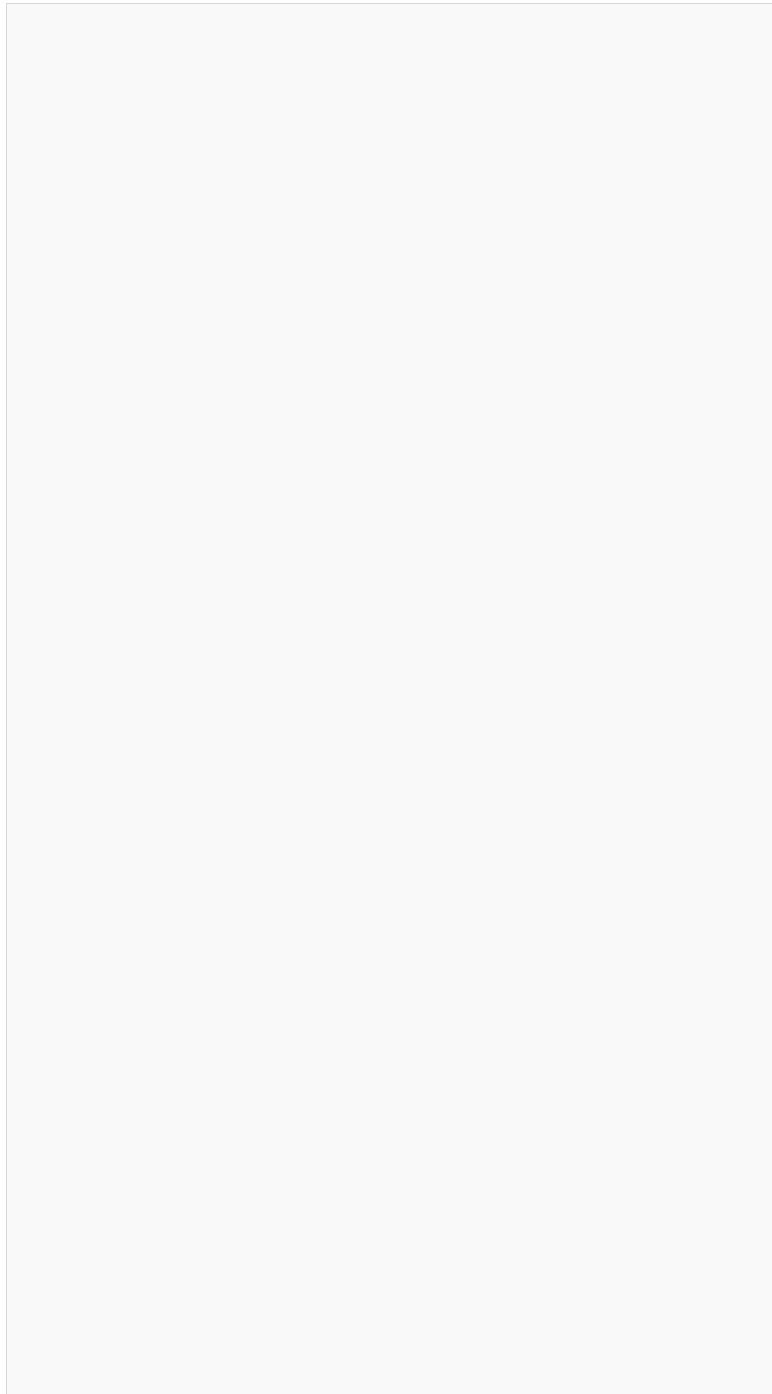


4 Other Projects

TF-A, U-boot and OP-TEE projects are proposing as Build targets:

- all
- clean
- all, including Device Tree generated by STM32CubeMX

They generate flash partition that has to be updated on the STM32MP15 board typically using STM2CubeProgrammer.





dk2f-mx_CA7_u-boot-2020.01 (in u-boot-2020.01)

- ▼ Build Targets
 - all
 - all (stm32mp157f-dk2f-mx-mx)
 - clean
- ▶ Includes
- ▶ build-basic
- ▼ build-optee
 - ▶ arch
 - ▶ board
 - ▶ cmd
 - ▶ common
 - ▶ disk
 - ▶ drivers
 - ▶ dts
 - ▶ env
 - ▶ examples
 - ▶ fs
 - ▶ include
 - ▶ lib
 - ▶ net
 - ▶ scripts
 - ▶ source
 - ▶ tools
 - Makefile
 - System.map
 - u-boot
 - u-boot.bin
 - u-boot.cfg
 - u-boot.cfg.configs
 - u-boot.dtb
 - u-boot.lds
 - u-boot.map
 - u-boot.srec
 - u-boot.stm32
 - u-boot.stm32.log
 - u-boot.sym
 - u-boot-dtb.bin
 - u-boot-nodtb.bin
 - u-boot-stm32mp157f-dk2f-mx-mx-optee.elf
 - u-boot-stm32mp157f-dk2f-mx-mx-optee.stm32**
- ▶ build-trusted
- ▶ u-boot-stm32mp-2020.01
 - Makefile.sdk
- manifest.prop

OpenSTLinux TFA Project



Software development kit (A programming package that enables a programmer to develop applications for a specific platform.)

Trusted Firmware for Arm Cortex-A

Open Portable Trusted Execution Environment