



STM32MP15 U-Boot



Contents

1. STM32MP15 U-Boot	3
2. Boot chain overview	9
3. How to configure TF-A FIP	16
4. MB1262	23
5. MB1263	30
6. MB1272	37
7. MB1407	44
8. STM32CubeProgrammer flashlayout	51
9. STM32MP15 boards	58
10. STM32MP15 device tree	65
11. U-Boot SPL: DDR interactive mode	72
12. U-Boot overview	79



A quality version of this page, approved on *11 June 2021*, was based off this revision.

This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	4
2 Selecting targets : choose defconfig and Device Tree	5
3 Compilation	6
4 U-Boot integration in FIP	7
5 SPL compilation	8
6 Examples	9
6.1 STM32MP157F-EV1 Evaluation board	9
6.2 STM32MP157C-EV1 Evaluation board	9
6.3 STM32MP157D-DK1 Discovery kit	9
6.4 STM32MP157C-DK2 Discovery kit	9
6.5 Custom board with external device tree	9
6.6 SPL for STM32MP157F-EV1 Evaluation board	9




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	MB1272+MB1407
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: *stm32mp15_basic_defconfig*

```
PC $> make stm32mp15_basic_defconfig  
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 12.03.2021 - 11:29 / Revision: 12.03.2021 - 11:15



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	11
2 Selecting targets : choose defconfig and Device Tree	12
3 Compilation	13
4 U-Boot integration in FIP	14
5 SPL compilation	15
6 Examples	16
6.1 STM32MP157F-EV1 Evaluation board	16
6.2 STM32MP157C-EV1 Evaluation board	16
6.3 STM32MP157D-DK1 Discovery kit	16
6.4 STM32MP157C-DK2 Discovery kit	16
6.5 Custom board with external device tree	16
6.6 SPL for STM32MP157F-EV1 Evaluation board	16




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: *stm32mp15_basic_defconfig*

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 28.06.2021 - 07:11 / Revision: 21.06.2021 - 14:08



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	18
2 Selecting targets : choose defconfig and Device Tree	19
3 Compilation	20
4 U-Boot integration in FIP	21
5 SPL compilation	22
6 Examples	23
6.1 STM32MP157F-EV1 Evaluation board	23
6.2 STM32MP157C-EV1 Evaluation board	23
6.3 STM32MP157D-DK1 Discovery kit	23
6.4 STM32MP157C-DK2 Discovery kit	23
6.5 Custom board with external device tree	23
6.6 SPL for STM32MP157F-EV1 Evaluation board	23




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 15.06.2020 - 10:25 / Revision: 15.06.2020 - 10:25



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	25
2 Selecting targets : choose defconfig and Device Tree	26
3 Compilation	27
4 U-Boot integration in FIP	28
5 SPL compilation	29
6 Examples	30
6.1 STM32MP157F-EV1 Evaluation board	30
6.2 STM32MP157C-EV1 Evaluation board	30
6.3 STM32MP157D-DK1 Discovery kit	30
6.4 STM32MP157C-DK2 Discovery kit	30
6.5 Custom board with external device tree	30
6.6 SPL for STM32MP157F-EV1 Evaluation board	30




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:

- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit	stm32mp157d-dk1	MB1272+MB1407
STM32MP157C-DK2 Discovery kit	stm32mp157c-dk2	
STM32MP157F-DK2 Discovery kit	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 15.06.2020 - 10:53 / Revision: 15.06.2020 - 10:52



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	32
2 Selecting targets : choose defconfig and Device Tree	33
3 Compilation	34
4 U-Boot integration in FIP	35
5 SPL compilation	36
6 Examples	37
6.1 STM32MP157F-EV1 Evaluation board	37
6.2 STM32MP157C-EV1 Evaluation board	37
6.3 STM32MP157D-DK1 Discovery kit	37
6.4 STM32MP157C-DK2 Discovery kit	37
6.5 Custom board with external device tree	37
6.6 SPL for STM32MP157F-EV1 Evaluation board	37




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see U-Boot_overview)

Stable: **Not stable** / Revision: 20.09.2021 - 06:42



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	39
2 Selecting targets : choose defconfig and Device Tree	40
3 Compilation	41
4 U-Boot integration in FIP	42
5 SPL compilation	43
6 Examples	44
6.1 STM32MP157F-EV1 Evaluation board	44
6.2 STM32MP157C-EV1 Evaluation board	44
6.3 STM32MP157D-DK1 Discovery kit	44
6.4 STM32MP157C-DK2 Discovery kit	44
6.5 Custom board with external device tree	44
6.6 SPL for STM32MP157F-EV1 Evaluation board	44




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 15.06.2020 - 10:42 / Revision: 15.06.2020 - 10:41



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	46
2 Selecting targets : choose defconfig and Device Tree	47
3 Compilation	48
4 U-Boot integration in FIP	49
5 SPL compilation	50
6 Examples	51
6.1 STM32MP157F-EV1 Evaluation board	51
6.2 STM32MP157C-EV1 Evaluation board	51
6.3 STM32MP157D-DK1 Discovery kit	51
6.4 STM32MP157C-DK2 Discovery kit	51
6.5 Custom board with external device tree	51
6.6 SPL for STM32MP157F-EV1 Evaluation board	51




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	MB1272+MB1407
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```




4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 03.05.2021 - 13:15 / Revision: 30.04.2021 - 13:30



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	53
2 Selecting targets : choose defconfig and Device Tree	54
3 Compilation	55
4 U-Boot integration in FIP	56
5 SPL compilation	57
6 Examples	58
6.1 STM32MP157F-EV1 Evaluation board	58
6.2 STM32MP157C-EV1 Evaluation board	58
6.3 STM32MP157D-DK1 Discovery kit	58
6.4 STM32MP157C-DK2 Discovery kit	58
6.5 Custom board with external device tree	58
6.6 SPL for STM32MP157F-EV1 Evaluation board	58




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```




5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 08.06.2020 - 07:20 / Revision: 18.05.2020 - 13:26



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	60
2 Selecting targets : choose defconfig and Device Tree	61
3 Compilation	62
4 U-Boot integration in FIP	63
5 SPL compilation	64
6 Examples	65
6.1 STM32MP157F-EV1 Evaluation board	65
6.2 STM32MP157C-EV1 Evaluation board	65
6.3 STM32MP157D-DK1 Discovery kit	65
6.4 STM32MP157C-DK2 Discovery kit	65
6.5 Custom board with external device tree	65
6.6 SPL for STM32MP157F-EV1 Evaluation board	65




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	MB1272+MB1407
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 05.01.2021 - 15:36 / Revision: 13.11.2020 - 10:23



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	67
2 Selecting targets : choose defconfig and Device Tree	68
3 Compilation	69
4 U-Boot integration in FIP	70
5 SPL compilation	71
6 Examples	72
6.1 STM32MP157F-EV1 Evaluation board	72
6.2 STM32MP157C-EV1 Evaluation board	72
6.3 STM32MP157D-DK1 Discovery kit	72
6.4 STM32MP157C-DK2 Discovery kit	72
6.5 Custom board with external device tree	72
6.6 SPL for STM32MP157F-EV1 Evaluation board	72




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 23.03.2021 - 10:12 / Revision: 16.02.2021 - 16:55



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	74
2 Selecting targets : choose defconfig and Device Tree	75
3 Compilation	76
4 U-Boot integration in FIP	77
5 SPL compilation	78
6 Examples	79
6.1 STM32MP157F-EV1 Evaluation board	79
6.2 STM32MP157C-EV1 Evaluation board	79
6.3 STM32MP157D-DK1 Discovery kit	79
6.4 STM32MP157C-DK2 Discovery kit	79
6.5 Custom board with external device tree	79
6.6 SPL for STM32MP157F-EV1 Evaluation board	79




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	MB1272+MB1407
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: *stm32mp15_basic_defconfig*

```
PC $> make stm32mp15_basic_defconfig  
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Stable: 19.10.2021 - 13:54 / Revision: 19.10.2021 - 13:54



This article briefly describes the STM32MP15x lines  support in U-Boot.

Contents

1 STM32MP15x lines support	81
2 Selecting targets : choose defconfig and Device Tree	82
3 Compilation	83
4 U-Boot integration in FIP	84
5 SPL compilation	85
6 Examples	86
6.1 STM32MP157F-EV1 Evaluation board	86
6.2 STM32MP157C-EV1 Evaluation board	86
6.3 STM32MP157D-DK1 Discovery kit	86
6.4 STM32MP157C-DK2 Discovery kit	86
6.5 Custom board with external device tree	86
6.6 SPL for STM32MP157F-EV1 Evaluation board	86




1 STM32MP15x lines support

For detailed information, please read the file in the delivered U-Boot code = `doc/board/st/stm32mp1.rst` or the `stm32mp1` documentation generated by `make htmldocs[1]`.

Also available in official U-Boot Git.

Code :

- `arch/arm/mach-stm32mp` : arch specific code for STM32 Arm[®] Cortex[®] MPUs 
- `board/st/common` : STMicroelectronics common code
- `board/st/stm32mp1` : generic STMicroelectronics board for STM32MP1 Series
- `drivers/*/*stm32*` : drivers

Configuration Files:









- defconfig file
 - `configs/stm32mp15_trusted_defconfig`
 - `configs/stm32mp15_basic_defconfig`
- config files
 - `include/configs/stm32mp1.h`
- `STM32MP15_device_tree` in `arch/arm/dts` : `stm32mp15*.dts*`
 - `<Device tree>.dts` : same as kernel
 - `<Device tree>-u-boot.dtsi` : addition for u-boot automatically included in build process



2 Selecting targets : choose defconfig and Device Tree

The STM32 MPU boot chain is supported by one U-Boot configuration with defconfig = `stm32mp15_trusted_defconfig`

Several boards are supported with the associated device-tree (same name as kernel):

Board part number	Device tree	Description
STM32MP157A-EV1 Evaluation board 	stm32mp157a-ev1	MB1262+MB1263
STM32MP157C-EV1 Evaluation board 	stm32mp157c-ev1	
STM32MP157D-EV1 Evaluation board 	stm32mp157d-ev1	
STM32MP157F-EV1 Evaluation board 	stm32mp157f-ev1	
STM32MP157A-DK1 Discovery kit 	stm32mp157a-dk1	MB1272
STM32MP157D-DK1 Discovery kit 	stm32mp157d-dk1	
STM32MP157C-DK2 Discovery kit 	stm32mp157c-dk2	MB1272+MB1407
STM32MP157F-DK2 Discovery kit 	stm32mp157f-dk2	

For information the 'Evaluation' daughter-board only (MB1263 without MB1262) is also supported by `stm32mp15*-ed1.dts` device tree files.



3 Compilation

see U-Boot_overview#U-Boot_build

With the defconfig file: `stm32mp15_trusted_defconfig`

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```


The supported variables are:

- **DEVICE_TREE**: select in arch/arm/dts the device tree that is used
- **KBUILD_OUTPUT**: change the destination directory for the build
- **EXT_DTB**: select external device tree

The output files `u-boot.dtb` and `u-boot-nodtb.bin` are integrated in FIP.

Nota: All the compiled device tree are available in `$KBUILD_OUTPUT/arch/arm/dts/*.dtb`.

You can select them instead of `u-boot.dtb` without U-Boot recompilation.

The output file is `u-boot.stm32` for ecosystem release v2.1.0 or if you activate `CONFIG_STM32MP15x_STM32IMAGE` in your defconfig for ecosystem release v3.0.0  (this temporary option is only introduced to facilitate the FIP migration but it will be removed in the next EcosystemRelease).

With FIP support for ecosystem release v3.0.0 , the offset on U-Boot environment in NOR are defined in the defconfig with:

```
CONFIG_ENV_OFFSET=0x480000
CONFIG_ENV_OFFSET_REDUND=0x4C0000
```

Without FIP support these MTD partition offsets in NOR for default flashlayout change and to reuse the ecosystem release v2.1.0 flashlayout the defconfig options become:

```
CONFIG_STM32MP15x_STM32IMAGE=y
CONFIG_ENV_OFFSET=0x280000
CONFIG_ENV_OFFSET_REDUND=0x2C0000
```



4 U-Boot integration in FIP

U-Boot binary and its associated device tree are part of the FIP binary, created with TF-A Makefile option :

- **BL33_CFG** = **u-boot.dtb**
- **BL33** = **u-boot-nodtb.bin**

or updated with fiptools:

- **--hw-config** **u-boot.dtb**
- **--nt-fw** **u-boot-nodtb.bin**

Example for fip update of STM32MP157C-EV1 Evaluation board :

```
PC $> fiptool update --verbose --nt-fw u-boot-nodtb.bin \  
    --hw-config u-boot.dtb \  
    tf-a-fip-stm32mp157c-ev1.bin
```

```
DEBUG: Replacing nt-fw with.../u-boot-nodtb.bin  
DEBUG: Replacing hw-config with .../u-boot.dtb  
DEBUG: Metadata size: ... bytes  
DEBUG: Payload size: ... bytes
```



5 SPL compilation

The alternate boot chain with SPL is also supported by "*stm32mp15_basic_defconfig*" but only for U-Boot_SPL:
_DDR_interactive_mode

With the defconfig file: `stm32mp15_basic_defconfig`

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=<Device tree> all
```

The resulting U-Boot files are located in your build directory:

- **u-boot-spl.stm32** : FSBL = SPL binary with STM32 image header, loaded by ROM code
- **u-boot.img** : SSBL = U-Boot binary with U-Boot image header (uImage), loaded by SPL

Warning

This alternate boot chain with SPL is not supported/promoted by STMicroelectronics to make product.



6 Examples

6.1 STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

6.2 STM32MP157C-EV1 Evaluation board i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157c-ev1 all
```

6.3 STM32MP157D-DK1 Discovery kit i

```
PC $> make stm32mp15_trusted_defconfig
PC $> make DEVICE_TREE=stm32mp157d-dk1 all
```

6.4 STM32MP157C-DK2 Discovery kit i

Using export to select the device tree

```
PC $> export KBUILD_OUTPUT=./build/stm32mp15_trusted
PC $> export DEVICE_TREE=stm32mp157c-dk2
PC $> make stm32mp15_trusted_defconfig
PC $> make all
```

6.5 Custom board with external device tree

```
PC $> make stm32mp15_trusted_defconfig
PC $> make EXT_DTB=stm32mp151a-myboard.dtb all
```

6.6 SPL for STM32MP157F-EV1 Evaluation board i

```
PC $> make stm32mp15_basic_defconfig
PC $> make DEVICE_TREE=stm32mp157f-ev1 all
```

- <https://u-boot.readthedocs.io/en/stable/board/st/stm32mp1.html>

Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))