
FSL Community BSP Release Notes Documentation

Release 1.7

FSL Community BSP Team

December 03, 2014

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This document has the release notes of the FSL Community BSP 1.7 which is a community effort to improve Freescale's SoCs support in the OpenEmbedded and Yocto Project projects.

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If you want to make part of FSL Community BSP access <http://freescale.github.io> and find links to this document, how to contribute, and how to download both the source code and several pre-built images.

WHAT IS THE FSL COMMUNITY BSP

The FSL Community BSP is a community-driven project to provide and maintain Board Support Package (BSP) metadata layers for use in the OpenEmbedded and Yocto Project projects with Freescale's SoCs.

The FSL Community BSP follows the same Yocto Project's *release schedule* and the *branch naming*, since release 1.3 (denzil).

See the [Yocto Project Release](#) for details on the Yocto Project.

1.1 Motivation

The FSL Community BSP started with the goal of making the use of OpenEmbedded and Yocto Project projects, with Freescale's SoCs, easier and providing an example of how to assemble an easy-to-use platform to base products on.

The project provides:

- common environment configuration;
- download several layers with [repo](#);
- common [place](#); for discussion regarding Freescale SoCs (kernels, bootloaders, user space packages (BSP in general), bugs, how-tos, and so on).

1.2 What the FSL Community BSP is not

The FSL Community BSP does not have a professional support team. The members of this community have full-time jobs and work on the project on spare time. Most of them are working with Freescale SoCs in their full-time job, it means most of them can provide a professional support if requested.

The provided source code is not supposed to have production quality. It is a reference BSP and platform for people to build products on top of it. Because of that, expect to have an adjustment cycle for your product when you decide to use it as a reference for your next product.

The project is a community-driven work and it is NOT an official Freescale support channel.

1.3 What you can expect

- You can expect help when you post a question, but please, be patient. Wait for at least 2 days until thinking nobody cares about your problem. Most of time people do reply when they know the answer, or try to provide advice. In case you are ignored, probably nobody knows the answer;
- The stable branch is supported for six months after the release date (following the Yocto Project's release schedule);
- The upstreaming takes place as fast as possible and any needed adjustment is going to be made accordingly.

1.4 What the community expects from you

The community does expect that you contribute back by:

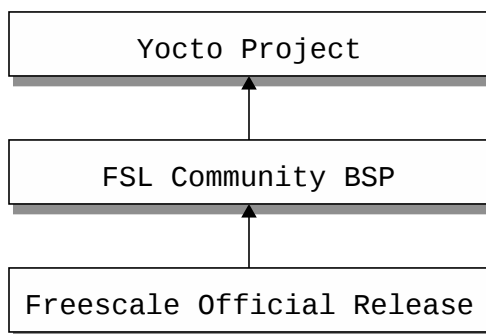
- replying when you know the answer for a question in the mailing list;
- reviewing the patches sent to mailing list;
- testing new patches that affect you directly or indirectly;
- reporting bugs you may find;
- upstreaming bug fixes;
- upstreaming features that may be good for community.

UPSTREAM

The FSL Community BSP provides a BSP, test images, and demos for Freescale reference boards and 3rd party boards based on Freescale's SoCs. Besides the BSP, a Linux-based operating system has several other packages such as ssh client/server, window managers, applications, and so on. These packages are not part of the BSP, in other words, when using FSL Community BSP we are also using applications, tools and metadata from other projects such as OpenEmbedded and Poky.

The FSL Community BSP always has a stable and a development version. You may face errors that are not caused by FSL Community BSP's layers, but by the OpenEmbedded's or Poky's metadata. In this case, the error must be fixed in the layer it belongs.

The following image shows the upstream levels:



2.1 Main branch names

- master-next: this branch is used to keep the patches to be built by the autobuilder for the very first built test. Do not expect to have a clear merging schedule, or to have a stable project;
- master: this is the branch where development takes place. Any new feature or bug fix must be merged here first. This is the development of the next stable branch;
- dizzy: the latest stable branch. This branch only accepts bug fixes, and is supported for 6 months after the release date.

There are other branches which are the previous stable branches. They are kept online for users' convenience, and you cannot expect backports or bug fixes.

2.2 Upstreaming cycle

Additionally to the normal upstreaming process when working with any Yocto Project's layer, we have the BSP upstreaming cycle.

The BSP upstreaming cycle starts just after a Freescale Official Release is published in git.freescale.com. The patches to adapt the recipes from **meta-fsl-bsp-release** are sent for review and comments to the **meta-freescale** mailing list and are merged in the **meta-fsl-arm**, **meta-fsl-demos** layers or upstreamed to Yocto Project accordingly.

A more detailed step-by-step is shown below:

1. New Freescale Official Release is published;
2. The patches are sent to **meta-freescale**;
3. After the review process, the patches are merged in the proper layer's *master-next* branch;
4. Source code is built by the autobuilder;
5. After one week in *master-next*, it is merged in *master*;
6. Freescale internally bases the next Freescale Official Release in community source code;
7. Back to step 1.

It means Freescale uses the FSL Community BSP source code with its bug fixes, improvements, and any new features to create the *next* Freescale Official Release.

Freescale uses the latest stable branch from Yocto Project to base the *next* Freescale Official Release. When this release is published, it is rebased and reworked to be merged in the current development branch.

THE DIFFERENCES BETWEEN FSL COMMUNITY BSP AND FREESCALE OFFICIAL RELEASE

The goal of both projects are different. See below the main points of divergence.

3.1 Freescale Official Release

The Freescale Official Release is intended to provide a static base for Freescale to test and validate the BSP modules in the Freescale evaluation boards and it is developed internally by Freescale. The set of supported boards vary from release to release and is listed in the Freescale Official Release's release notes for the respective version. The release points to a static revision of every included layer so, after release it does not receive updates and bug fixes.

3.2 FSL Community BSP

The FSL Community BSP is a reference system that can be used as a base for products and is an open project that accepts contributions from the community. It supports a wide range of boards which goes from Freescale evaluation boards (**meta-fsl-arm** layer) to 3rd party boards (**meta-fsl-arm-extra**). The release is a “*moving target*”, so there are updates on top of the released source code, such as addition of new features and of bug fixes.

Table 3.1: Comparative between Freescale Official Release and FSL Community BSP

| | Freescale Official Release | FSL Community BSP |
|---------------------------------|---|---|
| Intended use | Reference system for BSP modules test and validation on Freescale Reference Boards | Reference system for use as base for any project for all supported boards |
| Code | Static. Only include any bug fixes on the upcoming release | Updates. Receives bug fixes and has security issues fixed often |
| Contribution | Indirect contribution via FSL Community BSP. After revision, contribution may be merged in upcoming release | Open, everyone is welcome to contribute to the project |
| Board Support | Limited, as it supports just the Freescale evaluation boards listed in the Release Notes | Extended, as it supports both Freescale evaluation boards and 3rd party boards. See <i>Supported Board List</i> |
| Yocto Project Compatible | No | Yes |
| Support | i.MX Community | meta-freescale |
| Repository | git.freescale.com | github.com/Freescale |

FSL COMMUNITY BSP SCOPE

The scope of the FSL Community BSP includes the meta layers:

- [meta-fsl-arm](#): provides the base support and Freescale ARM reference boards;
- [meta-fsl-arm-extra](#): provides support for 3rd party and partner boards;
- [meta-fsl-demos](#): provides images recipes, demo recipes, and packagegroups used to easy the development with Yocto Project.
- [Documentation](#): provides the source code for FSL Community BSP Release Notes (RN), User Guide (UG) and Frequently Asked Questions (FAQ)

4.1 Kernel Release Notes

The FSL Community BSP includes support for several kernel providers. Each machine may have a different Linux Kernel provider.

The FSL Community BSP is not responsible for the content of those kernels. Although we *as community* should feel empowered to submit bug fixes and new features for those projects.

See the respective Linux Kernel provider for your machine in section [Linux Kernel](#).

4.2 Different Product SoC Families

Currently, the FSL Community BSP includes the following Product SoC Families:

- **i.MX Application Processors (imx)**: Regarding the [i.MX Freescale Page](#): *i.MX applications processors are multicore ARM®-based solutions for multimedia and display applications with scalability, high performance, and low power capabilities.*
- **Vybrid Controller Solutions based on ARM® Cores (vybrid)**: Regarding the [Vybrid Freescale Page](#): *Vybrid controller solutions are built on an asymmetrical-multiprocessing architecture using ARM® cores as the anchor for the platform, and are ideal for many industrial applications.*
- **Layerscape Architecture (ls)**: Regarding the [Layerscape Freescale Page](#): *delivers unprecedented efficiency and scale for the smarter, more capable networks of tomorrow.*

Freescall groups a set of SoCs which target different markets in product families. Those are grouped according to their SoC features and internal hardware capabilities.

The Yocto Project's tools have the required capabilities to differentiate the architectures and BSP components for the different SoC families. In this perspective, the FSL Community BSP can support a wide range of architectures and product lines which go across several markets.

For the FSL Community BSP, the different SoCs, from all product lines manufactured by Freescale, can be seen as different machines, thus easing the use of same architecture across different markets.

4.3 Supported Board List

Please, see the next table for the complete supported board list.

Table 4.1: Supported machines in FSL Community BSP

| Machine | Name | SoC | Layer |
|------------------------|---|------------|--------------------|
| cfa10036 | Crystalfontz CFA-10036 | i.MX28 | meta-fsl-arm-extra |
| cfa10037 | Crystalfontz CFA-10037 | i.MX28 | meta-fsl-arm-extra |
| cfa10049 | Crystalfontz CFA-10049 | i.MX28 | meta-fsl-arm-extra |
| cfa10055 | Crystalfontz CFA-10055 | i.MX28 | meta-fsl-arm-extra |
| cfa10056 | Crystalfontz CFA-10056 | i.MX28 | meta-fsl-arm-extra |
| cfa10057 | Crystalfontz CFA-10057 | i.MX28 | meta-fsl-arm-extra |
| cfa10058 | Crystalfontz CFA-10058 | i.MX28 | meta-fsl-arm-extra |
| cgtqmx6 | Congatec Qmx6 | i.MX6Q | meta-fsl-arm-extra |
| cubox-i | SolidRun CuBox-i and HummingBoard | i.MX6 Q/DL | meta-fsl-arm-extra |
| imx233-olinuxino-maxi | OLIMEX iMX233-OLinuXino-Maxi | i.MX23 | meta-fsl-arm-extra |
| imx233-olinuxino-micro | OLIMEX iMX233-OLinuXino-Micro | i.MX23 | meta-fsl-arm-extra |
| imx233-olinuxino-mini | OLIMEX iMX233-OLinuXino-Mini | i.MX23 | meta-fsl-arm-extra |
| imx233-olinuxino-nano | OLIMEX iMX233-OLinuXino-Nano | i.MX23 | meta-fsl-arm-extra |
| imx23evk | Freescall i.MX23 Evaluation Kit | i.MX23 | meta-fsl-arm |
| imx28evk | Freescall i.MX28 Evaluation Kit | i.MX28 | meta-fsl-arm |
| imx31pdk | Freescall i.MX31 Platform Development Kit | i.MX31 | meta-fsl-arm |
| imx35pdk | Freescall i.MX35 Platform Development Kit | i.MX35 | meta-fsl-arm |
| imx51evk | Freescall i.MX51 Evaluation Kit | i.MX51 | meta-fsl-arm |
| Continued on next page | | | |

Table 4.1 – continued from previous page

| Machine | Name | SoC | Layer |
|-------------------|--|---------|--------------------|
| imx53ard | Freescall i.MX53 SABRE Automotive Board | i.MX53 | meta-fsl-arm |
| imx53qsb | Freescall i.MX53 Quick Start Board | i.MX53 | meta-fsl-arm |
| imx6dl-riotboard | RIoTboard | i.MX6S | meta-fsl-arm-extra |
| imx6dlsabreauto | Freescall i.MX6DL SABRE Automotive | i.MX6DL | meta-fsl-arm |
| imx6dlsabresd | Freescall i.MX6DL SABRE Smart Device | i.MX6DL | meta-fsl-arm |
| imx6qsabreauto | Freescall i.MX6Q SABRE Automotive | i.MX6Q | meta-fsl-arm |
| imx6qsabrelite | Boundary Devices i.MX6Q SABRE Lite | i.MX6Q | meta-fsl-arm-extra |
| imx6qsabresd | Freescall i.MX6Q SABRE Smart Device | i.MX6Q | meta-fsl-arm |
| imx6slevk | Freescall i.MX6SL Evaluation Kit | i.MX6SL | meta-fsl-arm |
| imx6solosabreauto | Freescall i.MX6Solo SABRE Automotive | i.MX6S | meta-fsl-arm |
| imx6solosabresd | Freescall i.MX6Solo SABRE Smart Device | i.MX6S | meta-fsl-arm |
| ls1021aqds | Freescall LS1021AQDS board | ls102xa | meta-fsl-arm |
| ls1021atwr | Freescall LS1021ATWR board | ls102xa | meta-fsl-arm |
| m28evk | DENX M28 SoM Evaluation Kit | i.MX28 | meta-fsl-arm-extra |
| m53evk | DENX M53 SoM Evaluation Kit | i.MX53 | meta-fsl-arm-extra |
| nitrogen6x | Boundary Devices Nitrogen6X | i.MX6Q | meta-fsl-arm-extra |
| nitrogen6x-lite | Boundary Devices Nitrogen6X Lite | i.MX6S | meta-fsl-arm-extra |
| pcl052 | Phytec Cosmic Vybrid Development Kit | vf60 | meta-fsl-arm-extra |
| pcm052 | Phytec phyCORE Vybrid Development Kit | vf60 | meta-fsl-arm-extra |
| quartz | Device Solutions Quartz Vybrid Development Kit | vf60 | meta-fsl-arm-extra |
| twr-vf65gs10 | Freescall Vybrid TWR-VF65GS10 | vf60 | meta-fsl-arm |
| wandboard-dual | Wandboard i.MX6 Wandboard Dualite | i.MX6DL | meta-fsl-arm-extra |
| wandboard-quad | Wandboard i.MX6 Wandboard Quad | i.MX6Q | meta-fsl-arm-extra |

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Table 4.1 – continued from previous page

| Machine | Name | SoC | Layer |
|----------------|---------------------------------|--------|--------------------|
| wandboard-solo | Wandboard i.MX6 Wand-board Solo | i.MX6S | meta-fsl-arm-extra |

4.3.1 Machine Maintainers

Since FSL Community BSP Release 1.6 (Daisy), the maintainer field in machine configuration files of **meta-fsl-arm** and **meta-fsl-arm-extra** is mandatory for any new board to be added.

So now on, every new board must have someone assigned as maintainer. This ensures, in long term, all boards with a maintainer assigned. Current orphan boards are not going to be removed unless it causes maintenance problem and the fix is not straightforward.

The maintainer duties:

- The one with casting vote when a deadlock is faced.
- Responsible to keep that machine working (that means, booting and with some stability) Keep kernel, u-boot updated/tested/working.
- Keep release notes updated
- Keep test cycle updated
- Keep the most usual images building and booting

When a build error is detected, the maintainer will “fix” it. For those maintainers with kernel control (meta-fsl-arm-extra), it is expected that they properly fix the kernel issue (when it’s a kernel issue). However, anything out of community control should be worked around anyway.

Machines with maintainers

Table 4.2: Machines with maintainers

| Machine | Name |
|------------------------|-----------------------------------|
| cfa10036 | Crystallfontz CFA-10036 |
| cfa10037 | Crystallfontz CFA-10037 |
| cfa10049 | Crystallfontz CFA-10049 |
| cfa10055 | Crystallfontz CFA-10055 |
| cfa10056 | Crystallfontz CFA-10056 |
| cfa10057 | Crystallfontz CFA-10057 |
| cfa10058 | Crystallfontz CFA-10058 |
| cgtqmx6 | Congatec Qmx6 |
| cubox-i | SolidRun CuBox-i and HummingBoard |
| imx23evk | Freescale i.MX23 Evaluation Kit |
| imx28evk | Freescale i.MX28 Evaluation Kit |
| imx51evk | Freescale i.MX51 Evaluation Kit |
| Continued on next page | |

Table 4.2 – continued from previous page

| Machine | Name |
|------------------|--|
| imx53ard | Freescale i.MX53 SABRE Automotive Board |
| imx53qsb | Freescale i.MX53 Quick Start Board |
| imx6dl-riotboard | RIoTboard |
| imx6dlsabreauto | Freescale i.MX6DL SABRE Automotive |
| imx6dlsabresd | Freescale i.MX6DL SABRE Smart Device |
| imx6qsabreauto | Freescale i.MX6Q SABRE Automotive |
| imx6qsabrelite | Boundary Devices i.MX6Q SABRE Lite |
| imx6qsabresd | Freescale i.MX6Q SABRE Smart Device |
| imx6slevk | Freescale i.MX6SL Evaluation Kit |
| imx6solosabresd | Freescale i.MX6Solo SABRE Smart Device |
| ls1021aqds | Freescale LS1021AQDS board |
| ls1021atwr | Freescale LS1021ATWR board |
| nitrogen6x | Boundary Devices Nitrogen6X |
| nitrogen6x-lite | Boundary Devices Nitrogen6X Lite |
| pcl052 | Phytec Cosmic Vybrid Development Kit |
| pcm052 | Phytec phyCORE Vybrid Development Kit |
| quartz | Device Solutions Quartz Vybrid Development Kit |
| twr-vf65gs10 | Freescale Vybrid TWR-VF65GS10 |

Machines without a maintainer

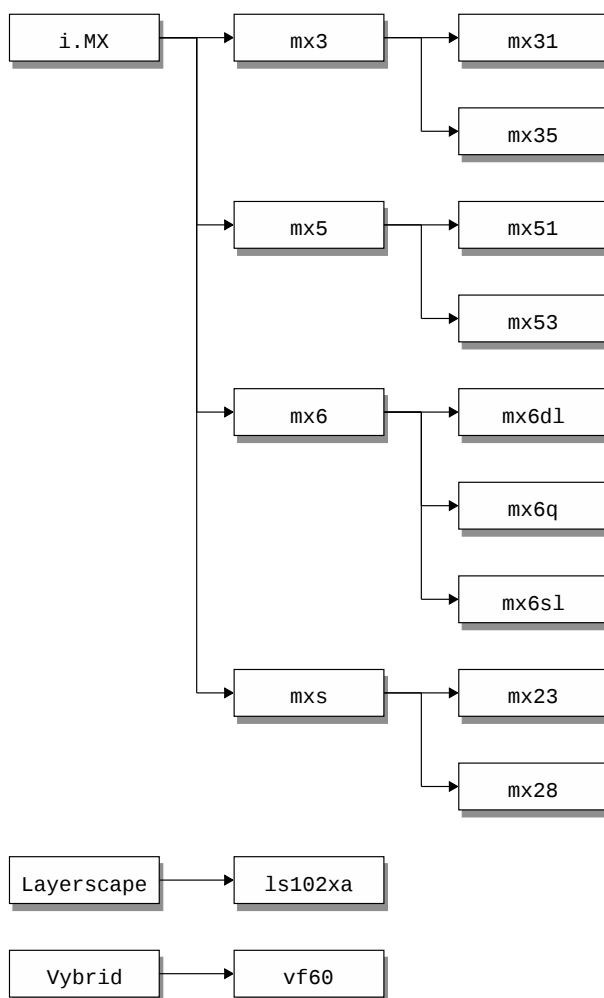
Table 4.3: Machines without a maintainer

| Machine | Name |
|------------------------|---|
| imx233-olinuxino-maxi | OLIMEX iMX233-OLinuxino-Maxi |
| imx233-olinuxino-micro | OLIMEX iMX233-OLinuxino-Micro |
| imx233-olinuxino-mini | OLIMEX iMX233-OLinuxino-Mini |
| imx233-olinuxino-nano | OLIMEX iMX233-OLinuxino-Nano |
| imx31pdk | Freescale i.MX31 Platform Development Kit |
| imx35pdk | Freescale i.MX35 Platform Development Kit |
| imx6solosabreauto | Freescale i.MX6Solo SABRE Automotive |
| m28evk | DENX M28 SoM Evaluation Kit |
| m53evk | DENX M53 SoM Evaluation Kit |
| wandboard-dual | Wandboard i.MX6 Wandboard Duallite |
| wandboard-quad | Wandboard i.MX6 Wandboard Quad |
| wandboard-solo | Wandboard i.MX6 Wandboard Solo |

SOFTWARE ARCHITECTURE

5.1 SoC Hierarchy

The following tree shows the SoC hierarchy:



5.2 Linux Kernel

FSL Community BSP supports the following sources for Linux Kernel:

- **linux-boundary**: Linux kernel for Boundary Devices boards.
- **linux-cfa**: Linux kernel for Crystalfontz boards.
- **linux-congatec**: linux-congatec version 3.10.17-r0.
- **linux-cubox-i**: Linux kernel that is based on Linaro's 3.14 releases, with full support for the i.MX6 features.
- **linux-denx**: DENX mainline based Linux kernel.
- **linux-fslc**: Linux kernel based on mainline kernel used by FSL Community BSP in order to provide support for some backported features and fixes, or because it was applied in linux-next and takes some time to become part of a stable version, or because it is not applicable for upstreaming.
- **linux-imx**: Linux Kernel provided and supported by Freescale with focus on i.MX Family Reference Boards. It includes support for many IPs such as GPU, VPU and IPU.
- **linux-ls1**: Linux Kernel provided and supported by Freescale with focus on Layerscape1 Family Boards.
- **linux-timesys**: Linux Kernel with added drivers and board support for Vybrid-based platforms.
- **linux-wandboard**: Linux kernel for Wandboard.

As stated in [Kernel Release Notes](#), FSL Community BSP is not responsible for the Linux Kernel content in any kernel provider. If you are looking for the feature list, supported devices, official way to get a support channel or how to report bug, please, see above where to get help, for each kernel provider.

- **linux-imx**: provider, Freescale has a release notes document for each version released. This document has a list of known issues, new features, list of kernel arguments, and the linux-imx kernel scope for each Freescale Reference Board. This document is present into the Document Bundle provided by Freescale.

5.2.1 Default Linux Providers

The following table shows the default version of Linux Kernel provided by FSL Community BSP for each supported machine.

Table 5.1: Default Linux kernel version for each supported machine

| Board | Kernel Provider | Kernel Version |
|------------------------|-----------------|----------------|
| cfa10036 | linux-cfa | 3.12 |
| cfa10037 | linux-cfa | 3.12 |
| Continued on next page | | |

Table 5.1 – continued from previous page

| Board | Kernel Provider | Kernel Version |
|------------------------|-----------------|-------------------------|
| cfa10049 | linux-cfa | 3.12 |
| cfa10055 | linux-cfa | 3.12 |
| cfa10056 | linux-cfa | 3.12 |
| cfa10057 | linux-cfa | 3.12 |
| cfa10058 | linux-cfa | 3.12 |
| cgtqmx6 | linux-congatec | 3.10.17-1.0.2_qmx6 |
| cubox-i | linux-cubox-i | 3.14.14 |
| imx233-olinuxino-maxi | linux-fslc | 3.17+git |
| imx233-olinuxino-micro | linux-fslc | 3.17+git |
| imx233-olinuxino-mini | linux-fslc | 3.17+git |
| imx233-olinuxino-nano | linux-fslc | 3.17+git |
| imx23evk | linux-fslc | 3.17+git |
| imx28evk | linux-imx | 2.6.35.3-maintain |
| imx31pdk | linux-fslc | 3.17+git |
| imx35pdk | linux-fslc | 3.17+git |
| imx51evk | linux-imx | 2.6.35.3-maintain |
| imx53ard | linux-imx | 2.6.35.3-maintain |
| imx53qsb | linux-imx | 2.6.35.3-maintain |
| imx6dl-riotboard | linux-fslc | 3.17+git |
| imx6dlsabreauto | linux-imx | 3.10.17-1.0.2_ga |
| imx6dlsabresd | linux-imx | 3.10.17-1.0.2_ga |
| imx6qsabreauto | linux-imx | 3.10.17-1.0.2_ga |
| imx6qsabrelite | linux-boundary | 3.10.17-1.0.2_ga+yocto |
| imx6qsabresd | linux-imx | 3.10.17-1.0.2_ga |
| imx6slevk | linux-imx | 3.10.17-1.0.2_ga |
| imx6solosabreauto | linux-imx | 3.10.17-1.0.2_ga |
| imx6solosabresd | linux-imx | 3.10.17-1.0.2_ga |
| ls1021aqds | linux-ls1 | 3.12-ls1-dev |
| ls1021atwr | linux-ls1 | 3.12-ls1-dev |
| m28evk | linux-fslc | 3.17+git |
| m53evk | linux-denx | 3.9-master |
| nitrogen6x | linux-boundary | 3.10.17-1.0.2_ga+yocto |
| nitrogen6x-lite | linux-boundary | 3.10.17-1.0.2_ga+yocto |
| pcl052 | linux-timesys | 3.0.15 |
| pcm052 | linux-timesys | 3.0.15 |
| quartz | linux-timesys | 3.0.15 |
| twr-vf65gs10 | linux-timesys | 3.0.15 |
| wandboard-dual | linux-wandboard | 3.10.17-1.0.1-wandboard |
| wandboard-quad | linux-wandboard | 3.10.17-1.0.1-wandboard |
| wandboard-solo | linux-wandboard | 3.10.17-1.0.1-wandboard |

5.3 Bootloaders

FSL Community BSP supports barebox and u-boot as bootloaders.

- **barebox:** Barebox - a bootloader that inherits the best of U-Boot and the Linux kernel
- **u-boot-boundary:** u-boot for Boundary Devices boards.
- **u-boot-congatec:** u-boot which includes support for Congatec Boards.
- **u-boot-cubox-i:** u-boot which includes support for SolidRun boards such as Cubox-i.
- **u-boot-fslc:** U-Boot based on mainline U-Boot used by FSL Community BSP in order to provide support for some backported features and fixes, or because it was submitted for revision and it takes some time to become part of a stable version, or because it is not applicable for upstreaming.
- **u-boot-imx:** U-Boot provided by Freescale with focus on i.MX reference boards.
- **u-boot-ls1:** U-Boot which includes the support for QorIQ Layerscape1 series boards
- **u-boot-timesys:** bootloader for Vybrid platforms

The following table shows the default bootloaders (and their versions) for the supported boards.

Table 5.2: Default bootloader version for each supported machine

| Board | Bootloader | Bootloader version |
|------------------------|-----------------|--------------------|
| cfa10036 | barebox | 2013.08.0 |
| cfa10037 | barebox | 2013.08.0 |
| cfa10049 | barebox | 2013.08.0 |
| cfa10055 | barebox | 2013.08.0 |
| cfa10056 | barebox | 2013.08.0 |
| cfa10057 | barebox | 2013.08.0 |
| cfa10058 | barebox | 2013.08.0 |
| cgtqmx6 | u-boot-congatec | 2013.04 |
| cubox-i | u-boot-cubox-i | v2013.10+git |
| imx233-olinuxino-maxi | u-boot-fslc | v2014.10+git |
| imx233-olinuxino-micro | u-boot-fslc | v2014.10+git |
| imx233-olinuxino-mini | u-boot-fslc | v2014.10+git |
| imx233-olinuxino-nano | u-boot-fslc | v2014.10+git |
| imx23evk | u-boot-fslc | v2014.10+git |
| imx28evk | u-boot-fslc | v2014.10+git |
| imx31pdk | u-boot-fslc | v2014.10+git |
| imx35pdk | u-boot-fslc | v2014.10+git |
| imx51evk | u-boot-fslc | v2014.10+git |
| imx53ard | u-boot-fslc | v2014.10+git |
| imx53qsb | u-boot-fslc | v2014.10+git |
| imx6dl-riotboard | u-boot-fslc | v2014.10+git |

Continued on next page

Table 5.2 – continued from previous page

| Board | Bootloader | Bootloader version |
|-------------------|-----------------|---------------------------------------|
| imx6dlsabreauto | u-boot-fslc | v2014.10+git |
| imx6dlsabresd | u-boot-fslc | v2014.10+git |
| imx6qsabreauto | u-boot-fslc | v2014.10+git |
| imx6qsabrelite | u-boot-boundary | v2014.07+git |
| imx6qsabresd | u-boot-fslc | v2014.10+git |
| imx6slevk | u-boot-fslc | v2014.10+git |
| imx6solosabreauto | u-boot-imx | 2013.04-imx_v2013.04_3.10.17_1.0.0_ga |
| imx6solosabresd | u-boot-imx | 2013.04-imx_v2013.04_3.10.17_1.0.0_ga |
| ls1021aqds | u-boot-ls1 | 2013.10-LS1-dev |
| ls1021atwr | u-boot-ls1 | 2013.10-LS1-dev |
| m28evk | u-boot-fslc | v2014.10+git |
| m53evk | u-boot-fslc | v2014.10+git |
| nitrogen6x | u-boot-boundary | v2014.07+git |
| nitrogen6x-lite | u-boot-boundary | v2014.07+git |
| pcl052 | u-boot-timesys | v2011.12 |
| pcm052 | u-boot-timesys | v2011.12 |
| quartz | u-boot-timesys | v2011.12 |
| twr-vf65gs10 | u-boot-fslc | v2014.10+git |
| wandboard-dual | u-boot-fslc | v2014.10+git |
| wandboard-quad | u-boot-fslc | v2014.10+git |
| wandboard-solo | u-boot-fslc | v2014.10+git |

5.4 User Space Packages

There is a huge number of user space packages provided by the Yocto Project. The following table shows some version for few highlighted packages.

Table 5.3: Main user space package versions

| Package | Board/SoC Family | Version |
|----------------|------------------|---------|
| gststreamer | All | 0.10.36 |
| gststreamer1.0 | All | 1.4.1 |
| libdrm | All | 2.4.54 |
| udev | All | 182 |

5.4.1 Freescale User Space Packages

This section shows the version package for each board. Those packages provide hardware acceleration for GPU or VPU, hardware optimization or some hardware test tools.

- **Hardware acceleration** is achieved using a different core for processing some specific task. In this case, GPU or VPU.

- **Hardware optimization** is achieved with some changes in source code in order to get a better performance for a specific task on a specific hardware. For example, audio decode made by software, but with optimizations for ARM.
- **Hardware-specific** is applicable when the package was designed to be executed on a specific hardware, and it does not make sense on other hardware. For example, imx-test is a test package for imx boards. It can be cross-compiled for any other core, although it will only behave as expect if executed on imx boards.

The package version and variety varies on *SoC Hierarchy*. For example, machines with i.MX28 SoC does not have VPU, the recipe imx-vpu is not needed. There are differences, as well, in GPU support recipes.

Version by *SoC Hierarchy*

The following table shows the version of each package depending on the *SoC Hierarchy*.

Table 5.4: User space package version by SoC hierarchy

| Package name | ls102xa | mx28 | mx5 | mx6q / mx6dl | mx6sl | vf60 |
|----------------------------|-----------|-----------|---------------|-------------------|-------------------|-----------|
| amd-gpu-bin-mx51 | – | – | 11.09.01 | – | – | – |
| amd-gpu-x11-bin-mx51 | – | – | 11.09.01 | – | – | – |
| directfb | 1.7.4 | 1.7.4 | 1.7.4 | 1.6.3 | 1.6.3 | 1.7.4 |
| directfb-examples | 1.7.0 | 1.7.0 | 1.7.0 | 1.6.0 | 1.6.0 | 1.7.0 |
| firmware-imx | – | – | 3.0.35-4.0.0 | 3.10.17-1.0.0 | 3.10.17-1.0.0 | – |
| fsl-alsa-plugins | – | – | – | 1.0.25 | 1.0.25 | – |
| gpu-viv-bin-mx6q | – | – | – | 3.10.17-1.0.2-hfp | 3.10.17-1.0.2-hfp | – |
| gpu-viv-g2d | – | – | – | 3.10.17-1.0.2 | 3.10.17-1.0.2 | – |
| gst-fsl-plugin | – | 3.0.11 | 3.0.11 | 3.0.11 | 3.0.11 | – |
| gststreamer1.0-plugins-imx | – | – | – | 0.9.9 | – | – |
| imx-lib | – | – | 11.09.02 | 3.10.17-1.0.0 | 3.10.17-1.0.0 | – |
| imx-test | 00.00.00 | 00.00.00 | 3.10.17-1.0.0 | 3.10.17-1.0.0 | 3.10.17-1.0.0 | 00.00.00 |
| imx-uuc | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| imx-vpu | – | – | 11.09.02 | 3.10.17-1.0.0 | 3.10.17-1.0.0 | – |
| libfslcodec | – | 4.0.1 | 4.0.1 | 4.0.1 | 4.0.1 | – |
| libfslparser | – | 4.0.1 | 4.0.1 | 4.0.1 | 4.0.1 | – |
| libfslvpwrap | – | – | – | 1.0.46 | – | – |
| libmcc | – | – | – | – | – | 1.05 |
| libz160 | – | – | 11.09.01 | – | – | – |
| mqxboot | – | – | – | – | – | 1.0 |
| mxsldr | 0.0.0+git | 0.0.0+git | 0.0.0+git | 0.0.0+git | 0.0.0+git | 0.0.0+git |
| xf86-video-imxfb | – | – | 11.09.01 | – | – | – |
| xf86-video-imxfb-vivante | – | – | – | 3.10.17-1.0.2 | 3.10.17-1.0.2 | – |

Hardware relation by *SoC Hierarchy*

The following table shows how packages interact with hardware depending on the *SoC Hierarchy*

Table 5.5: Hardware dependant packages

| Package Name | mx28 | mx5 | mx6 | vf60 |
|----------------------------|-----------------|-----------------|-----------------|-------------|
| imx-test | HW-specific | HW-specific | HW-specific | – |
| gst-fsl-plugin | HW-specific | HW-specific | HW-specific | – |
| libfslcodec | HW optimization | HW acceleration | HW acceleration | – |
| libfslparser | HW optimization | HW optimization | HW optimization | – |
| imx-vpu | – | HW acceleration | HW acceleration | – |
| imx-lib | – | HW acceleration | HW acceleration | – |
| firmware-imx | – | HW-specific | HW-specific | – |
| mxsldr | HW-specific | – | – | – |
| gpu-viv-g2d | – | – | HW acceleration | – |
| xf86-video-imxfb-vivante | – | – | HW acceleration | – |
| gpu-viv-bin-mx6q | – | – | HW acceleration | – |
| directfb | – | – | HW acceleration | – |
| directfb-examples | – | – | HW acceleration | – |
| xf86-video-imxfb | – | HW acceleration | – | – |
| amd-gpu-bin-mx51 | – | HW acceleration | – | – |
| libz160 | – | HW acceleration | – | – |
| amd-gpu-x11-bin-mx51 | – | HW acceleration | – | – |
| libfslvpuwrap | – | – | HW acceleration | – |
| fsl-alsa-plugins | – | – | HW-specific | – |
| gststreamer1.0-plugins-imx | – | – | HW acceleration | – |
| imx-uuc | HW-specific | HW-specific | HW-specific | – |
| libmcc | – | – | – | – |
| mqxboot | – | – | – | HW-specific |

5.5 PackageGroups and Images

The FSL Community BSP provides a list of PACKAGEGROUPS and images intended to ease the initial development of custom applications.

The main goal is not to provide a production solution, on the contrary, it should be seen as an example of package set for a specific IP development, and an example of initial generic development and test images.

5.5.1 PACKAGEGROUPS

The following list shows the current PACKAGEGROUPS available in Dizzy when using FSL Community BSP.

You can understand what a PACKAGEGROUPS is and learn how to use it in [Yocto Project Development Manual](#)

- **packagegroup-fsl-gstreamer**: Freescale's package group which provides audio, video, and debug gstreamer's plugins with the required hardware acceleration (if supported by the SoC).
- **packagegroup-fsl-gstreamer-full**: Freescale's package group which provides audio, video, and debug gstreamer's plugins (including good and bad ones) with the required hardware acceleration (if supported by the SoC).
- **packagegroup-fsl-mfgtool**: Freescale Manufacturing Tool requirements.
- **packagegroup-fsl-tools-benchmark**: Freescale's package group which provides a set of benchmark applications.
- **packagegroup-fsl-tools-gpu**: Freescale's package group used to add the packages which provides GPU support.
- **packagegroup-fsl-tools-gpu-external**: Freescale's package group which provides graphic packages used to test the several hardware accelerated graphics APIs including packages not provided by Freescale.
- **packagegroup-fsl-tools-testapps**: Freescale's package group provides a set of packages and utilities for hardware test.
- **packagegroup-fslc-gstreamer1.0**: Freescale package group which provides audio, video, networking and debug GStreamer plugins with the required hardware acceleration (if supported by the SoC).
- **packagegroup-fslc-gstreamer1.0-full**: Freescale package group which provides all GStreamer plugins from the base, good, and bad packages, as well as the ugly and libav ones if commercial packages are whitelisted, and plugins for the required hardware acceleration (if supported by the SoC).

5.5.2 Images

The following images are provided by FSL Community BSP only. See the list of Yocto Project's reference images in [Yocto Project Reference Manual](#)

- **fsl-image-machine-test**: A console-only image that includes gstreamer packages, Freescale's multimedia packages (VPU and GPU) when available, and test and benchmark applications.
- **fsl-image-mfgtool-initramfs**: Small image to be used with Manufacturing Tool (mfg-tool) in a production environment.
- **fsl-image-multimedia**: A console-only image that includes gstreamer packages and Freescale's multimedia packages (VPU and GPU) when available for the specific machine.
- **fsl-image-multimedia-full**: A console-only image that includes gstreamer packages and Freescale's multimedia packages (VPU and GPU) when available for the specific machine.
- **qt-in-use-image**: qt-in-use-image version 1.0-r0.
- **qte-in-use-image**: qte-in-use-image version 1.0-r0.

TEST RESULTS

Freescall has a complete test cycle for the BSP released. It includes tests for Linux Kernel for the GPU package and for the VPU package (and all other package needed by the BSP, such as imx-lib).

The results and known issues, from Linux Kernel, GPU and VPU packages can be found in the Freescall Release Notes (Download tab of freescall.com/imx).

For boards from meta-fsl-arm-extra, the test cycle is performed by each maintainer.

ACKNOWLEDGEMENTS

The FSL BSP Community is a community effort of keeping and maintaining a Freescale boards/chips layer for the Yocto Project.

7.1 Dizzy Source Code

The statistics can be seen at the FSL Community BSP website. It has not been included here as it changes every time bug fixes are included during the maintenance cycle of the release and it would be outdated most of time.

KNOWN ISSUES

The list of known issues for the FSL Community BSP can be seen at the following URL:

<https://bugzilla.yoctoproject.org/buglist.cgi?quicksearch=meta-fsl-arm>

It has not been included here as it changes every time bug fixes are included during the maintenance cycle of the release and it would be outdated most of time.