



**MaaXBoards**

**(iMX8M, iMX8mini and  
iMX8nano)**

**Yocto Kirkstone 5.15**

**User Manual iMX**

**Desktop PoC**

## Revision History

Rev.	Description	Author	Date
V0.0	Initial version	Mitsuki	12142022

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## Chapter 1 Introduction

### 1.1 Brief Introduction

The i.MX desktop build uses a Yocto-based meta layer to generate a desktop Proof of Concept (PoC) image. It works together with i.MX release layer (meta-imx). It reuses the Linux BSP release framework to manage and generate the U-Boot bootloader, Linux kernel image, and i.MX root file system in desktop image build.

Information:

- Built using Yocto Project
- Updated quarterly
- All source code is located [on codeauror.org](https://codeauror.org)
- This is a Linux distribution that uses the Canonical Ubuntu aarch64 repositories
- The bootloader and kernel are identical to the standard Yocto project builds
- The root filesystem and userspace toolchain are based on Ubuntu

You can download the documentation from NXP webpage:

[https://www.nxp.com/webapp/Download?colCode=L5.15.32\\_2.0.0\\_Desktop\\_POC\\_Docs](https://www.nxp.com/webapp/Download?colCode=L5.15.32_2.0.0_Desktop_POC_Docs)

## Chapter 2 Setup project

This chapter will introduce the setup host and Yocto project build as described in NXP desktop documentation.

### 2.1 Host setup

#### 2.1.1 Operating system

These instructions assume that you are using one of these two versions of standard desktop Ubuntu:

- ◆ Ubuntu 20.04 LTS "Bionic Beaver" is the officially supported version for Yocto Kirkstone.

These instructions also assume that you are using the default Bash shell that comes with Ubuntu.

#### 2.1.2 Host packages

Install the following packages

```
sudo apt-get update && sudo apt-get install -y gawk wget git-core diffstat unzip texinfo  
gcc-multilib build-essential chrpath socat libstdc++11-dev xterm sed cvs subversion coreuti  
ls texi2html docbook-utils python-pysqlite2 help2man make gcc g++ desktop-file-utils libg  
l1-mesa-dev libglu1-mesa-dev mercurial autoconf automake groff curl lzop asciidoc u-boot-  
tools cpio sudo locales
```

#### 2.1.3 Install the repo utility

Repo is a tool built on top of Git that makes it easier to manage projects that contain multiple repositories, which do not need to be on the same server

```
mkdir ~/bin (this step may not be needed if the bin folder already exists)  
  
chmod a+x ~/bin/repo  
curl http://commondatastorage.googleapis.com/git-repo-downloads/repo > /usr/bin/repo  
  
export PATH="${HOME}/bin:${PATH}"
```

## 2.2 Yocto setup

This section will introduce all the needed setup we will need in order to build the MaaXboards recipes we choose.

### 2.2.1 Configure GIT

- ◆ List present configuration

```
$ git config -list
```

If the above command demonstrates that you already have a username and email configured, then you can skip the remainder of this section and continue with configuring Repo.

- ◆ Configure Git

```
$ git config --global user.name "Firstname Lastname"
$ git config --global user.email "EmailAddress@Domain.com"
```

- ◆ Confirm that Git is configured properly

```
$ git config -list
```

You should see at least these two lines with your name and email address

```
user.name=Firstname Lastname
user.email=EmailAddress@Domain.com
```

### 2.2.2 Download meta layers from NXP desktop

Make a new directory called imx-yocto-bsp. We'll be downloading the board support package (BSP) and other meta layers here:

```
mkdir imx-yocto-bsp-desktop
sudo chown -R [USERNAME] imx-yocto-bsp-desktop
cd imx-yocto-bsp
```

Install the i.MX BSP repo and download the Yocto Project Layers. I'll be using Kirkstone here:

```
$ repo init -u https://source.codeaurora.org/external/imx/imx-manifest -b imx-linux-kirkstone -m imx-5.15.32-2.0.0_desktop.xml
repo sync
```

You should now see the following folders / files

```
imx-setup-release.sh
README
README-IMXBSP
setup-environment
sources
imx-setup-desktop.sh
```



### 2.2.3 Create MaaXboard git repository

All the needed files to build the kernel and universal bootloader can be downloaded from github:

[HinoAM/meta-maaxboard: Yocto meta-layer for MaaXBoard/Mini/Nano \(github.com\)](https://github.com/HinoAM/meta-maaxboard)

Go to sources folder

```
$ cd sources
```

Clone the meta-maaxboard layer

```
$ git clone https://github.com/HinoAM/meta-maaxboard.git  
$ cd meta-maaxboard  
$ git checkout kirkstone
```

At the end of this steps, you will have some repository like below image



**Image 1.1 Final meta-maaxboard layer**

## 2.2.4 Setup the yocto build enviroment

First some Yocto definitions

MACHINE=<machine>

Use EVK names for <machine> listed in Yocto Project Users Guide, section 5.1 "Build configurations"

DISTRO=fsl-imx-<backend> where <backend> refers to the graphics type:

xwayland = Wayland with X11 support - default distro

wayland = Wayland only

fb = Framebuffer (not supported for imx8)

Note: Each build folder can only support a single DISTRO

Setup the Yocto build environment

```
mkdir maaxboard-desktop
MACHINE=imx8mqevk DISTRO=imx-desktop-xwayland source imx-setup-desktop.sh -b maaxboard-de
sktop
```

This operation will generate two conf files under the path maaxboard-wayland

- ◆ local.conf
- ◆ bblayers.conf

You will need to modify both conf files according to your settings. Under the meta-maaxboard folder you will find a script that you can run and replace the files. You need to put the folder destination and the type of maaxboard desktop you want, for example:

```
./replace-conf.sh maaxboard-desktop maaxboard-desktop
bblayers.conf for maaxboard-desktop copied ... [OK]
local.conf maaxboard desktop copied ... [OK]
Done
```

Options are:

Maaxboard = maaxboard-desktop

Maaxboard mini = maaxboard-mini-desktop

Maaxboard nano = maaxboard-nano-desktop

---

## 2.2.5 Build Yocto

From maaxboard-desktop directory, run bitbake:

```
bitbake imx-image-desktop
```

---

## 2.2.6 Build output

Once it's done building, the build output is located under path:

imx-yocto-bsp-desktop/maaxboard-desktop/build/tmp/deploy/images/maaxboard-ddr4-  
2g-sdcard

You will find a wic file which is the needed file to flash into the SD card.

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## 2.2.7 Returning to this project at a later date

Bitbake will not run if the environment is not configured. If you close the present shell (terminal) then you will lose the environment set up by imx-setup-release.sh. To set up our environment again:

```
$ source setup-environment maaxboard-desktop
```