

# EDM iNAND installer

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## 1 Overview

The EDM installer can be operated in two modes. One is automatic mode, which installs a pre-programmed image into the iNAND. The other mode is interactive mode, which allows the user to “drag-and-drop” an image into iNAND using his/her Windows computer.

## 2 Interactive mode

By default there is no pre-programmed image to install in the installer. When run, the installer enters interactive mode.

Attach a USB OTG cable to the development kit and attach the other end to a USB host port on a Windows computer. A mass storage device will appear.

Drag and drop an (uncompressed) image to the mass storage device, will install the image into iNAND.

Once the copying has finished, unplug the EDM-MNF-connector, remove the SD card and reboot your development kit. If everything is right, your image will now boot.

## 3 Automatic mode

This section describes the technicalities of preparing an installer SD card.

The SD card created will install an image for every boot, without any user interaction.

### 3.1 Installer SD card overview

The EDM installer SD card has two partitions. The very first one, is a FAT partition containing boot files, and more importantly the image to be installed.

The second partition is the installer it self, and users should not have to touch the second partition.

The quickest way to make a custom installer (each step is explained in more detail further down this document) is:

1. Prepare an image file to be installed
2. Compress it with `xz`
3. Place it in `images/image.xz` on the FAT partition.

This way, the installer will install the `image.xz` into `inand`.

### 3.2 Preparing an image file

The image file is expected to be a compressed block device image. One way to prepare a such image is to first manually prepare one unit where the software works as intended.

Then use the `'dd'` command to take a block-by-block copy of the `iNAND` content to an SD card. In its simplest form:

```
# dd if=/dev/mmcblk1 of=/mnt/sdcard/image
```

In practice there are a few things that can be done more efficiently than a crude copy.

First, the command above copies the whole iNAND to a file on the SD card. You might not use it all. When partitioning your iNAND, leaving some part of the iNAND unpartitioned would decrease the install time. The smaller the iNAND image, the faster it installs.

Second, when copying the iNAND content to a file, only copy the actually used (partitioned) area. One way to do that is

```
b1='echo pq | fdisk -u /dev/mmcblk1 | grep /dev/ |  
tail -1 | awk '{print $3}''  
dd if=/dev/mmcblk1 of=/mnt/sdcard/image bs=$b1 count=512
```

The last step is to compress the image file. On a desktop computer running linux, it can be done by:

```
# xz -9 image
```

This will take some time, depending on the size of image and speed of your computer.

### 3.3 Customizing the installation process

To be written at a later point.

### 3.4 Tips and tricks

The maximum size of the compressed image is about 1GB. There are some tricks to reduce the size of the compressed image.

The most useful one is to fill the unused space in image with zeroes (by default the empty space contains remnants of whatever files has been stored there).

Before creating the image file, fill the device with a large, but empty file:

```
# dd if=/dev/zero of=/media/sdcard/file bs=1M
# umount /media/sdcard
# mount /dev/sdcard /media/sdcard
# rm -f /media/sdcard/file
```

The unmount/mount step is needed to ensure that the file is written out to the file system, and not just staying in the fs cache.

Then proceed with 'dd' ing the iNAND to a image file. The empty space will then xz-compress very well.