

# Recovery image installation or update with Heimdall

These instructions explain how to install the [Replicant recovery image](#) to your device. This procedure is part of [the larger procedure of installing Replicant](#).

## Prerequisites

### Applicable devices

This guide applies only to the following devices:

- [Galaxy S II \(GT-I9100\)](#)
- [Galaxy S III \(GT-I9300\)](#)
- [Galaxy S III 4G \(GT-I9305\)](#)
- [Galaxy Nexus \(GT-I9250\)](#)
- [Galaxy Note \(GT-N7000\)](#)
- [Galaxy Note 2 \(GT-N7100\)](#)
- [Galaxy Tab 2 7.0 \(GT-P3100\)](#)
- [Galaxy Tab 2 7.0 Wi-Fi \(GT-P3110\)](#)
- [Galaxy Tab 2 10.1 \(GT-P5100\)](#)
- [Galaxy Tab 2 10.1 Wi-Fi \(GT-P5110\)](#)
- [Galaxy Note 8.0 \(GT-N5100\)](#)
- [Galaxy Note 8.0 Wi-Fi \(GT-N5110\)](#)

If you use these instructions with a device not listed above, there is a significant risk of breaking your device up to a point where it's way too complicated to repair it. This is often referred as "[bricking your device](#)" in computer jargon.

### Personal computer

In order to install the recovery image on your device, it is assumed that you have a computer running a GNU/Linux operating system and everything necessary to connect your device to the computer through USB.

Moreover, it is assumed that anyone performing the installation knows how to use the command line in a terminal and has basic knowledge about it.

## Install heimdall

Heimdall is a free software program that is required to install the recovery image to your device.

If you don't already have heimdall you can use the instructions on the [ToolsInstallation](#) page to install all the required tools.

## Download the files

First find the section for the Replicant version you want to install.

For instance if you want to install Replicant 6.0 0003, go in the [Replicant 6.0 0003 section](#).

Then find the Security subsection and download the GPG signing key for that release.

Depending on your browser and the format of the GPG key, the GPG signing key can appear as a web page with some text that begin with "-----BEGIN PGP PUBLIC KEY BLOCK-----".

This is because one of the popular key format actually stores the key as encoded text as this gives various advantages. In that case, you simply need to save that web page with "File"->"Save Page As".

Once the GPG signing key has been downloaded, you need to find the Images subsection, and, inside it find the in the row that corresponds to your device.

Inside that row, there are links to the recovery image and the corresponding signature, which are in that row under the column **Bootable/recovery**.

You need to download both files to your PC.

For example, if you want to install Replicant to a [Galaxy S II \(GT-I9100\)](#), you will download **recovery-i9100.img** and **recovery-i9100.img.asc**.

## Check the signature of the recovery image

First, [add the Replicant release key to your GPG keyring](#).

Then, from the command line:

1. Change directories to the location of the recovery image and its signature (the location of the files may differ depending on your system setup):

```
cd "${HOME}/Downloads/"
```

2. Check the signature of the recovery with the following command, substituting "<yourdevice>" with your device's identifier:

```
gpg --verify recovery-<yourdevice>.img.asc
```

Unless GPG reports something to the effect of a "good signature" from [the expected key](#), **do not continue!** Your downloaded files may be corrupted or compromised.

## Prepare the device

The next step in the installation process is to prepare the device for heimdall mode.

1. Make sure the device is completely turned off and the USB cable is disconnected from the device
2. Remove the device's [external case](#) or protection if it has one.

There are a few additional steps to follow, depending on which device you have.

### Galaxy Nexus (GT-I9250)

If your device is the Galaxy Nexus (GT-I9250):

1. Start the device by holding the following key combination: **Volume down, Power**.
2. Hold the key combination until the device shows a green "Start".

### Galaxy Tab 2

If your device is one of the following devices:

- Galaxy Tab 2 7.0 (GT-P3100)
- Galaxy Tab 2 7.0 Wi-Fi (GT-P3110)
- Galaxy Tab 2 10.1 (GT-P5100)
- Galaxy Tab 2 10.1 Wi-Fi (GT-P5110)

1. Start the device by holding the following key combination: **Volume down, Power**.
2. Hold the key combination until the device shows a **Warning** message.
3. Confirm that you want to download a custom OS using volume up
4. Make sure the device is in **Downloading** mode

You can then connect the USB cable to both the computer and the device

### All other devices

For all other devices:

1. Start the device by holding the following key combination: **Volume down, Select, Power**,
2. Hold the key combination until the device shows a **Warning** message.
3. Confirm that you want to download a custom OS using volume up
4. Make sure the device is in **Downloading** mode

You can then connect the USB cable to both the computer and the device

## Install the recovery image

For instructions on installing the recovery image on your device for the first time, proceed to the section on [installing the recovery](#).

Otherwise, for instructions on updating the recovery image on your device, proceed to the section on [upgrading the recovery](#).

## Install the recovery image

When installing or upgrading Replicant, use the commands in the table below. This will make sure that the device is rebooted right into the recovery. It does that by also installing the recovery in the boot partition.

If instead you only want to upgrade an existing recovery, use the commands in the section on [upgrading the recovery](#).

Once in the recovery you can then proceed to the installation or s.

Devices	Command for installing the recovery image
Galaxy Nexus (I9250)	heimdall flash --boot path/to/recovery-<yourdevice>.img --recovery path/to/recovery-<yourdevice>.img
Galaxy S 3 (I9300)	heimdall flash --BOOT path/to/recovery-<yourdevice>.img --RECOVERY path/to/recovery-<yourdevice>.img
Galaxy S 3 4G (I9305)	
Galaxy Note 2 (N7100)	
Galaxy Note 8.0 (N5100)	
Galaxy Note 8.0 Wi-Fi (N5110)	
Galaxy S 2 (I9100)	heimdall flash --KERNEL path/to/recovery-<yourdevice>.img --RECOVERY path/to/recovery-<yourdevice>.img
Galaxy Note (N7000)	
Galaxy Tab 2 7.0 (P3100)	
Galaxy Tab 2 7.0 Wi-Fi (P3110)	
Galaxy Tab 2 10.1 (P5100)	
Galaxy Tab 2 10.1 Wi-Fi (P5110)	

If your device reboots into the recovery OS, **you have successfully installed the Replicant recovery**. Proceed with the remaining [installation instructions](#), or with the [minor version upgrade instructions](#) if you are upgrading an existing Replicant installation.

Otherwise, see the section on [troubleshooting](#).

## Upgrade the recovery image

If you only want to update the recovery, without updating or installing Replicant, use the commands in the this section. This will make sure that your Replicant installation is not modified.

If instead you are installing Replicant for the first time, use the commands in the section on [installing the recovery](#).

The command to update the recovery depends on which device you have. See below.

### Galaxy Nexus (I9250)

If your device is the Galaxy Nexus (I9250):

```
heimdall flash --recovery path/to/recovery-<yourdevice>.img
```

### All other devices

For all other devices:

```
heimdall flash --RECOVERY path/to/recovery-<yourdevice>.img
```

# Troubleshooting

## Making sure that the device is connected in download mode

You can run the following command to verify if the device is in download mode:

```
lsusb
```

If it is you will then have one line that will be somewhat similar to that one:

```
Bus 004 Device 002: ID 04e8:685d Samsung Electronics Co., Ltd GT-I9100 Phone [Galaxy S II] (Download mode)
```

## Heimdall failing with "ERROR: Protocol initialisation failed!"

It is pretty easy to end up with heimdall failing like that:

```
Heimdall v1.4.2
```

```
Copyright (c) 2010-2017 Benjamin Dobell, Glass Echidna  
http://www.glassechidna.com.au/
```

```
This software is provided free of charge. Copying and redistribution is encouraged.
```

```
If you appreciate this software and you would like to support future development please consider donating:  
http://www.glassechidna.com.au/donate/
```

```
Initialising connection...  
Detecting device...  
Claiming interface...  
Setting up interface...
```

```
Initialising protocol...  
ERROR: Protocol initialisation failed!
```

```
Releasing device interface...
```

In that case disconnect and reconnect the USB cable from the computer and try again.

If it still fails, make sure that your computer isn't doing resource intensive tasks:

- Doing tasks that uses a lot your storage device (HDD, SSD, etc) can easily make the installation of the images fail.

If it still fails:

- Verify if your USB cable is not damaged by trying with another cable if you have one
- Verify if your USB port is not damaged by trying with another port if you have one

## Heimdall failing when Secure Download is Enabled

The download mode for more recent devices, like the Galaxy S III GT-I9305, may show the following message in blue:

```
Secure Download : Enabled
```

This is usually not an issue, but in devices where users didn't install (yet) another recovery or distribution before, it may prevent the installation of the recovery. Heimdall will fail with errors like:

```
Initialising connection...  
Detecting device...
```

```
libusb: error [_get_usbfs_fd] libusb couldn't open USB device /dev/bus/usb/001/028: Input/output error
ERROR: Failed to access device. libusb error: -1
```

or block during the image upload, or even appear to successfully install the recovery with no actual modification taking place.

This can usually be solved with the following adb command:

```
adb reboot bootloader
```

This command must be issued when running the installed Android system. In order to use adb you'll have to enable Android debugging in the Developer settings.

Unlike what's expected (a reboot to Download mode), this command will rather trigger a normal reboot, with the device going back to the installed Android system. After this you should power off your phone and use the key combination to enter Download mode. After that, installing images with Heimdall should work from then on.