

The Schick WiFi Interface contains an Analog Devices [Blackfin](#) Processor running an embedded Linux distribution, based on the [Open Source uClinux](#) distribution maintained by Analog Devices. In accordance with the [GNU General Public License](#), we are providing access to the complete source code. This page provides instructions for downloading and building the Schick WiFi Interface software. To build the software, a Linux-based development machine (or virtual machine) is required. We recommend an [Ubuntu](#) distribution.

## Download these Files

Before continuing with the steps to build the Schick WiFi software, please download the files below:

1. Script to install the prerequisite tools: [FirstInstallTools.sh](#)
2. Toolchain (approx 500 MB): [toolchain-trunk-svn.bin.tar.bz2](#)
3. Download one (or more) of the following releases of the Marconi source code:

Marconi uClinux	Release Date	Description
<a href="#">marconi-uclinux-03.00.192.tar.bz2</a>	8/4/2015	Version 3.0
<a href="#">marconi-uclinux-02.02.343.tar.bz2</a>	7/14/2014	Version 2.0 SR 2
<a href="#">marconi-uclinux-02.00.238.tar.bz2</a>	2/21/2013	Version 2.0
<a href="#">marconi-uclinux-01.01.0286.tar.bz2</a>	3/19/2012	Service Release 1
<a href="#">marconi-uclinux-01.00.0246.tar.bz2</a>	9/23/2011	Initial release

There are three steps to build and update the Schick WiFi software successfully:

1. [Prepare the Build System](#)
2. [Build the Software](#)
3. [Modify the Software](#)

## Prepare the Build System

### Development Tools

Before you can build the software, you will need to install a few prerequisite development tools on your Ubuntu Linux distribution. The script, `FirstInstallTools.sh`, may be used to install the development tools required to compile the Schick WiFi Interface linux software. It is based on the directions from the corresponding [Blackfin uClinux](#) page.

Execute the script using sudo since the script will use apt-get to install packages.

```
ubuntu:~$ sudo ./FirstInstallTools.sh
```

## Blackfin Toolchain

The toolchain consists of special versions of the linux compiler, linker and other development tools that target the Blackfin processor. In order to build the Schick WiFi Interface software, you will need to use these special compilers instead of the standard GNU development tools. Expand the toolchain tarball into a folder of your choice.

```
ubuntu:~/toolchain$: tar -xvf toolchain-trunk-svn.bin.tar.bz2
```

After extracting the toolchain binaries, add the path to these binaries to your environment. You should add the binaries in three paths relative to the root of the toolchain:

- opt/uClinux/bfin-uclinux/bin
- opt/uClinux/bfin-linux-uclibc/bin
- opt/uClinux/bfin-elf/bin

One easy way to make sure that these binaries are always accessible is to add the paths to your PATH environment variable. You can do this automatically at each login by adding something like the following to the end of your .profile script:

```
# add toolchain to path
export PATH=$PATH:$HOME/toolchain/opt/uClinux/bfin-
uclinux/bin:$HOME/toolchain/opt/uClinux/bfin-linux-
uclibc/bin:$HOME/toolchain/opt/uClinux/bfin-elf/bin
```

## Build the Software

Extract the Schick WiFi uClinux software into a folder of your choice. Navigate into the uclinux folder. Configure the uClinux build system to build the Schick WiFi platform:

```
ubuntu:~/uclinux$ make Schick/BF527-Marconi_config
```

Now you can build the complete system with a simple make command:

```
ubuntu:~/uclinux$ make
```

If all goes well, at the end of the build you should have several files in the images folder below the uclinux root. The file called uImage (symbolic link to uImage.initramfs) is the primary image used to program the Schick WiFi Interface. Open the Web Server and Upgrade Utility and upgrade your device with the uImage you just built.

```
ubuntu:~/uclinux$ ls images
linux    rootfs.ext2  rootfs.initramfs.gz  System.map.initramfs.gz
uImage.initramfs.gz  linux.initramfs  rootfs.initramfs    rootfs.jffs2
uImage          vmImage          linux.initramfs.gz  rootfs.initramfs.contents
System.map.initramfs  uImage.initramfs  vmlinux
ubuntu:~/uclinux$
```

## Modify the Software

You have successfully built the software and downloaded a new uImage to the Schick WiFi Interface. What's next? Here are a few simple modifications you can make that would allow you to immediately see the effects of the new software you built.

### Build Version

The file `localversion-0-schick` in the `uclinux/linux-2.6.x` folder contains the version information for this build of the Schick WiFi Interface. The contents of this file are used to version the linux kernel as well as a portion of the `/etc/version` file which appears in the web server under the Version info page. Typically you will see this in the second line of the `/etc/version` file prefixed by the word `Build`:

Contents of `localversion-0-schick` on build system:

```
-STI-01.00.0215
```

Contents of `/etc/version` on target Schick WiFi Interface:

```
Schick/BF527-Marconi Version 3.2.0
Build-STI-01.00.0215
Built By: linuxbuilder.schicknt.com
Build Date: Thu Apr 21 16:48:35 EDT 2011
```

The `uclinux/linux-2.6.x/localversion-0-schick` distributed is actually a symbolic link - most likely a broken link. It points to a file outside the `uclinux` folder that is used to control automatic build versioning. You can simply delete the broken link and recreate the file with whatever contents you like to change the version information. Remember to include a space or dash at the beginning so it does not run into the word `Build`. For example:

```
ubuntu:~/uclinux$ rm linux-2.6.x/localversion-0-schick
ubuntu:~/uclinux$ echo "-CUSTOM-01.00.0217" > linux-2.6.x/localversion-0-
schick
ubuntu:~/uclinux$ make
```

After the `make`, you can use the `bfin-uclinux-mkimage` command to inspect the uImage and see

your new version information. For example:

```
ubuntu:~/uclinux$ bfin-uclinux-mkimage -l images/uImage
Image Name: Linux-2.6.28.6-CUSTOM-01.00.0217
Created: Thu Jul 7 11:15:40 2011
Image Type: Blackfin Linux Kernel Image (gzip compressed)
Data Size: 3397674 Bytes = 3318.04 kB = 3.24 MB
Load Address: 0x00001000
Entry Point: 0x00229CEC
```

If you upload the new uImage to your Schick WiFi Interface, the web page should also display your new custom version information.

## **Web Server and Upgrade Utility**

Another simple way to make changes to the Schick WiFi Interface software is to modify or extend the content served by the embedded Web Server. Most of the files that are copied to the Web Server are found in the uclinux/vendors/Schick/common folder. The cgi-bin folder contains cgi scripts that are copied to the cgi-bin folder on the Web Server.

Inspect the Makefile in uclinux/vendors/Schick/BF527-Marconi to see how the files in this folder are copied to the image. If you add a new .html file, you may need to add that file to the WEB\_FILES variable:

```
# Busybox httpd
WEB_FILES-$(CONFIG_USER_BUSYBOX_HTTPD) += index.html index_test.html cgi-
bin/ speedtest/
```