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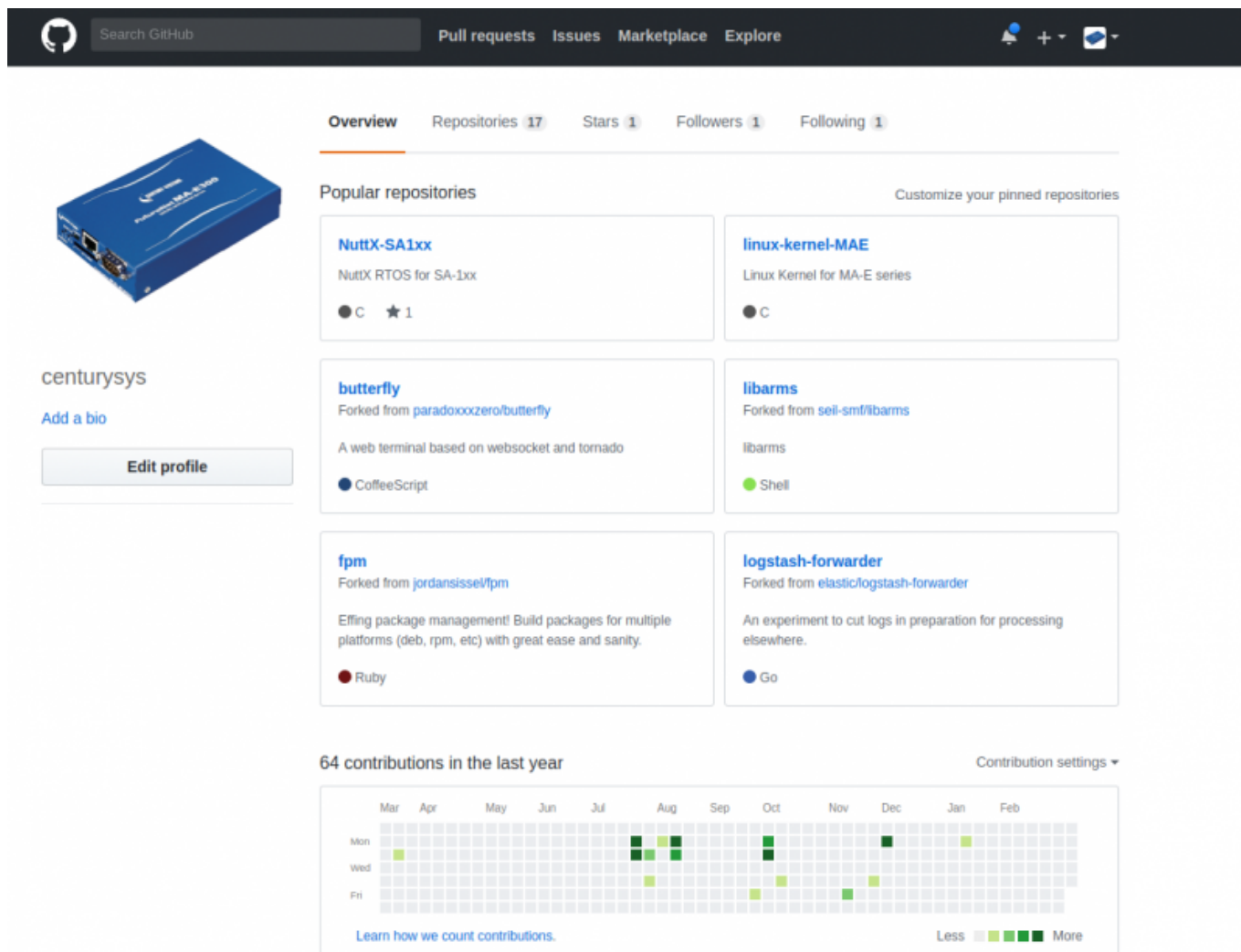
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# カーネルのビルド

MA-E4xx シリーズ用のカーネルは、[GitHub のリポジトリ](#) で公開しています。



The screenshot shows the GitHub profile of 'centurysys'. The profile includes a bio 'Add a bio' and an 'Edit profile' button. The 'Popular repositories' section lists six repositories: NuttX-SA1xx (NuttX RTOS for SA-1xx, 1 star), linux-kernel-MAE (Linux Kernel for MA-E series), butterfly (Forked from paradoxxxzero/butterfly, a web terminal based on websocket and tornado, using CoffeeScript), libarms (Forked from sei-smf/libarms, using Shell), fpm (Forked from jordansissel/fpm, Effing package management! Build packages for multiple platforms (deb, rpm, etc) with great ease and sanity, using Ruby), and logstash-forwarder (Forked from elastic/logstash-forwarder, An experiment to cut logs in preparation for processing elsewhere, using Go). The bottom section shows '64 contributions in the last year' with a calendar heatmap.

MA-E3xx と同じく git で管理されていますので git パッケージの導入が必要です。

参考: [\[MA-E3xx\] カーネルのビルド](#)

## カーネルのビルド

### clone と checkout

[\[MA-E3xx\] カーネルのビルド](#) を参考に、リポジトリの clone, checkout まで済ませておきます。

```
kikuchi@develop:~/work$ git clone  
https://github.com/centurysys/linux-kernel-MAE.git
```

```
Cloning into 'linux-kernel-MAE'...
remote: Counting objects: 5857742, done.
remote: Compressing objects: 100% (3297/3297), done.
remote: Total 5857742 (delta 6079), reused 7155 (delta 5711), pack-reused
5848715
Receiving objects: 100% (5857742/5857742), 1.25 GiB | 8.48 MiB/s, done.
Resolving deltas: 100% (4945210/4945210), done.
Checking connectivity... done.
Checking out files: 100% (46095/46095), done.
kikuchi@develop:~/work$ cd linux-kernel-MAE/
```

```
kikuchi@develop:~/work/linux-kernel-MAE$ git checkout MA-E4xx/linux-4.4.y
Checking out files: 100% (39647/39647), done.
Branch MA-E4xx/linux-4.4.y set up to track remote branch MA-E4xx/linux-4.4.y
from origin.
Switched to a new branch 'MA-E4xx/linux-4.4.y'
kikuchi@develop:~/work/linux-kernel-MAE$
```

## configure

デフォルトの config をロードします。

```
kikuchi@develop:~/work/linux-kernel-MAE$ make kumquat_MA_defconfig
HOSTCC scripts/basic/fixdep
HOSTCC scripts/kconfig/conf.o
SHIPPED scripts/kconfig/zconf.tab.c
SHIPPED scripts/kconfig/zconf.lex.c
SHIPPED scripts/kconfig/zconf.hash.c
HOSTCC scripts/kconfig/zconf.tab.o
HOSTLD scripts/kconfig/conf
net/sched/Kconfig:44: warning: menuconfig statement without prompt
#
# configuration written to .config
#
kikuchi@develop:~/work/linux-kernel-MAE$
```

## build

config がこのままでよければ build を行います。

```
kikuchi@develop:~/work/linux-kernel-MAE$ make CROSS_COMPILE=arm-linux-
gnueabihf- -j16
CHK include/config/kernel.release
CHK include/generated/uapi/linux/version.h
```

```
CHK      include/generated/utsrelease.h
make[1]: 'include/generated/mach-types.h' is up to date.
CHK      include/generated/timeconst.h
CHK      include/generated/bounds.h
CHK      include/generated/asm-offsets.h
CALL     scripts/checksyscalls.sh
CHK      include/generated/compile.h
... 中略 ...
LD [M]   net/netfilter/xt_time.ko
LD [M]   net/netfilter/xt_u32.ko
LD [M]   net/xfrm/xfrm_ipcomp.ko
LD [M]   sound/core/seq/snd-seq-midi.ko
LD [M]   sound/core/snd-rawmidi.ko
LD [M]   sound/usb/snd-usb-audio.ko
LD [M]   sound/usb/snd-usbmidi-lib.ko
AS       arch/arm/boot/compressed/piggy.xzkern.o
LD       arch/arm/boot/compressed/vmlinux
OBJCOPY  arch/arm/boot/zImage
Kernel: arch/arm/boot/zImage is ready
kikuchi@develop:~/work/linux-kernel-MAE$
```

uImage 形式のカーネルイメージを作成します。

```
kikuchi@develop:~/work/linux-kernel-MAE$ make CROSS_COMPILE=arm-linux-
gnueabihf- -j16 uImage
CHK      include/config/kernel.release
CHK      include/generated/uapi/linux/version.h
CHK      include/generated/utsrelease.h
make[1]: 'include/generated/mach-types.h' is up to date.
CHK      include/generated/timeconst.h
CHK      include/generated/bounds.h
CHK      include/generated/asm-offsets.h
CALL     scripts/checksyscalls.sh
CHK      include/generated/compile.h
CHK      kernel/config_data.h
Kernel: arch/arm/boot/Image is ready
Kernel: arch/arm/boot/Image is ready
Kernel: arch/arm/boot/zImage is ready
Kernel: arch/arm/boot/Image is ready
Kernel: arch/arm/boot/zImage is ready
UIMAGE  arch/arm/boot/uImage
Image Name:   Linux-4.4.30
Created:      Thu Mar 15 15:27:16 2018
Image Type:   ARM Linux Kernel Image (uncompressed)
Data Size:    3648072 Bytes = 3562.57 kB = 3.48 MB
Load Address: 42208000
Entry Point:  42208000
Image arch/arm/boot/uImage is ready
kikuchi@develop:~/work/linux-kernel-MAE$
```

From:

<https://ma-tech.centurysys.jp/> - **MA-X/MA-S/MA-E/IP-K Developers' WiKi**

Permanent link:

[https://ma-tech.centurysys.jp/doku.php?id=mae4xx\\_devel:build\\_kernel:start](https://ma-tech.centurysys.jp/doku.php?id=mae4xx_devel:build_kernel:start)

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