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# 開発環境のセットアップ(クロスarm64 用)

Ubuntu Linuxにはarm64(aarch64) 用のクロス開発ツールのパッケージが用意されていますので、それをセットアップします。

```
user1@max3xx-devel:~$ sudo apt install crossbuild-essential-arm64
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  binutils-aarch64-linux-gnu cpp-11-aarch64-linux-gnu cpp-aarch64-linux-gnu
  cross-config dpkg-cross file
  g++-11-aarch64-linux-gnu g++-aarch64-linux-gnu gcc-11-aarch64-linux-gnu
  gcc-11-aarch64-linux-gnu-base
  gcc-11-cross-base gcc-12-cross-base gcc-aarch64-linux-gnu libasan6-arm64-
  cross libatomic1-arm64-cross
  libauthen-sasl-perl libc6-arm64-cross libc6-dev-arm64-cross libclone-perl
  libconfig-auto-perl
  libconfig-inifiles-perl libdata-dump-perl libdebian-dpkgcross-perl
  libencode-locale-perl libfile-homedir-perl
  libfile-listing-perl libfile-which-perl libfont-afm-perl libgcc-11-dev-
  arm64-cross libgcc-s1-arm64-cross
  libgomp1-arm64-cross libhtml-form-perl libhtml-format-perl libhtml-parser-
  perl libhtml-tagset-perl
  libhtml-tree-perl libhttp-cookies-perl libhttp-daemon-perl libhttp-date-
  perl libhttp-message-perl
  libhttp-negotiate-perl libhwasan0-arm64-cross libio-html-perl libio-
  socket-ssl-perl libio-string-perl
  libitm1-arm64-cross liblsan0-arm64-cross liblwp-mediatypes-perl liblwp-
  protocol-https-perl libmagic-mgc libmagic1
  libmailtools-perl libnet-http-perl libnet-smtp-ssl-perl libnet-ssleay-perl
  libstdc++-11-dev-arm64-cross
  libstdc++6-arm64-cross libtimedate-perl libtry-tiny-perl libtsan0-arm64-
  cross libubsan1-arm64-cross liburi-perl
  libwww-perl libwww-robotrules-perl libxml-libxml-perl libxml-
  namespacesupport-perl libxml-parser-perl
  libxml-sax-base-perl libxml-sax-expat-perl libxml-sax-perl libxml-simple-
  perl libyaml-libyaml-perl libyaml-perl
  linux-libc-dev-arm64-cross perl-openssl-defaults
Suggested packages:
  binutils-doc gcc-11-locales cpp-doc binutils-multiarch gcc-11-doc autoconf
  automake libtool flex bison
  gdb-aarch64-linux-gnu gcc-doc libdigest-hmac-perl libgssapi-perl libcrypt-
  ssleay-perl libsub-name-perl
  libbusiness-isbn-perl libauthen-ntlm-perl libxml-sax-expatxs-perl libyaml-
  shell-perl
The following NEW packages will be installed:
  binutils-aarch64-linux-gnu cpp-11-aarch64-linux-gnu cpp-aarch64-linux-gnu
  cross-config crossbuild-essential-arm64
```

```
dpkg-cross file g++-11-aarch64-linux-gnu g++-aarch64-linux-gnu gcc-11-  
aarch64-linux-gnu  
gcc-11-aarch64-linux-gnu-base gcc-11-cross-base gcc-12-cross-base gcc-  
aarch64-linux-gnu libasan6-arm64-cross  
libatomic1-arm64-cross libauthen-sasl-perl libc6-arm64-cross libc6-dev-  
arm64-cross libclone-perl  
libconfig-auto-perl libconfig-inifiles-perl libdata-dump-perl libdebian-  
dpkgcross-perl libencode-locale-perl  
libfile-homedir-perl libfile-listing-perl libfile-which-perl libfont-afm-  
perl libgcc-11-dev-arm64-cross  
libgcc-s1-arm64-cross libgomp1-arm64-cross libhtml-form-perl libhtml-  
format-perl libhtml-parser-perl  
libhtml-tagset-perl libhtml-tree-perl libhttp-cookies-perl libhttp-daemon-  
perl libhttp-date-perl  
libhttp-message-perl libhttp-negotiate-perl libhwasan0-arm64-cross libio-  
html-perl libio-socket-ssl-perl  
libio-string-perl libitm1-arm64-cross liblsan0-arm64-cross liblwp-  
mediatypes-perl liblwp-protocol-https-perl  
libmagic-mgc libmagic1 libmailtools-perl libnet-http-perl libnet-smtp-ssl-  
perl libnet-ssleay-perl  
libstdc++-11-dev-arm64-cross libstdc++6-arm64-cross libtimedate-perl  
libtry-tiny-perl libtsan0-arm64-cross  
libubsan1-arm64-cross liburi-perl libwww-perl libwww-robotrules-perl  
libxml-libxml-perl  
libxml-namespacesupport-perl libxml-parser-perl libxml-sax-base-perl  
libxml-sax-expat-perl libxml-sax-perl  
libxml-simple-perl libyaml-libyaml-perl libyaml-perl linux-libc-dev-arm64-  
cross perl-openssl-defaults  
0 upgraded, 76 newly installed, 0 to remove and 0 not upgraded.  
Need to get 61.0 MB of archives.  
After this operation, 222 MB of additional disk space will be used.  
Do you want to continue? [Y/n]
```

ARM64 用 GCC の起動を確認してみます。

```
ファイル(F) 編集(E) 表示(V) 検索(S) 端末(T) ヘルプ(H)  
user1@max3xx-devel:~$ aarch64-linux-gnu-gcc -v  
Using built-in specs.  
COLLECT_GCC=aarch64-linux-gnu-gcc  
COLLECT_LTO_WRAPPER=/usr/lib/gcc-cross/aarch64-linux-gnu/11/lto-wrapper  
Target: aarch64-linux-gnu  
Configured with: ../src/configure -v --with-pkgversion='Ubuntu 11.3.0-1ubuntu1~22.04' --with-bugurl=file:///usr/share  
/doc/gcc-11/README.Bugs --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,m2 --prefix=/usr --with-gcc-major-vers  
ion-only --program-suffix=-11 --enable-shared --enable-linker-build-id --libexecdir=/usr/lib --without-included-gette  
xt --enable-threads=posix --libdir=/usr/lib --enable-nls --with-sysroot=/ --enable-clocale=gnu --enable-libstdc++-deb  
ug --enable-libstdc++-time=yes --with-default-libstdc++-abi=new --enable-gnu-unique-object --disable-libquadmath --di  
sable-libquadmath-support --enable-plugin --enable-default-pie --with-system-zlib --enable-libphobos-checking=release  
--without-target-system-zlib --enable-multiarch --enable-fix-cortex-a53-843419 --disable-werror --enable-checking=re  
lease --build=x86_64-linux-gnu --host=x86_64-linux-gnu --target=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu-  
--includedir=/usr/aarch64-linux-gnu/include --with-build-config=bootstrap-lto-lean --enable-link-serialization=2  
Thread model: posix  
Supported LTO compression algorithms: zlib zstd  
gcc version 11.3.0 (Ubuntu 11.3.0-1ubuntu1~22.04)  
user1@max3xx-devel:~$
```

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=max3xx\\_devel:setup\\_crossdev:start](https://ma-tech.centurysys.jp/doku.php?id=max3xx_devel:setup_crossdev:start)

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