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???????????? Cross-Compile ? Linux x86 ?????????? CPU ?????? toolchain???????????? Asterisk ???

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- ?????? Linux x86 ?????????????????? Ubuntu 10 32-bit ? VMware ESXi ??
- ?????? toolchain ??(?????????????)???? Cross-Compile ?????
- ? Cross-Compile ncurses ?????? Asterisk ??????
- ?? Cross-Compile Asterisk ??

?? Ubuntu 10 x86 Linux

- ?????????
- ?????????????

?? Cross-Compile ????

- ?? embedded system ?????????????? toolchain ?????????????????????????????? toolchain:
arm-2011.03-41-arm-none-linux-gnueabi-i686-pc-linux-gnu.tar.bz2 ???
- Cross-Compile ??? root ?????? /home ?????????
- ??????????
 - ? ~/ARM_Cross-Compile/toolchain : ?????????? toolchain ??
 - ? ~/ARM_Cross-Compile/build_source : ??????????
 - ? ~/ARM_Cross-Compile/build_opt : ??? Cross-Compile ?????????
 - ? ~/ARM_Cross-Compile/build_start : ??? Cross-Compile ??????
- ?? PATH
 - ?? ~/.profile??? toolchain ??????????

```
export PATH="$PATH:/home/along/ARM_Cross-Compile/toolchain/CodeSourcery/bin/
export LD_LIBRARY_PATH="$LD_LIBRARY_PATH:/home/along/ARM_Cross-Compile/toolchain/CodeSourcery/lib"
```

????????????? toolchain ? cross-compile????????? PATH ?????? cross-compile ?????? CC, CXX ??????

Cross-Compile ncurses

cd /home/along/ARM_Cross-Compile/build_start/ncurses-5.9/

```
CC=arm-none-linux-gnueabi-gcc \
CXX=arm-none-linux-gnueabi-g++ \
./configure arm-linux --host=arm-none-linux-gnueabi --with-shared --without-ada --with-build-cc=gcc
--with-build-cpp=arm-none-linux-gnueabi-g++ --enable-termcap --prefix=/home/along/
ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery
```

```
make
make install
```

Cross-Compile OpenSSL

NOTES?????? IAX2 ?????? Asterisk ??????????

Channel Drivers > [*] chan_iax2

Resource Modules > [*] res_crypto

????? res_crypto ?????????? openssl?????????FAQ [Install Asterisk 1.4/1.6/1.8 on Debian?](#)

wget http://www.openssl.org/source/openssl-1.0.1.tar.gz

```
./Configure linux-generic32 --prefix=/home/alang/ARM_Cross-Compile/build_opt/
openssl_build_by_codesourcery --openssldir=/home/alang/ARM_Cross-Compile/build_opt/
openssl_build_by_codesourcery shared
```

TIPs?

Configure?C ?????

????? shared????????? shared libraries(*.so)?

?? Makefile

```
...
CC= arm-none-linux-gnueabi-gcc
AR= arm-none-linux-gnueabi-ar $(ARFLAGS) r
RANLIB= arm-none-linux-gnueabi-ranlib
...
```

TIPs?

AR ?????? \$(ARFLAGS) r?

????

```
make
make install
```

TIPs

??? Asterisk ??????????

--with-crypto=<openssl?????> --with-ssl=<openssl?????>

Cross-Compile SQLite3

???? Asterisk 10.x

```
./configure CC=arm-none-linux-gnueabi-gcc CXX=arm-none-linux-gnueabi-g++
--host=arm-none-linux-gnueabi --prefix=/home/alang/ARM_Cross-Compile/build_opt/
sqlite3_build_by_codesourcery
make
make install
```

Cross-Compile Astrisk

for Asterisk 1.8.x

```
cd /home/alang/ARM_Cross-Compile/build_start/asterisk-1.8.10.1
```

```
./configure \
CC=arm-none-linux-gnueabi-gcc \
AR=arm-none-linux-gnueabi-ar \
CXX=arm-none-linux-gnueabi-g++ \
RANLIB=arm-none-linux-gnueabi-ranlib \
CPPFLAGS="-I/home/alang/ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery/include/
ncurses" \
LDFLAGS="-L/home/alang/ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery/lib" \
--host=arm-none-linux-gnueabi --target=arm-none-linux-gnueabi --without-pwlib --with-ncurses=/home/
alang/ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery --disable-xmldoc
--with-crypto=/home/alang/ARM_Cross-Compile/build_opt/openssl_build_by_codesourcery
--with-ssl=/home/alang/ARM_Cross-Compile/build_opt/openssl_build_by_codesourcery
```

```
make menuselect
```

```
make
```

```
make install DESTDIR=/home/alang/ARM_Cross-Compile/build_opt/asterisk18_arm
```

```
make samples DESTDIR=/home/alang/ARM_Cross-Compile/build_opt/asterisk18_arm
```

for Asterisk 10.x

??Asterisk 10 ?????? AST DB ?? SQLite3????????? SQLite3?

```
cd /home/alang/ARM_Cross-Compile/build_start/asterisk-10.2.1
```

```
./configure \
CC=arm-none-linux-gnueabi-gcc \
AR=arm-none-linux-gnueabi-ar \
CXX=arm-none-linux-gnueabi-g++ \
RANLIB=arm-none-linux-gnueabi-ranlib \
CPPFLAGS="-I/home/alang/ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery/include/
ncurses/" \
LDFLAGS="-L/home/alang/ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery/lib" \
--host=arm-none-linux-gnueabi --target=arm-none-linux-gnueabi --without-pwlib --with-ncurses=/home/
alang/ARM_Cross-Compile/build_opt/ncurses_build_by_codesourcery --with-sqlite3=/home/alang/
```

ARM_Cross-Compile/build_opt/sqlite3_build_by_codesourcery --disable-xmldoc

make menuselect

make

make install DESTDIR=/home/alang/ARM_Cross-Compile/build_opt/

asterisk10_arm_build_by_codesourcery

make samples DESTDIR=/home/alang/ARM_Cross-Compile/build_opt/

asterisk10_arm_build_by_codesourcery

TIPS

- CPPFLAGS ??? -I<???? include ??>

- LDFLAGS ??? -L<???? library ??>

- ??? --prefix=???????????? Asterisk ?????????? /etc/asterisk/asterisk.conf?

- DESTDIR ? Asterisk ??????

FAQ

Q: ???cc1: warning: include location "/usr/include/SDL" is unsafe for cross-compilation
console_board.c:46:21: fatal error: SDL/SDL.h: No such file or directory

Ans??? SDL ???

sudo apt-get remove libsdl1.2-dev

Q: cross-compile OpenSSL ?????

checking for mandatory modules: NCURSES OPENSSSL... fail

configure: ***

configure: *** The OPENSSSL installation appears to be missing or broken.

Ans?

1. ?? <openssl ?????>/lib ??? *.so (shared libraries)???????????? openssl ?????

2. ?? Asterisk ?????????? --with-crypto=<openssl?????> --with-ssl=<openssl?????>?

Q: ?? Asterisk ????

fatal error: openssl/ssl.h: No such file or directory

Ans?? toolchain ?????? include ?? openssl ? include ??

cd <toolchain ?????>/arm-none-linux-gnueabi/include

ln -s <openssl ?????>/include/openssl ./

Q: ?? configure Asterisk ????

configure: error: *** termcap support not found (on modern systems, this typically means the ncurses

development package is missing)

Ans?? configure ??????

```
CPPFLAGS="-I<ncurses >/include/ncurses"
```

Q: ?? make Asterisk ????

configure: error: termcap support not found

make[1]: *** [editline/libedit.a] Error 1

make: *** [main] Error 2

Ans?? configure ??????

```
LDFLAGS="-L<ncurses >/lib"
```

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- <http://forums.digium.com/viewtopic.php?t=71520>
- [HOW-TO: Setup Asterisk 1.8/gtalk on Dockstar/Debian](#)
- [ARM cross-compiling howto](#)
- [???????](#)
- [wl500g::CompilingCustomFirmware](#)
- download: <http://sources.buildroot.net/>
- [Embedded Linux on ARM Devices](#)