Debian and Clang

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Current status :
All C, C++, Objective-C sources are being built with gcc for all supported Debian arches (9) and Kernel (3).

Rebuild of Debian using Clang

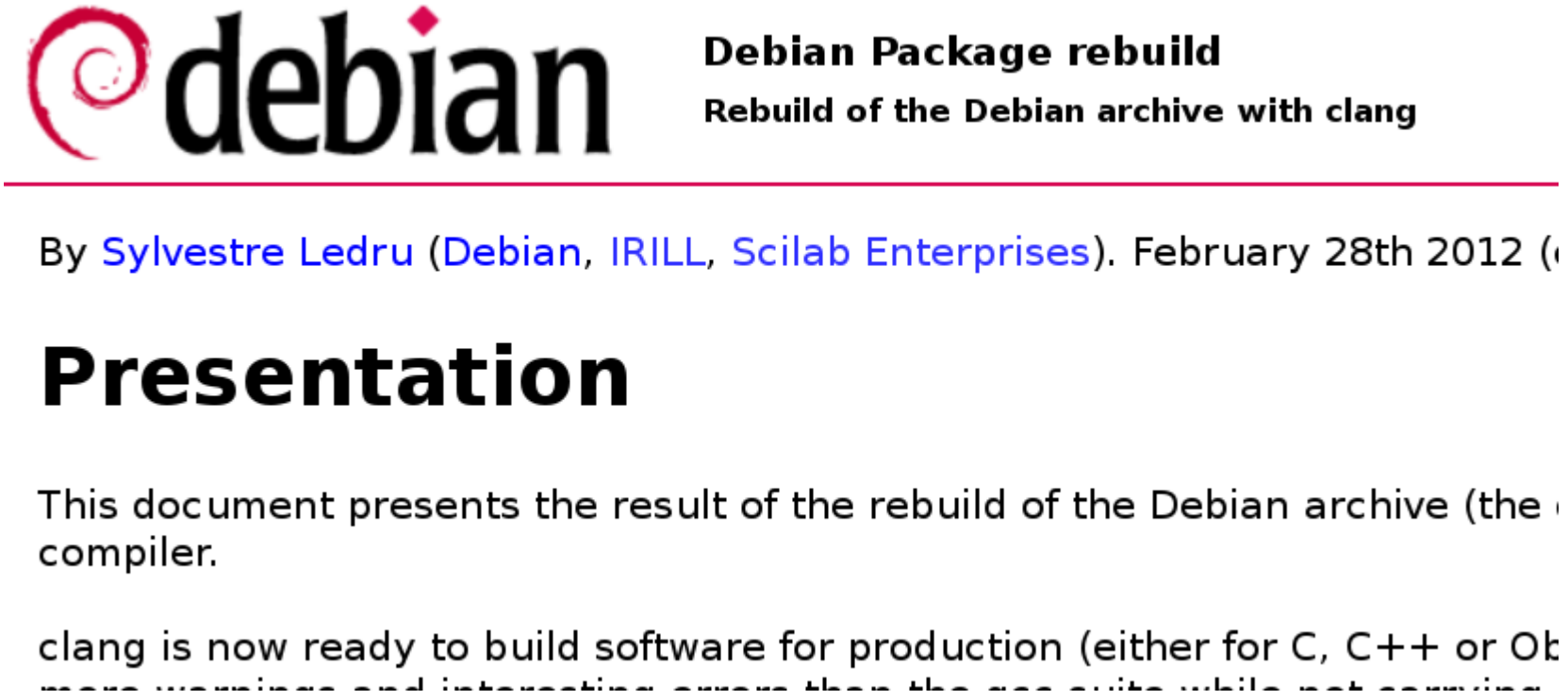
Crappy method :

VERSION=4.7
cd /usr/bin
rm g++-$VERSION gcc-$VERSION cpp-$VERSION
ln -s clang++ g++-$VERSION
ln -s clang gcc-$VERSION
ln -s clang cpp-$VERSION
cd -

Testing the rebuild of the package under amd64.

NOT the performances (build time or execution)
nor the execution of the binaries

Full results published:
http://clang.debian.net/



Done on the cloud-qa - EC2 (Amazon cloud)
Thanks to Lucas Nussbaum

Rebuild with clang 3.0 - February 28, 2012
15658 packages built : 1381 (8.8 %) failed.

Rebuild with clang 3.1 - June 23, 2012
17710 packages built : 2137 (12.1 %) failed.

Rebuild with clang 3.2 - January 28, 2013
18264 packages built : 2204 (12.1 %) failed.

Why these differences between 3.0 vs 3.1/3.2?

Some information about *-Wall* & *-Werror* :

-Wall enables many warnings

-Werror transforms Warning to Error

```
int main() {
    unsigned int i = 0;
    return i < 0;
}
```

```
$ gcc -Wall -Werror foo.c && echo $?
0

$ clang -Wall -Werror foo.c && echo $?
foo.c:3:14: error: comparison of unsigned expression < 0 is always false
      [-Werror,-Wtautological-compare]
    return i < 0;
           ~ ^ ~
1 error generated.
```

Unsupported options
50 occurrences

$ gcc -O9 foo.c && echo $?

0

$ clang -O9 foo.c

error: invalid value '9' in '-O9'

Record by libdbi-drivers with -O20 \o/

Different default behavior
133 occurrences

– noreturn.c –

```
int foo(void) {
  return;
}
```

```
$ gcc -c noreturn.c; echo $?
0
# -Wall shows it as warning
$ clang -c noreturn.c
noreturn.c:2:2: error: non-void function 'foo' should return a value
      [-Wreturn-type]
  return;
  ^
1 error generated.
```

Last rebuild proved that clang is now ready

Remaining problems are upstream

Some work started to report bugs upstream

What next ?

Two goals :

- Test of the quality of the binaries
- Provide tools to the Debian / Ubuntu communities to fix their packages

Publication of a full repository built with clang :

deb http://clang.debian.net/repository-2013-04-07/ unstable-clang main

```
$ echo "deb http://clang.debian.net/repository-2013-04-07/ unstable-clang main" >>
/etc/apt/sources.list
$ apt-get update
$ apt-get install coreutils/unstable-clang
$ ls
$ awk
```

http://buildd-clang.debian.net/

Automatic build results of the packages using clang

Connected on the debian mirror (ie : updated packages)

Debian Clang Package Auto-Building

Buildd reports for amd64 (sid)

Distributions: **[sid]**
Architectures: **[amd64]**

Package: Page: 1 Go

Name	Version	Last change	State
0ad	0.0.13-1	2013-04-15 19:35:42.986454	Needs-Build
0xffff	0.6~git20130406-1	2013-04-25 09:52:46.800427	Built
389-admin	1.1.30-1	2013-04-15 16:54:17.54452	Built
389-adminutil	1.1.15-1	2013-04-10 14:10:40.255492	Built
389-ds-base	1.3.0.3-1	2013-04-15 16:57:04.652782	Built
389-dsgw	1.1.9-1	2013-04-15 16:57:47.72331	Failed
3dchess	0.8.1-17	2013-04-15 16:58:17.217191	Built
3depict	0.0.10-1	2013-04-15 17:22:53.431718	Needs-Build

Package(s): golang Suite: sid Go

☐ Compact mode ☐ Co-maintainers

Architecture	Version	Status	For	Buildd	State	
amd64	2:1.0.2-2	Build-Attempted	2h		uncompiled	deve

Tail of log for golang on amd64:

```
debug/gosym
encoding/csv
encoding/hex
database/sql
image/gif
image/png
os/user
testing
testing/iotest
testing/quick
# os/user
clang: error: argument unused during compilation: '-fno-eliminate-unused-debug-t
make[1]: *** [debian/build.stamp] Error 2
make[1]: Leaving directory `/«PKGBUILDDIR»'
make: *** [build-arch] Error 2
```

Further about Debian & LLVM

Publication of Debian (wheezy, unstable) and Ubuntu (Quantal, Precise, Raring) of Nightly packages of LLVM, Clang, Compiler-rt, Polly & LLDB

http://llvm.org/apt

http://blog.llvm.org/2013/04/llvm-debianubuntu-nightly-packages.html

What next next ?

Try a Debian release built with clang with lld + libc++

Thanks !

(For listening
For the software
For this excellent community)