

Autobuild

Automate building software and generate build status summary
for version 3.4, 13 September 2005

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1 Introduction

Autobuild is a package that process output from building software, primarily focused on packages using Autoconf and Automake, and then generate an HTML summary file, containing links to each build log. The output include project name, version, build host types (cross compile aware), compiler host name, date of build, and indication of success or failure. The output is indexed in many ways to simplify browsing.

Autobuild can also help you automate building your project on many systems concurrently. Users with accounts on the SourceForge compile farms will be able to invoke a parallel build of their software, and produce a summary of the build status, after reading this manual.

The quickest way to get an understanding of what Autobuild can do for you, is to look at some example output. For now, we recommend looking at how Autobuild is used in the GNU Libidn project, see <http://josefsson.org/autobuild-logs/libidn.html>.

2 Tutorial

The first step is to collect build logs of your package. Autobuild can help you do this, but you can also do it easily yourself, as follows.

```
jas@latte:~/src/libidn-0.5.0$ ./configure > ~/libidn.txt
jas@latte:~/src/libidn-0.5.0$ make check >> ~/libidn.txt
```

Now let Autobuild parse the file.

```
jas@latte:~/src/libidn-0.5.0$ cd
jas@latte:~$ autobuild --dry-run --verbose libidn.txt
'libidn.txt':
Project: libidn
Revision: 0.5.0
Mode: default
Hosttype: i686-pc-linux-gnu
Buildtype: i686-pc-linux-gnu
Hostname: unknown
Timestamp: unknown
Status: ok
jas@latte:~$
```

Everything went fine, except possibly that the hostname and timestamp have default looking values. If Autobuild is not able to guess more important values, such as the project name, you may have to use a command line parameter, e.g. `--project`. You could also consider improving the guessing logic.

Now, one build log isn't much if you want to make an overview. Let's create another build log.¹

```
jas@latte:~/src/libidn-0.5.1$ td > ~/libidn2.txt
```

If you have Emacs and `htmlize.el` installed, you can markup this log file up using the `htmlize` tool.

```
jas@latte:~$ htmlize libidn2.txt libidn2.html
jas@latte:~$
```

Ok, now we have two build logs, and one of them has even been converted into HTML format. Let's generate a summary for them. Notice that here Autobuild is actually parsing an HTML page, which can be less reliable than parsing a text file.

```
jas@latte:~$ autobuild --verbose libidn.txt libidn2.html > example.html
'libidn.txt':
Project: libidn
Revision: 0.5.0
Mode: default
Hosttype: i686-pc-linux-gnu
Buildtype: i686-pc-linux-gnu
Hostname: unknown
Timestamp: unknown
```

¹ The script 'td' is not part of Autobuild. It is responsible for logging on a remote machine and building a package – it may be cleaned up and discussed here in the future.

```
Status: ok
'libidn2.html':
Project: libidn
Revision: 0.5.1
Mode: default
Hosttype: i386-unknown-netbsdelf1.6
Buildtype: i386-unknown-netbsdelf1.6
Hostname: 192.233.54.143
Timestamp: unknown
Status: ok
jas@latte:~$
```

See the 'examples/' sub-directory in the Autobuild source code distribution, it contains the 'libidn.txt' and 'libidn2.txt' files, and a Makefile that will execute the above commands. In that directory, you can remove the distributed 'example.html' and type *make example.html* to regenerate it.

3 Integrating ‘autobuild.m4’ In Your Project

A normal build log from an Autoconf/Automake based project do normally not include the project name, revision, time stamp of build or host name of the build host. Specifying these values using `--project` etc (see [Chapter 6 \[Invoking autobuild\], page 8](#)) can be tedious, especially considering that it would be so simple for the Autoconf ‘configure’ script to print them.

To solve the above problem, Autobuild includes an M4 macro suitable for use in your Autoconf project, invoked from ‘configure.ac’. Properly installed, the macro will make your project print something similar to the following output (this example is what the Autobuild itself prints during its build), as part of its build. This format is later recognized by Autobuild.

```
...
checking build system type... i686-pc-linux-gnu
checking host system type... i686-pc-linux-gnu
configure: autobuild project... autobuild
configure: autobuild revision... 1.2
configure: autobuild hostname... latte
configure: autobuild timestamp... 20040708-163123
...
```

To use the macro, put something like the following in your ‘configure.ac’:

```
AB_INIT
```

Then make sure your Autoconf installation can find the ‘autobuild.m4’ file, which should have been installed when you installed Autobuild.

The macro can take an optional parameter, the build mode, as follows:

```
AB_INIT(whatever)
```

This would result in an additional message:

```
...
configure: autobuild mode... whatever
...
```

4 Build Robot

Collecting build logs manually, especially when more platforms are involved, is tedious. Autobuild can help you with this.

The details of how to send the source code to all build systems, and how to invoke the actual software build on all systems, depend on your environment. To help separate these details, Autobuild have two commands, **abput** and **abbuild**, that act as generic front ends. The **abput** tool is responsible for uploading your source code to the build systems. The **abbuild** tool is responsible for logging on to each system and build the software. The reason these two steps are separated is that the **abput** step can be time consuming, and it is typically invoked less frequently than the **abbuild** step. Here's a typical scenario:

```
$ abput --system sourceforge yourproject-4.2.tar.gz
...
$ abbuild yourproject-4.2.tar.gz sourceforge alpha-linux1
...
```

The **abput** tool is invoked by specifying the **--system** parameter naming each back end, and the file name to upload. The file name is typically the output from Automake **make dist**, i.e., **'yourproject-4.2.tar.gz'**. The tool will then invoke a back end, **abput-system**, with the file name as parameter, for each of the provided systems. The back end could use FTP, Secure Shell SCP, **cp** to NFS-mounted file systems, etc. As you can imagine, the **abput** tool is a simple shell script, but you can make **abput-system** however complex you need.

Likewise, the **abbuild** tool is a simple front end for the back end scripts, **abbuild-system**, that are responsible for building your project on the host given as a parameter. It will typically use **telnet** or Secure Shell (**ssh**) to log on to a system, and then unpack the source code and invoke **./configure && make check** or similar.

The intention is that you will implement the details of uploading the software package to your various build systems in a script **abput-somename**, and the details of building the project on those systems in a script **abbuild-somename**.

4.1 SourceForge Compile Farm Back End

Autobuild ships with one set of example scripts, **abput-sourceforge** and **abbuild-sourceforge**, which are written to upload files and build projects on the SourceForge Compile Farms (see <http://www.sf.net/> for more information). As SourceForge utilize **ssh** with public key authentication, there is little configuration needed. In fact, the only thing you will need to tell the Autobuild SourceForge back end is your SourceForge user name, in case it is different from your login user name.

If you have an account **joe42** on the SourceForge compile farms, here is how you would use Autobuild to build your hypothetical package **yourproject**.

```
~/src/yourproject$ make dist
...
~/src/yourproject$ abput -s sourceforge \
    yourproject-4.2.tar.gz
yourproject-4.2.tar.gz      100% 2556KB  79.9KB/s   00:32
~/src/yourproject$ ABSFUSER=joe42 abbuild \
```



```

yourproject-4.2.tar.gz \
sourceforge x86-linux2
checking build system type... i686-pc-linux-gnu
checking host system type... i686-pc-linux-gnu
checking target system type... i686-pc-linux-gnu
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
configure: autobuild project... yourproject
configure: autobuild revision... 4.2
configure: autobuild hostname... x86-linux2.cf.sourceforge.net
configure: autobuild timestamp... 20040826-115252
...
PASS: simple
PASS: anonself
=====
All 2 tests passed
=====
...
~/src/yourproject$

```

Supplying the ABSFUSER environment variable can be removed, if you set it in the shell script file ‘~/ab-sf’ which is sourced by abbuild-sourceforge.

```
$ echo ABSFUSER=joe42 > ~/ab-sf
```

5 Scripting The Build Robot

The tools `abput` and `abbuild` helped you build your project, but you would still need to invoke those commands for each host in all your systems. The natural next step is to write a script to do this for you. One isn't included with Autobuild, but the following is what the author uses. Let it serve as inspiration.

```
#!/bin/bash
BASE=~/.src/logs
HOSTS="alpha-linux1 amd64-linux1 ppc-osx2 \
      shell sparc-solaris1 sparc-solaris2 \
      x86-linux2 x86-openbsd1 x86-solaris1"
FILE=$1

test x$FILE == x && echo "Usage: $0 FILE" && exit 1

for HOST in $HOSTS; do
    OUT=$BASE/$FILE-$HOST-output

    if test -f $OUT; then
        echo Working $host... remove $OUT to start again
    else
        abbuild $FILE sourceforge $HOST > $OUT 2>&1 &
    fi
done
```

As you can see, it will launch many `abbuild` processes in parallel, one for each host on the SourceForge system. All output are redirected into files named after the project name, version and host, below the directory `~/src/logs`. Incidentally, that directory contain a CVS repository of such files, which is checked out on a web server, to make the build logs accessible for interested parties.

Once the build processes has been started, you can get an overview of the process by invoking `autobuild` and viewing the output in an HTML browser.

```
~/src/logs$ autobuild yourproject-*-output > yourproject.html
```

The final touch can be given by converting the build logs to HTML, and then let the index page link to them. The HTMLized build logs are easier to read.

```
~/src/logs$ for i in yourproject-*-output; do \
    htmlize -u $i; done
~/src/logs$ autobuild yourproject-*-output.html > yourproject.html
```

That's all folks!

6 Invoking autobuild

6.1 Synopsis

```
autobuild [OPTION]... FILE...
```

6.2 Description

Read and parse build logs to find project name, revision, build mode, build host type, build type (for cross compile builds), hostname, and timestamp, then print an HTML page with information and links to the logs.

See [Chapter 2 \[Tutorial\], page 2](#), for more discussion.

Mandatory arguments to long options are mandatory for short options too.

```
--abort
    Abort if any of the following values cannot be guessed: project
    name, revision, host type, and build type.

-n, --dry-run
    Just parse, don't print output.

-s, --skip-unknown
    Skip unparsable files.

-v, --verbose
    Explain what is being done.
```

For use when autobuild fail to guess the values properly:

```
-p, --project=STRING
    Specify project name.

--revision=STRING
    Specify project revision.

--mode=STRING
    Specify build mode (typically âdefaultâ).

--hosttype=STRING
    Specify host type (e.g., i686âpcâlinuxâgnu).

--buildtype=STRING
    Specify build type (e.g., m68kâuclinuxâelf). Different from
    hosttype for cross compiles.

--hostname=STRING
    Specify name of host log was created on.
```

`--timestamp=STRING`

Specify when build was made. Any date format will work, but 'YYYY-MM-DD+HH.MM.SS' is recommended.

`--status=STRING`

Outcome of build. Any string will work, but "ok" and "fail" are recommended for the two basic outcomes.

Other options:

`--help` Display this help and exit.

`--version`

Output version information and exit.

7 Invoking htmlize

7.1 Synopsis

Add markup to file and save as HTML.

```
htmlize [OPTION]... INFILE [OUTFILE [EMACS-MODE]]
```

7.2 Description

Launch Emacs and load *INFILE* into a buffer, then invoke a major mode for font locking, and render the fontified buffer as HTML, saving the result into *OUTFILE*.

Emacs must have ‘htmlfontify.el’ installed in its load-path.

If *OUTFILE* is not specified, it will use *INFILE* appended with .html.

If *EMACS-MODE* is not specified, *compilation-mode* will be used.

Options:

`--emacs COMMAND`

Use specified command to invoke emacs, e.g. "emacs21".

`--mode MODE`

Fontify file using specified Emacs mode, defaults to "compilation-mode". E.g., "sh-mode".

`-f, --force`

Overwrite *OUTFILE* if it exists, instead of exiting unsuccessfully with an error message.

`-u, --update`

Only write to *OUTFILE* when *OUTFILE* does not exist, or when *INFILE* is more recent than *OUTFILE*.

`-h, --help`

Display this help and exit successfully.

`--version`

Display version information and exit successfully.

Environment variables:

EMACS The Emacs editor command.

Simple example:

```
htmlize mybuildlog.txt mybuildlog.html
```

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