

GNU Alive

for version 2.0.2, 8 September 2013

Thien-Thi Nguyen

This manual is for GNU Alive (version 2.0.2, 8 September 2013).

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1 Introduction

Sometimes it's not enough to simply “get on the net”; what's important is to **stay on** the net. If the network is depressed, it might start ignoring you. You can use GNU Alive to cheer it up. But, first things first. Do you know what this command:

```
ping -i 149 ipaddr
```

does? If you answered “yes” and don't mind typing that command into a shell, then you **do not** need GNU Alive, as its functionality is roughly equivalent to that command. In this case, go ahead and save yourself some time and disk space and remove this package from your computer!

If you answered “no” instead, perhaps that's because you know what `ping ipaddr` does, but are not so sure about `-i 149`. Well, it turns out that `-i n` means repeat the ping every *n* seconds, instead of every second, the default. So now you know, and can blithely proceed to remove GNU Alive from your computer. Go ahead, what are you waiting for?

Still here? Fine. You must be curious, then, about the “roughly equivalent” functionality mentioned above. Surely there must be **something** to recommend GNU Alive. Was such profligate duplication always so?

1.1 Features

As previously established (see [Chapter 1 \[Introduction\], page 1](#)), GNU Alive is a package that provides a command-line program to periodically make network contact with (aka “ping”) a specified host. This section describes some differences between ‘ping’ and ‘alive’ (the program).

superficial

takes ‘--help’, ‘--version’

Like all proper GNU programs, ‘alive’ supports these options, displaying the requested information to stdout and exiting successfully. See [Chapter 2 \[Invoking alive\], page 4](#).

Note that Inetutils (see [Appendix A \[GNU Software\], page 7](#)) ping also supports these options, as it is also a proper GNU program. Other ping programs may or may not.

no arguments

To keep things simple and consistent, ‘alive’ takes no arguments, and instead reads configuration information from files in the *config directory*, by default `$HOME/.alive.d/`.

If that dir does not exist and your system has ‘xdgdirs’¹, then the the config directory is taken to be what ‘xdgdirs alive’ returns for `config-home` (you can influence this by setting `env var XDG_CONFIG_HOME`).

In any case, if the config dir or those files don't exist, ‘alive’ uses reasonable defaults.

¹ home page: <http://www.gnuvola.org/software/xdgdirs/>

reconfiguration without restart

Each configuration file is rescanned at the top of every loop iteration if its modification time differs from the last check. This means it's enough to edit a file (and wait); no need to restart the program. See [Chapter 3 \[Configuration\]](#), [page 5](#).

multiple hosts / no hosts

If you specify more than one host, 'alive' contacts them in a round-robin fashion. This reduces the annoyance level of some network administrators—always a good idea.

On the other hand, if you don't specify any hosts, 'alive' contacts localhost (typically, 127.0.0.1).

randomized period

The default *period*, i.e., time between successive contacts, is a random number of seconds in the range 149 to 420, inclusive.

profound

source code available at runtime

All GNU programs are distributed as source code, of course, but GNU Alive goes further; the source code is also available when you run the program.

This is because 'alive' is implemented as a *script*, a sequence of textual instructions for an “interpreter” program to read and evaluate, rather than a binary file.

Most users don't care about runtime access to source code, but perhaps you are not like most users.

implementation language: Guile Scheme

configuration language: sexps

GNU Alive uses Guile Scheme (see [Appendix A \[GNU Software\]](#), [page 7](#)) as the implementation language.

Each configuration file is a series of *sexps*, or structured expressions, amenable to the Scheme `read` procedure. (Actually, the syntax is designed to be a subset of what Scheme `read` can handle, to be friendly also to Emacs Lisp `read`.)

Most programmers don't care about sexps, but perhaps you are not like most programmers.

1.2 History

This section describes the evolution of GNU Alive purpose and design. There are two major development phases, both completely independent of the other.

1.2.1 Phase 1

[TODO: Describe evolution, as advertized—the following is only a description of the state immediately prior to beginning of phase 2 (see [Section 1.2.2 \[Phase 2\]](#), [page 3](#)).]

Originally, GNU Alive was called ‘qads1’, and had two purposes: to auto-login to certain Swedish dial-up ISPs²; and to maintain the connection via periodic network traffic. Its authors and maintainers were: Jakob "Kuba" Stasilowicz, Peter Strömberg, Kenth Garlov, Joachim Nilsson, and Jakob Eriksson.

It was implemented in C and ported to GNU/Hurd, several GNU/Linux variants, NetBSD, and FreeBSD. It used a text-based configuration file format for server name and port, user name, login, password, keepalive daemon type and policy, and so forth. Configuration could be done at system (in `/etc`) level, user (under `~`) level, and with corresponding command-line options.

There were two *keepalive* types, i.e., methods for generating network traffic: HTTP and “ping” (in spirit, not really ICMP). There was debug, pidfile, syslog support. Once running, the daemon could be queried and commanded by another invocation.

The distribution included an example configuration file, installed in `$(sysconfdir)`; an info-format manual, for `$(infodir)`; and two manpages: `alive.8` and `alive.conf.5`, installed under (in the appropriate subdirectory of) `$(mandir)`.

The last release of phase 1 GNU Alive was 1.4.0 (2005-02-22), released under GNU GPL v2+ (like all previous releases). There was a small change afterwards that was never released:

```
Author: Joachim Nilsson <jochaim.nilsson@member.fsf.org>
Date: 2005-11-19 12:23:22 +0000
```

```
Attempt to lower the impact of non-responding login servers.
Don't sleep too long before retrying, it's OK to fail.
```

```
src/http.c | 8 ++++----
1 files changed, 4 insertions(+), 4 deletions(-)
```

The source code comprised a handful of C files for low-level internals (cross-platform support, e.g., `strcasecmp`); a pair of Yacc/Lex input files with glue C code, to implement the configuration file parser module; and 19 `.h` and `.c` files, to implement the program itself.

Curiously, the usual mass of Autotools flotsam (i.e., `configure` script et al, see [Appendix A \[GNU Software\]](#), page 7) was checked into the repository. Release 1.4.0 was prepared using GNU Autoconf 2.59 and GNU Automake 1.8.5.

1.2.2 Phase 2

After several years without activity or release (see [Section 1.2.1 \[Phase 1\]](#), page 2), in 2012 Thien-Thi Nguyen volunteered to adopt GNU Alive with the intent to drop the auto-login functionality, leaving only the periodic ping, and furthermore, to do a rewrite from scratch. (This is why his name appears on the copyright notices, solely.)

Phase 2 GNU Alive is released under GNU GPL v3+, with a new feature set (see [Section 1.1 \[Features\]](#), page 1).

² Some contemporary projects in the same functionality space: TeliaTalker, CiC Login, ARAW, qADSL 1.2.x (from a previous maintainer), TeliaADSLCon, Telia ADSL Connection Keeper, “Clever use of netcat”, LF Connection Keeper. Most of these are defunct or obsolete nowadays.

2 Invoking alive

Running ‘alive’ is easy. Simply type ‘alive’ at the shell prompt followed by RET. You can use the shell’s i/o redirection facilities to filter/suppress the output, and its job control facilities to have ‘alive’ execute in the background. For example, with GNU Bash (see [Appendix A \[GNU Software\], page 7](#)):

```
$ alive >/dev/null &
```

Two other modes of operation are available:

```
$ alive --version
```

```
$ alive --help
```

That’s it! Quite boring, no? The real fun lies in playing with the configuration, either before starting ‘alive’, or while it runs. See [Chapter 3 \[Configuration\], page 5](#).

Additionally, ‘alive’ responds to certain signals in a more or less well-defined manner. To send it a signal, first note its *pid* (process id), displayed on the first line output:

```
$ alive
alive: 2012-08-11 16:24:26 restart (pid 9731)
[...]
```

The pid in this example is 9731. Next, use the command-line utility ‘kill’:

```
$ kill -INT 9731
```

or Emacs command `signal-process`:

```
M-x signal-process RET 9731 RET 2 RET
```

specifying this pid and the signal to send. All unhandled signals (not described in the following table) will cause ‘alive’ to die unceremoniously. To see a list, try ‘kill -l’. Handled signals, on the other hand, elicit an acknowledgement on stdout, e.g., ‘received signal 2 (SIGINT)’.

SIGALRM Interrupt the current `sleep(2)`. This is useful if you change the configuration and don’t want to wait for the next iteration.

SIGHUP

SIGUSR1 Restart. This is useful if you forget the pid.

SIGINT

SIGQUIT

SIGTERM Shut down, i.e., display ‘`exiting`’ and exit successfully.

3 Configuration

You can modify ‘alive’ behavior (even while it runs), by writing simple sexps into text files under the config directory (see [Section 1.1 \[Features\], page 1](#)). Information for a *configuration item foo* is written in file `foo`.

3.1 Generally Sexp-ing

The file format for the configuration items (see [Chapter 3 \[Configuration\], page 5](#)) is composed of comments, structured expressions, and whitespace.

comments A comment begins with ‘;’ (semicolon) and goes to the end of the line. If you use Emacs, you can add the comment:

```
;; -*- scheme -*-
```

on the first line to make comments appear differently, presuming syntax highlighting support is enabled.

structured expressions

A structured expression, for the purposes of GNU Alive, is one of:

integer A decimal¹ number. For instance, `42`.

symbol A contiguous sequence of non-whitespace characters that do not include ‘(’ (parentheses), ‘,’ (comma), ‘’ (apostrophe, also known as single-quote), or ‘”’ (double-quote). For instance, `www.gnu.org`.

That’s it!

whitespace

Everything else, that is, all the stuff between comments and structured expressions, is whitespace.

3.2 hosts

The `hosts` configuration item specifies who to ping. Each symbol is either a host name or IP address.

```
;;; hosts ( -*- scheme -*-)

;; gateway
10.0.0.1

;; various hosts, increasingly further out
foo.local-lan
bar.site-lan
baz.example.com

;;; hosts ends here
```

¹ (usually). GNU Alive will also accept `#b101010` (binary), `#o52` (octal) and `#x2A` (hexadecimal) without complaint.

3.3 period

The `period` configuration item specifies how long to wait between pings. The units are (integer) seconds. If there is one integer, `'alive'` uses it as a fixed period. If there are two, the first must be less than or equal than the second, and `'alive'` chooses a random number between (inclusively) the two.

```
;;; period (*- scheme *-)

;; quickly
;      3

;; languidly
;      391

;; randomly, but not too quickly
;      149 420

;;; period ends here
```

Appendix A GNU Software

This appendix describes some other GNU software used in the maintenance, design and implementation of GNU Alive. For more information about the GNU project, please visit <http://www.gnu.org/>.

Inetutils — <http://www.gnu.org/software/inetutils/>

Inetutils provides several command-line utilities for working with a network capable of speaking *IP* (Internet Protocol). Most relevant to GNU Alive is ‘`ping`’, which ‘`alive`’ invokes directly, to compose, send, receive and interpret the actual network (on the wire) packets; and “emulates” indirectly (i.e., sleeping and looping, as for ‘`ping -i period`’).

Guile — <http://www.gnu.org/software/guile/>

Guile provides the Scheme interpreter that actually executes the ‘`alive`’ script, a crucial role certainly. The design choice to use sexps for configuration items is also informed by Guile. Less known perhaps is that Guile plays a part also in the GNU Alive maintenance; e.g., several Scheme programs and modules are used to prepare its home page.

Autoconf — <http://www.gnu.org/software/autoconf/>

Automake — <http://www.gnu.org/software/automake/>

These are indispensable for maintenance. Autoconf is responsible for the `configure` script, and Automake is responsible for generating the various `Makefile.in` files that uphold the rest of the standard GNU build/installation system.

Bash — <http://www.gnu.org/software/bash/>

GNU Alive writes to standard output, and thus is amenable to the parent shell’s i/o redirection facilities. We use Bash to document an example of this (see [Chapter 2 \[Invoking alive\]](#), page 4).

Emacs — <http://www.gnu.org/software/emacs/>

Although Alive does not use Emacs directly, the configuration items can be easily manipulated by Emacs (see [Chapter 3 \[Configuration\]](#), page 5), and Emacs has good support for managing child processes, like Bash.

Why not consider writing a user interface to Alive for Emacs?

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Version 1.3, 3 November 2008

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