

Back to the Terminal

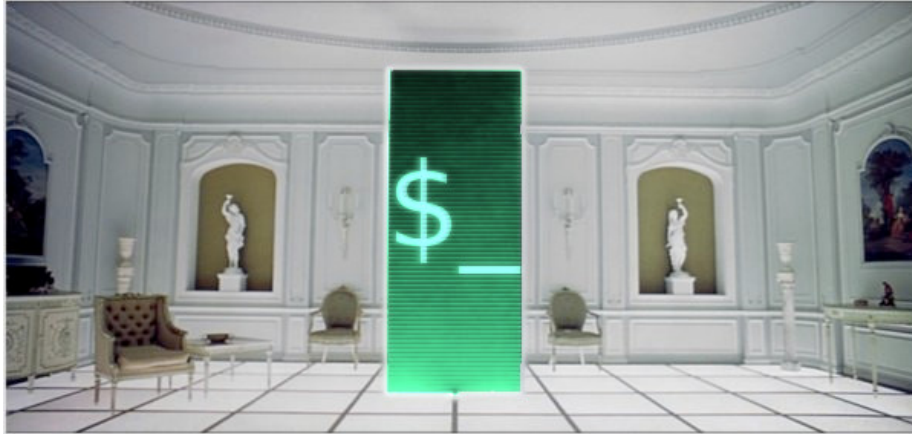


Figure 1: monolith

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Linux Users' Group of Davis, April 17, 2017

Pre-history

Before computers, there were [teletypewriters](#) (teletypes). In the 1920s, Telex, a global teletype network for businesses, was established. The first computers used these teletypes, later moving to text terminal screens (CRTs) – think MSDOS, the Unix command-line, old microcomputers (via TV sets or monitors), etc.

Trivia: “the legacy of teletypewriters lives on in the designations for serial ports and consoles (i.e., the text-only display mode), which have the prefix `tty`, such as `/dev/tty5` for the fifth virtual console.”

Text editors

- [GNU nano](#) (and `pico`)
- [Vim](#) (and `vi`)
- [GNU Emacs](#)

Dive deeper

Text manipulation and analysis tools, such as `grep`, `sed`, `awk`, the Perl language, and much more, while created long ago, are still helpful today!

Web browsing: Links

[Links](#) is an interactive terminal-based web browser.

IRC Chat

[Internet Relay Chat](#) is a client/server based protocol that provides text-based chat rooms (“channels”), as well as direct private messaging. Users connect to a server (and servers can be connected to each other, to expand an IRC network) using an IRC client.

As an example, LUGOD has its own channel, “`#lugod`”, registered on the [freenode](#) IRC network.

Along with graphical clients (such as Konversation and Adium), and even web-based interfaces to IRC, there are of course text-based clients. (Not surprising since IRC was created in 1988!)

- [ircII](#)
- [Irssi](#)

Slack

[Slack](#), the popular “cloud-based team collaboration software” launched in 2013, was originally based on an IRC backend, and offers many IRC-like features (channels, private messages). It’s even possible to [use an IRC client to connect to Slack!](#)

Instant Messaging and Social Media

Bitlbee

[Bitlbee](#) brings Instant Messengers and more to your IRC clients. [Among others](#), it supports:

- AIM / ICQ
- Google Talk, GMail/Google+ chat
- Twitter
- Facebook
- MSN
- Hipchat

Rainbowstream

[Rainbowstream](#) is a terminal-based Twitter client, allowing you to do almost anything a GUI app can:

- compose tweets
- send direct messages (DMs)
- search
- ‘favorite’ tweets
- browse trending topics
- follow hashtags

More web access and file sharing

googler

[googler](#) is a command-line tool for accessing Google Search, Google Site Search, and Google News from the terminal.

```
$ export BROWSER=links ; googler -n 2 lugod
"‘1 Linux Users’ Group of Davis (LUGOD): Serving the Sacramento
...http://www.lugod.org/Davis. Meetings 3rd Mondays, social gath-
erings 1st Tuesdays, mailing lists, installfests, special events. 2
LUGOD - Davis - LocalWikihttps://localwiki.org/davis/LUGODApr
15, 2008 - LUGOD stands for Linux Users’ Group of Davis. From
their website, they are “a 501(c)(7) non-profit computer club serving
Davis, California and ... googler (? for help) ““
```

curl

[curl](#) a non-interactive command-line tool (as well as library, used within other programs!) for transferring data with URLs.

- Protocols: DICT, FILE, FTP, FTPS, GOPHER, HTTP, HTTPS, IMAP, IMAPS, LDAP, LDAPS, POP3, POP3S, RTMP, RTSP, SCP, SFTP, SMTP, SMTPS, TELNET and TFTP
- SSL certificates
- HTTP POST, HTTP PUT, FTP uploading
- HTTP form based upload
- proxies
- cookies
- user+password authentication (Basic, Plain, Digest, CRAM-MD5, NTLM, Negotiate and Kerberos)
- file transfer resume
- proxy tunneling
- ... and more

```
$ curl http://www.lugod.org/ > lugod.html
% Total % Received % Xferd Average Speed Time Time Time
Current
Dload Upload Total Spent Left Speed
100 39489 0 39489 0 0 28328 0 --:--:-- 0:00:01 --:--:--
28327
```

Wget

[GNU Wget](#) is

- Protocols: HTTP, HTTPS and FTP
- can convert absolute links in downloaded documents to relative, so that downloaded documents may link to each other locally
- unattended / background operation
- useful for mirroring sites
- ... and more

```
$ wget lugod.org
--2017-04-05 22:21:37-- http://lugod.org/
Resolving lugod.org (lugod.org)... 138.197.203.91
Connecting to lugod.org (lugod.org)|138.197.203.91|:80...
connected.
HTTP request sent, awaiting response... 200 OK
```

```
Length: unspecified [text/html]
Saving to: 'index.html'
[ <=> ] 39,463 26.0KB/s in 1.5s
2017-04-05 22:21:39 (26.0 KB/s) - 'index.html' saved
[39463]
```

DropBox

[DropBox](#), the popular file hosting and collaboration service.

- Provides a integration into the Linux desktop GUI.
- Also provides a “dropbox” command-line tool, which allows you to sync, share files via public or private links, exclude files/directories, and more.

rTorrent

[rTorrent](#) is a “bittorrent” client (which also has a daemon mode, and includes `LibTorrent` library). “BitTorrent” is a communications protocol of peer-to-peer file sharing (“P2P”) which is used to distribute data and electronic files over the Internet, in which each part of a file downloaded by a user is transferred to other users.

termbin

[termbin.com](#) is a command-line ‘pastebin’ service. “pastebin” services are websites that host text-based content which can be accessed by a short URL meant for sharing online. In software development communities, for example, programmers use them to post long chunks of text (e.g., a log file, or copious output from a failed build) – especially in situations where a large paste would be obnoxious (e.g., in an IRC channel!)

Send data to `termbin.com`’s port 9999, e.g. by sending content to the Unix “netcat” (`nc`) tool’s `stdin`, and it will be stored, and a short URL will be returned. e.g.:

```
$ echo "just testing!" | nc termbin.com 9999
http://termbin.com/ad34
```

Email

Mutt

“All mail clients suck. This one just sucks less.”

[Mutt](#) is a terminal-based email client.

- Mailbox formats (mbox, Maildir)
- Protocols (POP3, IMAP, ...)
- MIME support, PGP/GPG, S/MIME integration
- Hundreds of configuration directives and commands
- Keybindings can be changed
- Macros can be written
- Color/layout of most of the interface can be modified
- “Hooks” allow settings to change based on criteria (e.g., current mailbox, outgoing message recipients, etc.)
- Patches/extensions for NNTP support, sidebar, etc.
- Conversation threading(!!!)
- Regexp searching of various parts of messages (to, from, subject, body, etc.)

And more

- Pine
- Elm
- Gnus
- ... and others

Terminal multiplexers

Need to do more than one thing at a time?

If you’re using a terminal application in a GUI, you can just open multiple terminals; or if it supports ‘tabs’, open multiple tabs; or do both!

If you’re using virtual terminals (i.e., no GUI at all) on Linux, you can switch between them (e.g., [Alt]+[F1], [Alt]+[F2], etc.)

But if you’re connected remotely, or need to do more complex actions (scroll back, copy/paste within or between terminal sessions, etc.), you’ll want a terminal multiplexer.

- [GNU Screen](#)
 - [tmux](#)
-

Creating text documents

Markdown

[Markdown](#) is a text-to-HTML conversion tool. “The idea is that a Markdown-formatted document should be publishable as-is, as plain text, without looking like it’s been marked up with tags or formatting instructions.” Enter text like so:

```
# Title
## Header
Here is my text.
```

and it produces:

Title

Header

Here is my text.

Check it out This presentations markdown source (created using Vim text editor): [back-to-terminal.md](#), and HTML version [back-to-terminal.html](#).

Pandoc

[Pandoc](#) is a “swiss-army knife” for text formats.

It converts from:

- markdown
- HTML
- DocBook
- LaTeX
- Microsoft Word DOCX
- LibreOffice ODT
- EPUB
- ... and more

To all those, plus

- all those, plus
- TexInfo, Groff man pages
- PDF (via LaTeX)
- AsciiDoc
- MediaWiki markup
- ... and more

Check it out This presentation's markdown, converted to PDF using Pandoc: [back-to-terminal.pdf](#).

Spreadsheets

Long before MicroSoft Excel, there was the original spreadsheet: "Visicalc". originally released in 1981 for the Apple II personal computer (64KB RAM, 8-bit 6502 CPU, 40x25 or 80x25 text screen). So of course there are terminal-based spreadsheet available today!

sc - spreadsheet calculator

Based on `vc`, written in 1982 by James Gosling (creator of the Java language), `sc` was also created in the 1980s!

Motivation for this talk (why me, why now?)

"Get work done" via my Atari 8-bit home computer!

From the 1980s:

- Atari 1200XL (8-bit 6502 CPU @ 1.79MHz) with 256KB RAM upgrade
- Atari 850 serial interface (max 19.2Kbps)

From modern times:

- Lantronix UDS-10 (serial->ethernet)
 - "Ice-T" 80-column VT-101 terminal program
 - Linux laptop with `telnetd` service running
-

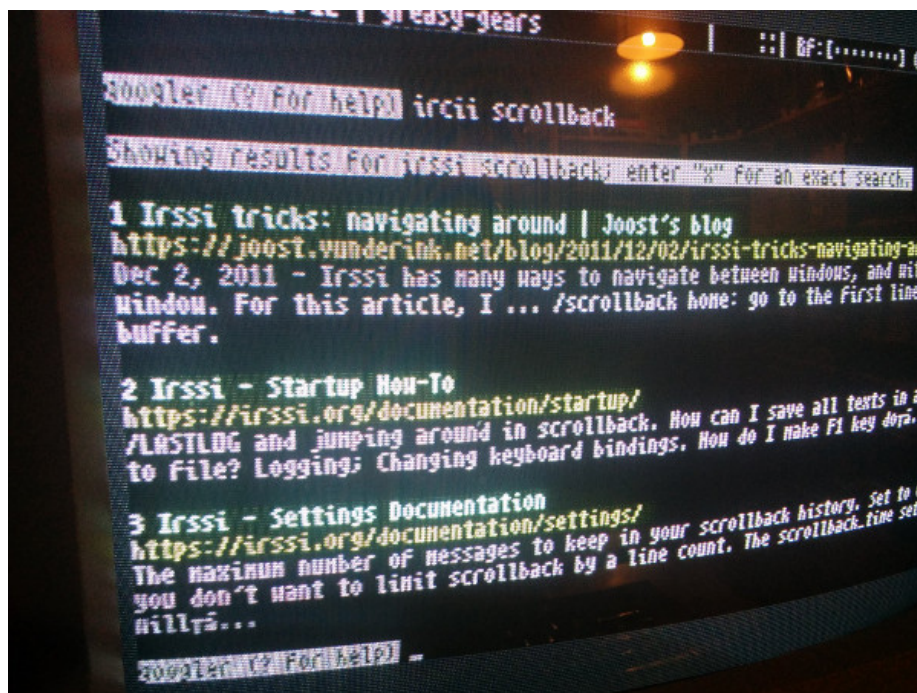


Figure 2: googler via Atari

Do even more!

- Manipulate photos and other images (ImageMagick, NetPBM, GIMP (yes!))
- Edit audio files (SoX, lame, ffmpeg)
- Alter video files (mencoder, ffmpeg, VideoLan/VLC, HandBrake)
- . . . undoubtedly so much more!

Check out [Command-Line Application Roundup](#) from [Linux Journal magazine, issue 198](#) (October 2010), or search the web (via Links!?) or ask around (LUGOD's IRC channel and mailing lists!?) for even more!