Cygwin

Get that Linux feeling - on Windows

What is it

- Cygwin is:
    - A collection of open source GNU tools that provide linux like experiences on windows
    - A DLL that gives POSIX API functionality for programs
- Cygwin is NOT:
    - Native compatibility. You must compile from source to get benefit
    - A magic solution that will give windows native apps access to unix functionality.

A brief history

- Started in 1995 by Steve Chamberlain, a Cygnus engineer
- He noticed that windows used COFF and GNU already supported this and figured out how to target GCC to produce executables that could run on windows
- Initially it was called gnuwin32 then changed to Cygwin32
- In 1999 Cygnus offered Cygwin 1.0 as a commercial product

So this is like Wine but for windows right?
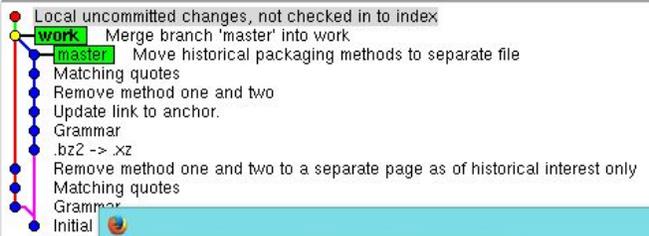
So why would I want to use this?

- Especially if you are stuck in Windows 10 home, or Windows 7 WSL won't work for you
- You want to cross compile code and then ship it with the Cygwin dll
- X windows ssh tunneling on windows
- You want your windows shell experience to be more linuxy (less now that power shell is a thing)

What all is in the repos?

- Shells (i.e. command line interpreters): bash, dash, fish, pdksh, tcsh, zsh
- File and system utilities: coreutils, findutils, util-linux
- Text utilities: grep, sed, diff, patch, awk
- Terminals: mintty, rxvt, screen
- Editors: emacs, joe, mined, nano, vim
- Remote login: ssh, rsh, telnet
- Remote file transfer/synchronization: ftp, scp, rsync, unison, rtorrent

- Compression/archiving: tar, gzip, bzip2, lzma, zip
- Text processing: TeX, groff, Ghostscript
- Programming languages: C, C++, Objective-C, Fortran, Gambas, Perl, Python, Ruby, Tcl, Ada, CLISP, Scheme, OCaml, Prolog
- Development tools: make, autotools, flex, bison, doxygen
- Version control systems: cvs, subversion, git, mercurial
- Servers: Apache, BIND, PostgreSQL, Pure-FTPd, OpenSSH, telnetd, exim, UW IMAP
- Clients: Mutt (email), Lynx (web), Irssi (IRC), tin (newsgroups)

But wait there's more! Cygwin/X

- There is a version of X Windows as well...

- Local programs include
  - Terminals: rxvt-unicode, xterm
  - Editors: emacs-X11, gvim
  - Text processors/viewers: LyX, xpdf, xdvi

- X tunnels over ssh!

- Can not do the other direction though

```xml
<itemizedlist>
<listitem>
<para>
Windowed or rooted mode.
<parameter>(default)</parameter>
</para>
<para>
Each X screen appears as a single Windows window and all X windows are contained
within those windows.  (the Windows window contains the X root window for the
screen)
</para>

<note>
<para>
This is typically used to present a virtual full-screen X session using the X
desktop environment or window manager of your choice, or for remote XDMCP
sessions.
</para>
</note>

<para>
The <parameter>-nodecoration</parameter> option can be used to remove the
Windows window decorations from the X screen window.  Alternatively, the
<parameter>-fullscreen</parameter> option can be used to show the X screen in
exclusive fullscreen mode.
</para>

</listitem>

<listitem>
<para>
Multiwindow mode.
(<parameter>-multiwindow</parameter>)
</para>
<para>
Each top-level X window appears in its own Windows window.
</para>

<note>
<para>
This is typically used to work with local or remote X applications, integrated
into your native Windows desktop.
</para>
</note>
</listitem>
```

U:**-   configure.xml   14% L64   CVS-1.10   (nXML Invalid Fly WS Rbow) Sat Jan 31 17:34
Auto-saving...done

---

gitk: htdocs

Local uncommitted changes, not checked in to index
work   Merge branch 'master' into work
master   Move historical packaging methods to separate file
Matching quotes
Remove method one and two
Update link to anchor.
Grammar
.bz2 -> .xz
Remove method one and two to a separate page as of historical interest only
Matching quotes
Grammar
Initial

Jon TURNEY <jon.turney@droneco 2014-05-08 20:26:13
Jon TURNEY <jon.turney@droneco 2014-04-30 11:17:42
Jon TURNEY <jon.turney@droneco 2014-04-30 10:32:48
Jon TURNEY <jon.turney@droneco 2014-04-30 10:32:36

Configuring Cygwin/X — x.cygwin.com/docs/ug/configure.html#configure-cygwin-x-wind

Cygwin/X can be configured to present X windows for an X screen

- Windowed or rooted mode. (default)

Each X screen appears as a single Windows window and all X

Note: This is typically used to present a virtual full-scre

The –nodecoration option can be used to remove the Windo

by using a utility like **xroot**, which provides a clickable area of root window.

Home   Next
Command line parameters

---

jon@tambora /wip/cygwin-x-doc/doc/build

```
dvipdf -f cygwin-x-ug.dvi > cygwin-x-ug.pdf
This is dvips(k) 5.994 Copyright 2014 Radical Eye Software (www.radicaleye.com)
' TeX output 2015.01.31:1731' ->
</usr/share/texmf-dist/dvips/base/tex.pro>
</usr/share/texmf-dist/fonts/enc/dvips/base/8r.enc>
</usr/share/texmf-dist/dvips/base/texps.pro>
</usr/share/texmf-dist/dvips/base/special.pro>
</usr/share/texmf-dist/dvips/base/color.pro>.
</usr/share/texmf-dist/fonts/type1/urw/helvetic/uhvb8a.pfb>
</usr/share/texmf-dist/fonts/type1/urw/courier/ucrbo8a.pfb>
</usr/share/texmf-dist/fonts/type1/urw/courier/ucrb8a.pfb>
</usr/share/texmf-dist/fonts/type1/urw/helvetic/uhvbo8a.pfb>
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</usr/share/texmf-dist/fonts/type1/urw/helvetic/uhvr8a.pfb>
</usr/share/texmf-dist/fonts/type1/urw/times/utmr8a.pfb>
</usr/share/texmf-dist/fonts/type1/urw/times/utmri8a.pfb>
</usr/share/texmf-dist/fonts/type1/urw/times/utmb8a.pfb>[1] [2] [3] [4] [1]
[2<./figures/cyi01welcome.ps>] [3<./figures/cyi02installoption.ps>] [4
<./figures/cyi03installto.ps><./figures/cyi04directory.ps>] [5
<./figures/cyi05proxy.ps>] [6<./figures/cyi06mirror.ps>] [7
<./figures/cyi07packages.ps><./figures/cyi08downloading.ps>] [8
<./figures/cyi09installing.ps>] [9<./figures/cyi10createicons.ps>] [10] [11]
[12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26]
[27] [28] [29] [30] [31]
cat cygwin-x-ug.ps | gzip -f > cygwin-x-ug.ps.gz
make[2]: Leaving directory '/wip/cygwin-x-doc/doc/build/ug'
make[1]: Leaving directory '/wip/cygwin-x-doc/doc/build/ug'
make[1]: Entering directory '/wip/cygwin-x-doc/doc/build'
make[1]: Nothing to be done for 'all-am'.
make[1]: Leaving directory '/wip/cygwin-x-doc/doc/build'

jon@tambora /wip/cygwin-x-doc/doc/build
$
```

This is great where do I learn more?

- https://www.cygwin.com/
- https://x.cygwin.com/
- https://en.wikipedia.org/wiki/Cygwin
- https://www.physionet.org/physiotools/cygwin/
- https://www3.ntu.edu.sg/home/ehchua/programming/howto/Cygwin_HowTo.html

Demo time!