Cygwin

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Background & History

◆Needs for Gnu & Open Source Tools on Win32

❖Porting of Unix Tools One-by-one was Tedious

❖Providing of POSIX Environment was Preferable

⤫Microsoft Announced POSIX Support for WinNT4, But …?

⤫Personal Users use Win98 etc. instead of WinNT etc.

❖Competitive Solutions

⤫Interix/OpenNT (Commercial, later bought by Microsoft),
    Cygnus/GNU-win32 (OpenSource, later Redhat/Cygwin),
    AT&T/UWin (Free but not OpenSource)

⤫Evaluated OpenNT and Gnuwin32/Cygwin in 1998
    and Cygwin (beta18) was Already Mature Enough including Sockets

◆ Ported Several e-Linac Software on to Cygwin (There was no Setup.exe yet)

Cygwin API - System Calls

◆Cygwin API

❖Originally aimed at POSIX

❖Currently Supports Most Linux facilities,
    POSIX/System5/BSD
    System Calls and System Subroutines Including pthread

❖Cygwin1.dll (+ Registry and Shared Memory)
    Provides Most of the Functionalities

❖Try to Utilize Windows Services Transparently
    as much as Possible with Some Compromise

❖Only System5 IPC Needs Another Process
    "cygserver" (formally "IPC-Daemon2")

❖Designed to Support Open Source Tools

❖Development of Windows-native Application is also Possible

❖Development of dll Possible

❖Good Support from Redhat

Cygwin Applications/Environment

◆ Most of the Open-Source Application Tools on Unix are Ported

❖ Fileutils, XXXutils, Compilers, Debuggers, Editors, Internet Clients, Interpreters, Development Tools, Document Tools,

⌖ Very Quick to Follow Updates (Because of Centralized Management)

❖ Servers

⌖ Sshd, Apache (php etc.), Squid, PostgreSQL, Inetutils, Xinetd, Proftpd, NFS, …

❖ X11

⌖ Many of Standard X11 Clients

⌖ X11 Server with Root-less Capability

⌖ Ghostscript, etc.

❖ EPICS

⌖ Client could be Compiled in 2000 with Cygwin 1.1/EPICS 3.13

⌖ Now Many people Use EPICS 3.14 on Cygwin

Hint 1

❖ Shell

- ⌑ See the definition of "Cygwin" Icon ("Command Prompt" +Bash)

- ⌑ Replace with Rxvt + Tcsh, and your own .cshrc

  » Example
  @echo off
  rem cygtcsh.bat k.furukawa may.13.2001, apr.4.2002.
  set path=c:¥cygwin¥bin;%path%
  ¥cygwin¥bin¥rxvt -fn Courier -geometry 80x40 -sl 1000 -e /usr/bin/tcsh -l

❖ File Sharing

- ⌑ Samba, scp (ssh), …

  - ◆ ln -s /cygdrive/c /c ; ln -s /cygdrive/d /d ; …

❖ Servers

- ⌑ Sshd

  - ◆ /usr/bin/ssh-host-config ; crypt xxx ; paste result into /etc/passwd

  - ◆ sshd

- ⌑ SystemV IPC

  - ◆ /usr/bin/cygserver-config

  - ◆ cygserver &

Hint 2

❖ "sh" is not complete "sh", "bash" is not "sh"

❖ Line Terminater

⌗ Line-feed is the default (bin-mode)
　　　Unix : Line-feed,
　　　DOS/Windows : Carriage-return + Line-feed
　　　MacOS 9 and before, OS9 : Carriage-return

❖ Compiler Predefined Symbol

⌗ `__CYGWIN__`, `__CYGWIN32__`, `__i386__`, `__unix__`, etc
　　But not `_WIN32`

　◆ We should use "`__CYGWIN__`" for Cygwin and "`_WIN32`" for Windows-native.

❖ .EXE File Name Extension

⌗ Most Gnu Tools support it Now including autoconf

Documentations

❖ Main Site

  ⌑ <URL : http://cygwin.com/docs.html>

❖ Document Installed under Cygwin

  ⌑ /usr/share/man/ : Manual Pages

  ⌑ /usr/(share)/doc/ ; /usr/share/info/ : Standard Docs

  ⌑ /usr/(share)/doc/Cygwin/ : Modifications for Cygwin

  ⌑ /etc/setup/ : List of Installed Packages

❖ Others (now somewhat old)

  ⌑ <URL:http://www.nanotech.wisc.edu/~khan/software/gnu-win32/>

❖ Recommended packages

  ⌑ binutils, bzip2, diffutils, findutils, gcc, grep, gv, gzip, less, make, ncftp, openssh, perl, rsync, rxvt, tar, tcsh, tetex, wget, x11