

Cygwin/XFree86 User's Guide

Harold L Hunt, II

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by Harold L Hunt, II

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Document installation with setup.exe.

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Document the -lesspointer parameter.

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Document the -nodecoration parameter.

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Add information about each command line parameter.

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Displaying Remote Clients - Added a section on using ssh; moved the telnet steps into a new section. Thanks to Steinar Bang for pointing

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Bumped the revision number to 1.0.0 to indicate that all planned content is now present.

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Change the download directory from / to /tmp.

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Updated the Cygwin/XFree86 downloading instructions with the new archive names that are created by the XFree86 build-bindist script

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Chapter 1. Cygwin/XFree86 Overview

Cygwin/XFree86 is a port of XFree86 to Cygwin; Cygwin provides a UNIX-like API on the Win32 platform. As of 2003-01-01 the supported Win32 platforms are Windows 95, Windows 98, Windows Me, Windows NT 4.0, Windows 2000, and Windows XP.

Chapter 2. Setting Up Cygwin/XFree86

Cygwin/XFree86 Contents

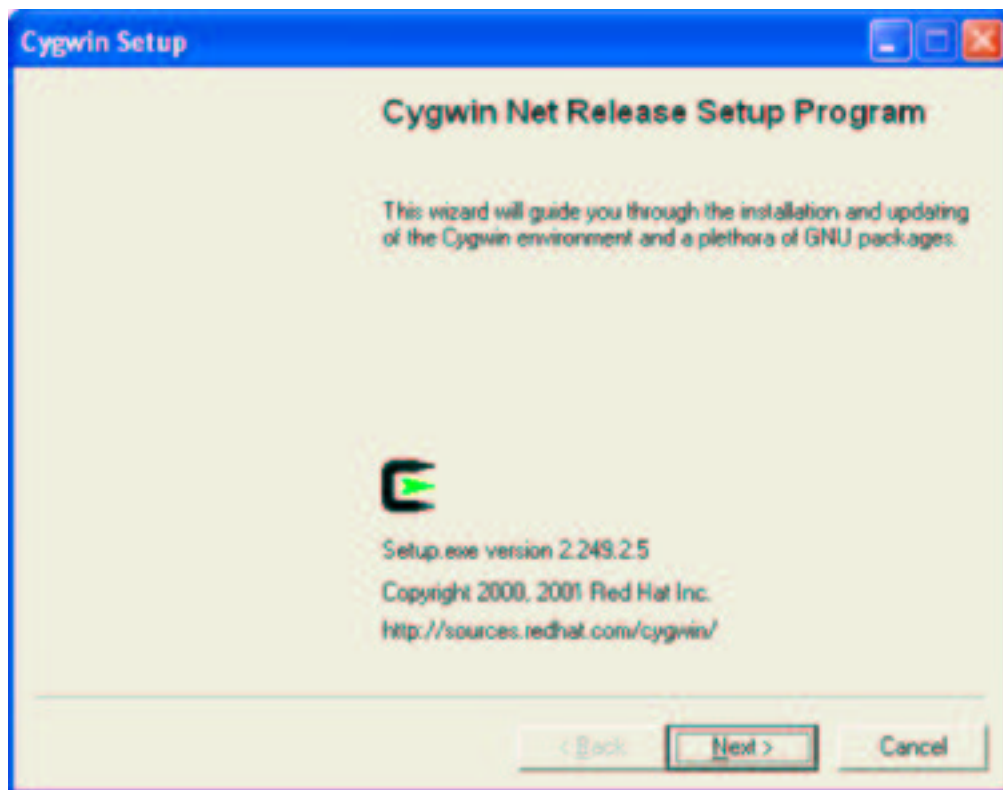
Cygwin/XFree86 consists of two parts: Cygwin, a port of the GNU tools to Win32, and Cygwin/XFree86, a port of XFree86 to Win32. Both parts of Cygwin/XFree86 are needed to successfully run an X Server on a Win32 platform.

Installing Cygwin/XFree86

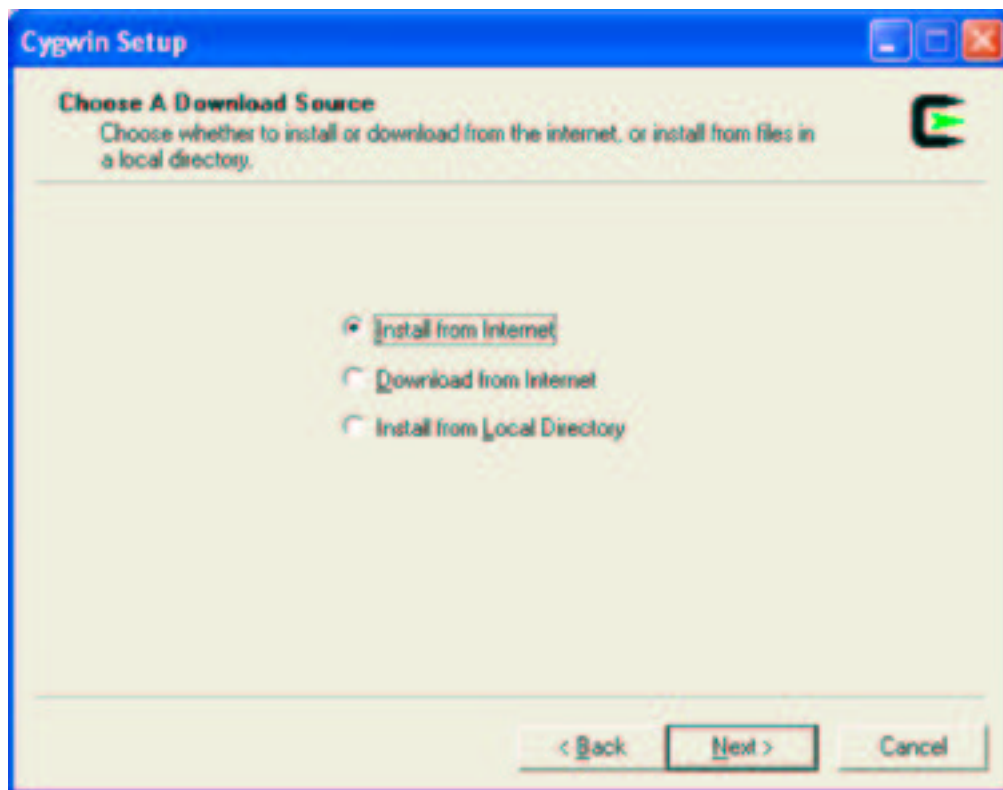
Cygwin tools are, in the words of the Cygwin development homepage, <http://cygwin.com/>, “ports of the popular GNU development tools and utilities for Windows 95, 98, and NT. They function by using the Cygwin library which provides a UNIX-like API on top of the Win32 API.” Cygwin allows the compilation of the XFree86 source on Win32; several patches were made to the XFree86 source to make XFree86 actually compile and run under Cygwin; those patches have been merged into the XFree86 4.0 source tree.

Cygwin has a nice setup program that downloads and installs the necessary Cygwin packages for you.

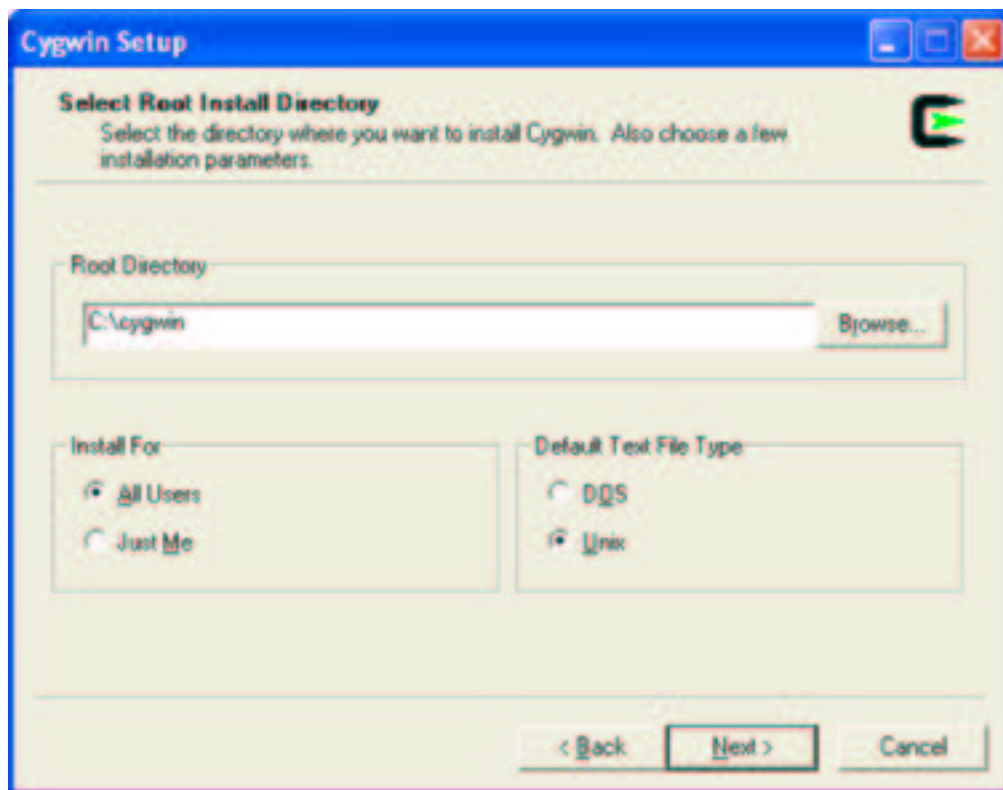
1. Open the Cygwin, <http://cygwin.com/> page in your web browser
2. Click the “Install Cygwin Now” link in the upper-right hand corner of the page; or, click the “Install” link next to “Latest net release:”, which should be near the top of the page in the main content area. This link downloads `setup.exe` from the primary Cygwin server; save `setup.exe` to the directory that you would like to store the downloaded packages in (e.g. `c:\cyginstall`); do not save `setup.exe` to `c:\cygwin`, as that is the default directory for the extraction and installation of the downloaded packages.
3. Run `setup.exe`, you will see the welcome screen:



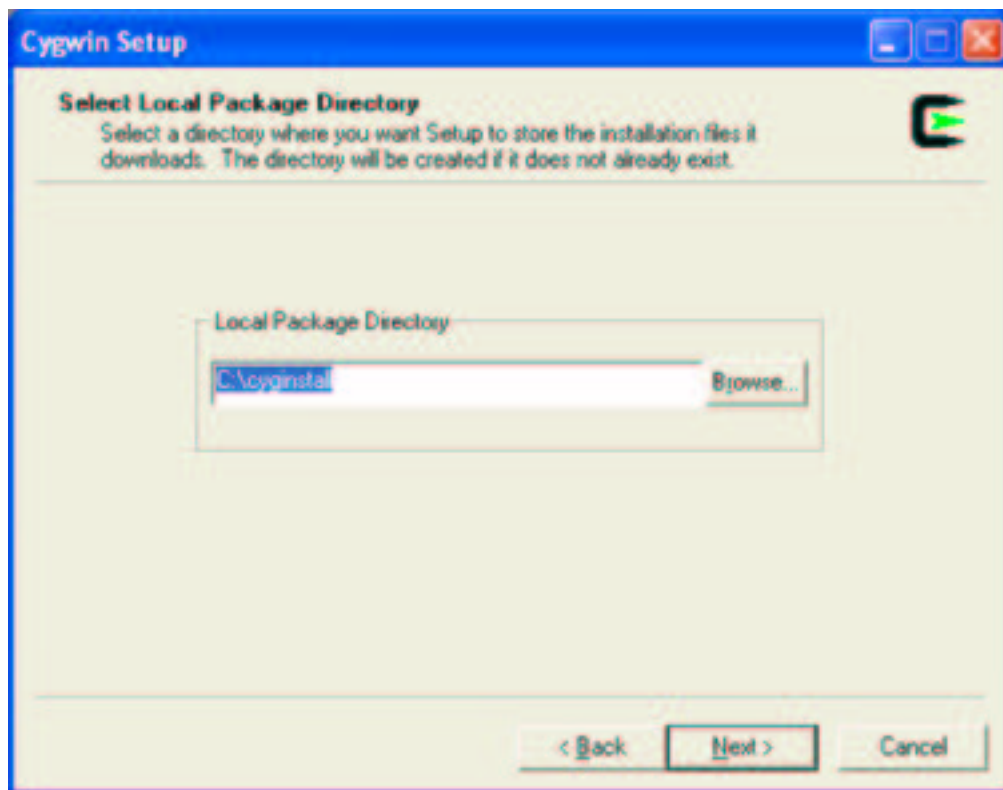
4. Click Next to proceed to the next screen.
5. Choose, Install from Internet, this will still save the package files to your download directory so that you can install Cygwin on any number of machines:



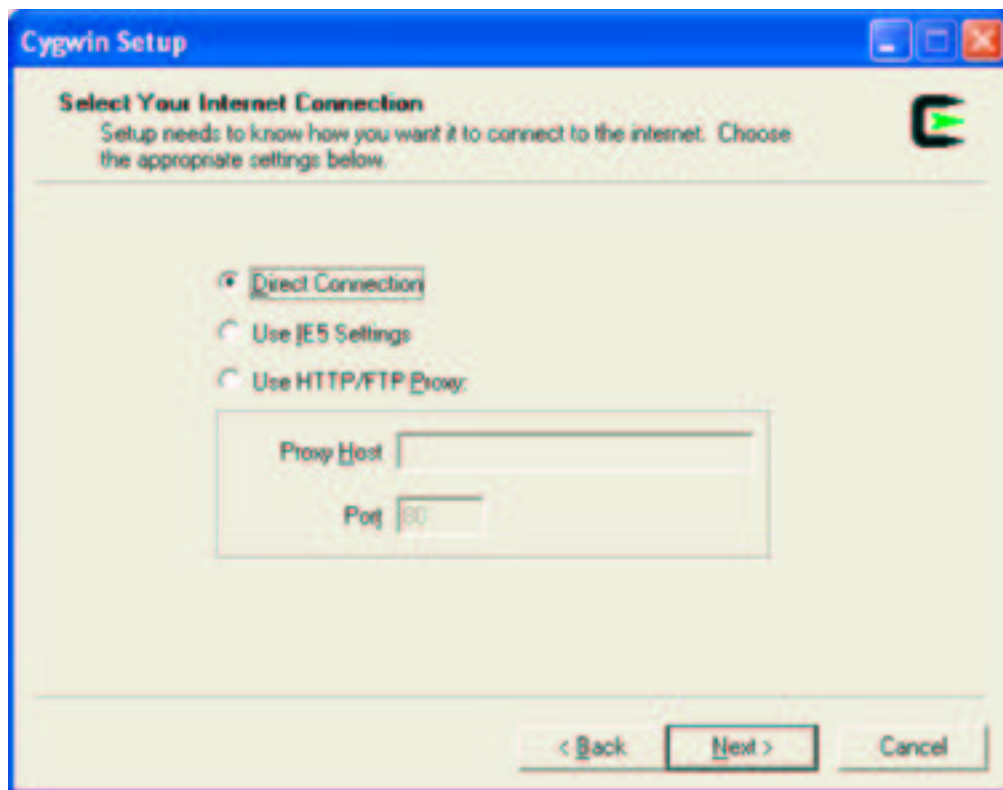
6. Click Next to proceed to the next screen.
7. The default Install Root is `c:\cygwin`; this should be fine for most installations. Leave Default Text File Type as UNIX. If you have several users on your NT machine, and you are logged in with local administrative privileges, you may wish to set Install For to All, but the default of Just Me will work fine for single user machines.



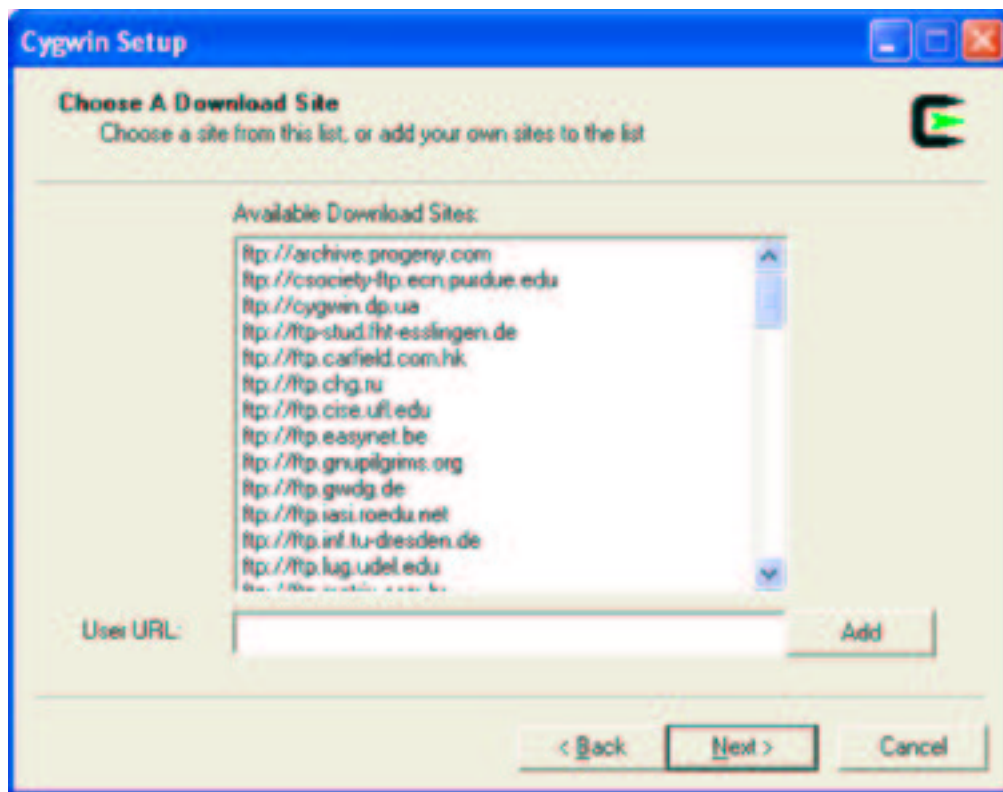
8. Click Next to proceed to the next screen.
9. Local Package Directory should default to the directory that you ran `setup.exe` from:



10. Click Next to proceed to the next screen.
11. Choose your proxy setup, or, just choose Direct Connection to limit the scope of download problems:



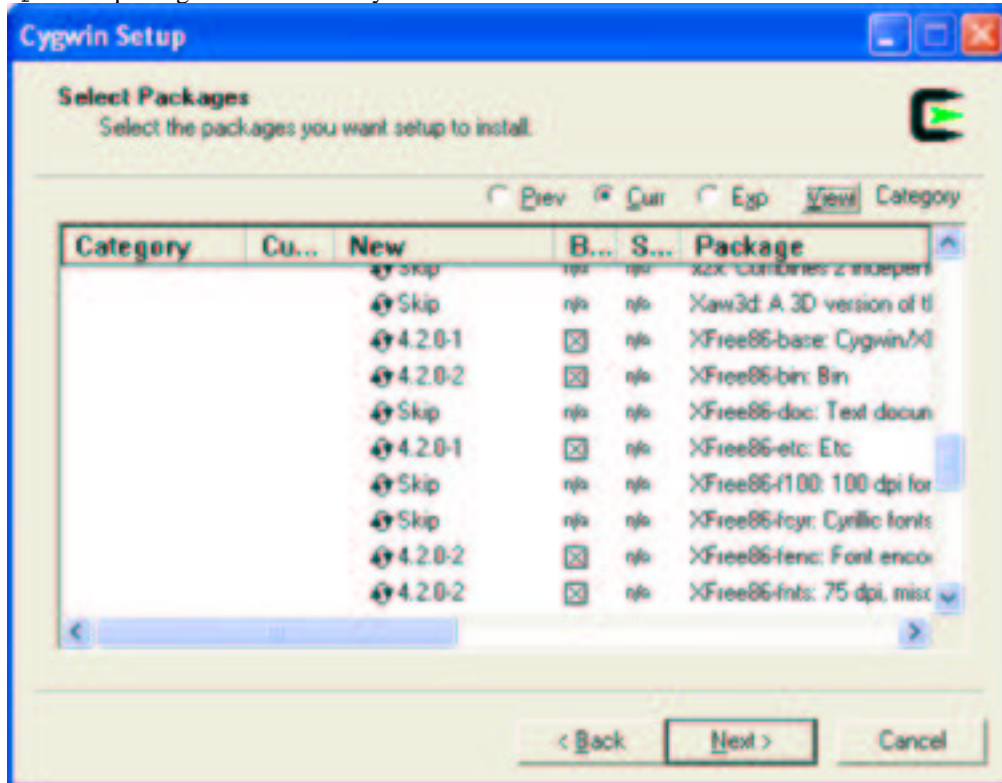
12. Click Next to proceed to the next screen.
13. Select your nearest mirror for downloading:



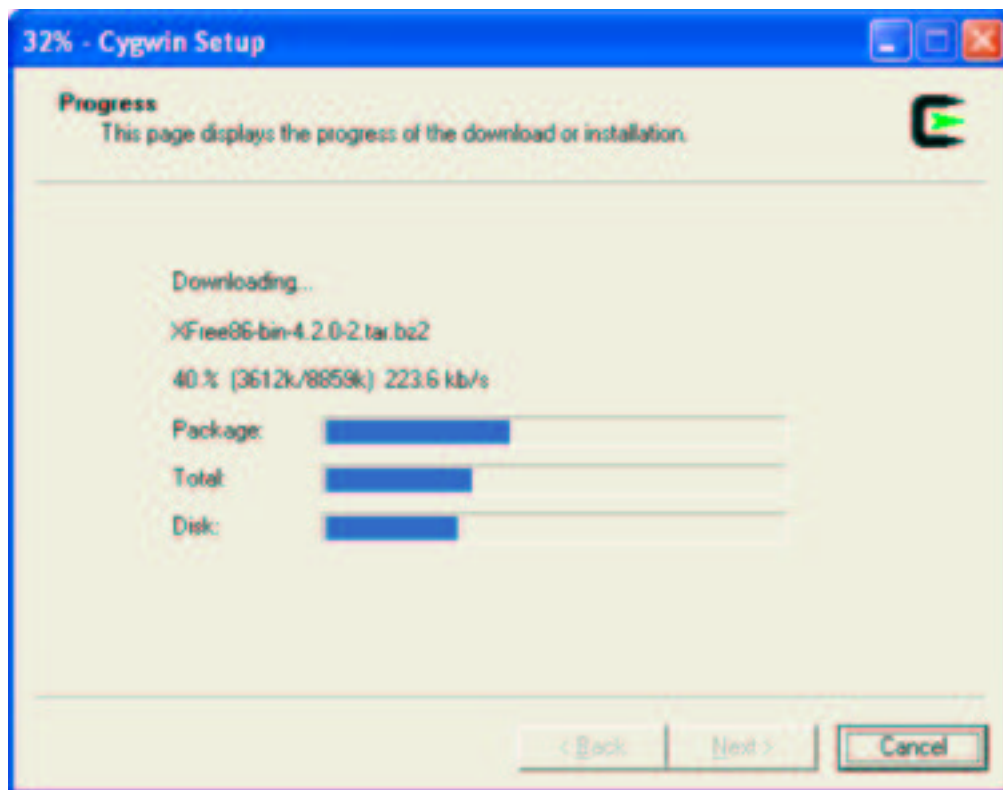
14. Click **Next** to proceed to the next screen; setup will download a list of available packages as it moves to the next screen.
15. On the next screen you will select the packages that will be downloaded and installed. A listing of the Cygwin/XFree86 packages is given below; a listing of the general Cygwin packages would be beyond the scope of this document.
 - XFree86-bin (8.7 MiB; required, executables for xterm, twm, etc.)
 - XFree86-doc (1.26 MiB; optional, formatted documentation)
 - XFree86-etc (470 KiB; required, configuration files for the X Server and programs in XFree86-bin)
 - XFree86-f100 (11.9 MiB; optional, 100 dpi fonts (75 dpi fonts are used by default))
 - XFree86-fcyr (364 KiB; optional, Cyrillic fonts)
 - XFree86-fenc (337 KiB; required, font encodings)
 - XFree86-fnts (15.9 MiB; required, 75 dpi fonts)
 - XFree86-fscl (1.96 MiB; optional, Speedo and Type1 scalable fonts)
 - XFree86-fsrv (202 KiB; optional, X Font Server)
 - XFree86-html (904 KiB; optional, documentation html format)
 - XFree86-jdoc (84 KiB; optional, XFree86 Japanese documentation)
 - XFree86-lib (83 KiB; required, X11R6/lib/ files)
 - XFree86-man (548 KiB; optional, **man** pages)

- XFree86-nest (1.1 MiB; optional, Xnest nested X Server)
- XFree86-prog (595 KiB; optional, additional files needed to compile programs for Cygwin/XFree86)
- XFree86-prt (791 KiB; optional, X Print (Xprt) server)
- XFree86-ps (4.41 MiB; optional, documentation in Postscript format)
- XFree86-startup-scripts (10 KiB; required, example X Server and client startup scripts)
- XFree86-vfb (1.22 MiB; optional, X Virtual Frame Buffer (Xvfb) server)
- XFree86-xserv (1.19 MiB; required, the Cygwin/XFree86 X Server)
- XFree86-xwinclip (6 KiB; optional, provides clipboard integration between Windows and Cygwin/XFree86)

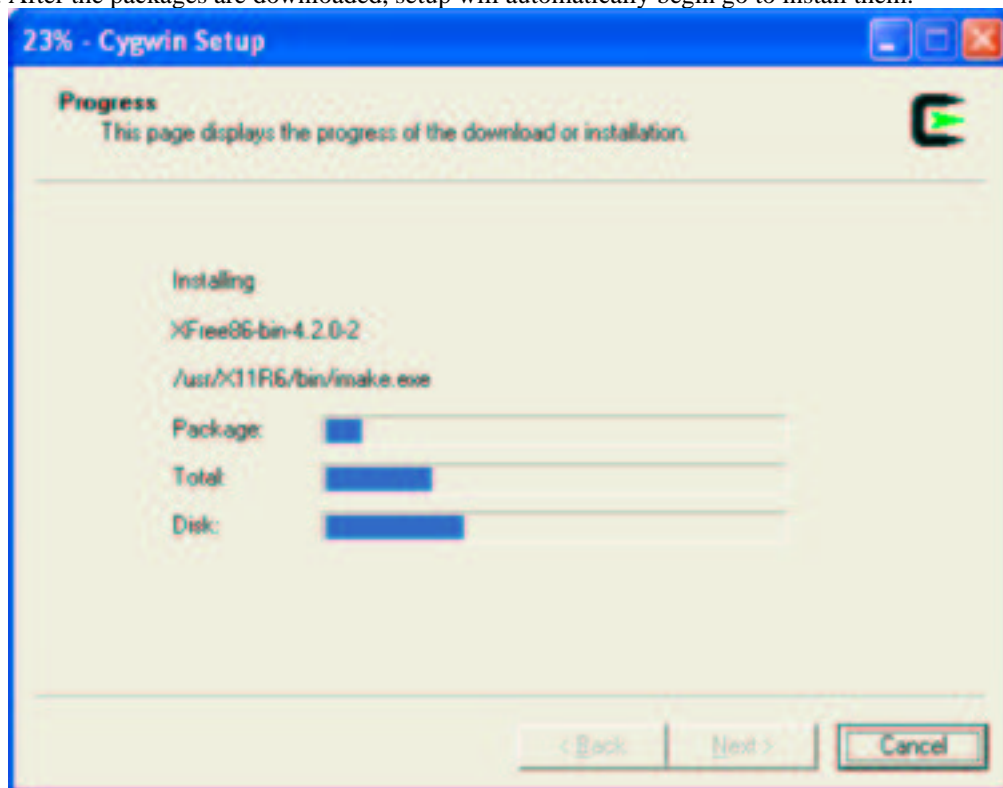
16. You must select the XFree86-base package, which is located in the XFree86 category. The XFree86-base package is a helper package that automatically selects a working set of packages for you that will allow Cygwin/XFree86 to work. You may also want to ensure that the inetutils and openssh packages are selected if you wish to use **telnet** and **ssh** to connect to remote machines.



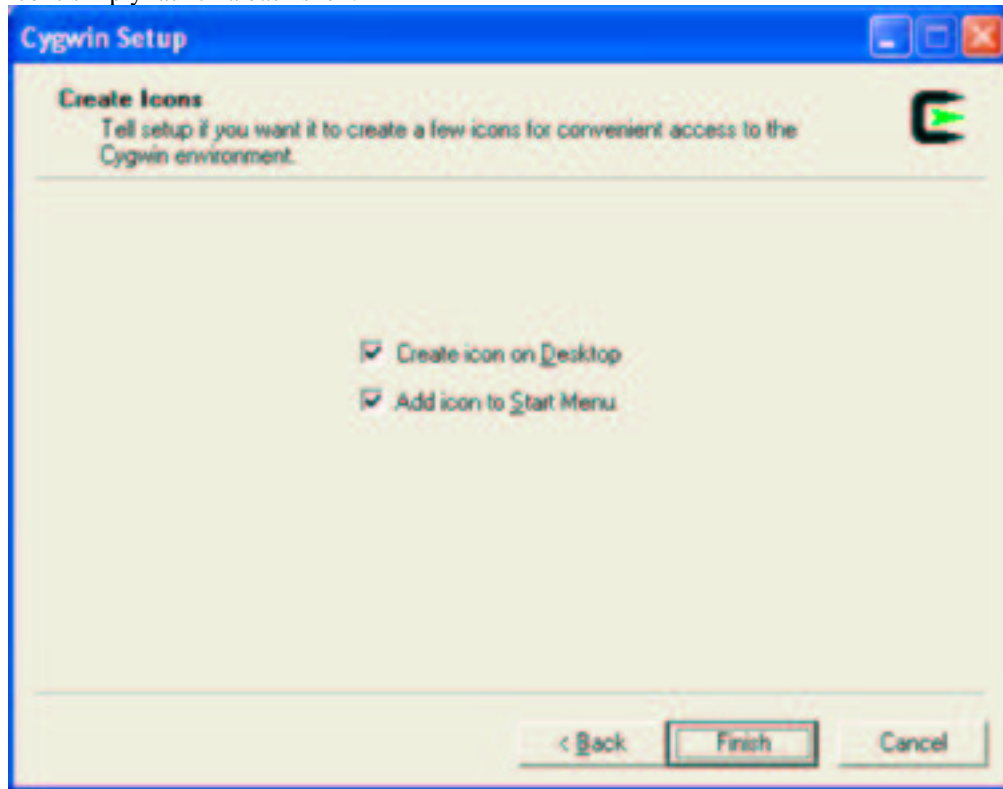
17. Click **Next** to begin the download process, you may want to try another mirror if you see a "Connecting" message on this screen for a long period of time:



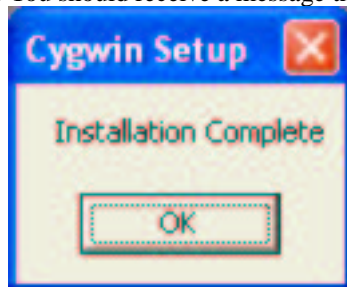
18. After the packages are downloaded, setup will automatically begin to install them:



19. I highly recommend allowing Cygwin Setup to create Desktop and Start Menu icons for you; these icons simply launch a bash shell:



20. Click Next to proceed to the next screen.
21. You should receive a message that the installation has completed.



You have now successfully installed Cygwin/XFree86. Proceed to Chapter 4 for instructions on how to use Cygwin/XFree86.

Chapter 3. Configuring Cygwin/XFree86

Configuration Overview

Cygwin/XFree86 settings are configured primarily through command-line parameters passed to `xwin.exe`. Cygwin/XFree86 comes with a file called `startxwin.bat` that launches an X Server, a terminal, and a window manager.

Command Line Parameters

Cygwin/XFree86, by default, runs in windowed mode with the largest window that will fit on your Windows desktop, using the best performing engine that is installed on your system; you do not need to pass any parameters to **XWin.exe** to use the default behavior. Below is the syntax for **XWin.exe** parameters.

XWin.exe

```
[-screen screen_number width height ...]  
[-engine engine_number ]  
[-fullscreen [-depth depth_in_bits_per_pixel ] [-refresh refresh_rate_in_hertz ]]  
[-nodecoration]  
[-lesspointer]  
[-emulate3buttons timeout_in_milliseconds ]  
[-[no]winkill]  
[-[no]unixkill]
```

Below is an example command line for **XWin.exe**.

```
XWin.exe -screen 0 800 600 -fullscreen -depth 32 -refresh 85  
-emulate3buttons 100 -nowinkill -unixkill
```

Table 3-1. Parameter Descriptions

| Parameter | Description |
|-----------|-------------|
|-----------|-------------|

| Parameter | Description |
|--|--|
| <code>[-screen <i>screen_number width height</i> ...]</code> | <p>This parameter does not have to be specified. Cygwin/XFree86's default behavior is to create a single screen that is roughly the size of the current Windows display area.</p> <p>This parameter may be used to specify the screen number, height, and width of one or several Cygwin/XFree86 screens; each Cygwin/XFree86 screen will be opened in its own window. When using multiple screens, be sure not to duplicate any screen numbers. Do note that, as of 2002-01-08, using multiple screens is not fully implemented; there are several bugs that must be fixed by someone that uses the multiple screens feature.</p> <p>Screen specific parameters, such as <i>-fullscreen</i>, can be applied as a default to all screens by placing those screen specific parameters before any <i>-screen</i> parameter. Screen specific parameters placed after the first <i>-screen</i> parameter will apply only to the immediately preceeding <i>-screen</i> parameter.</p> |
| <code>[-engine <i>engine_number</i>]</code> | <p>Do not use this parameter unless you are a Cygwin/XFree86 developer or are instructed by a Cygwin/XFree86 developer to do so.</p> <p>Cygwin/XFree86's default behavior is to determine if DirectDraw or DirectDraw4 are present, then to examine the <i>-depth</i> and <i>-fullscreen</i> parameters to determine the engine with optimum performance that supports the specified depth and window configuration.</p> |
| <code>[-fullscreen]</code> | This parameter tells Cygwin/XFree86 to open a given screen in fullscreen mode. |
| <code>[-depth <i>depth_in_bits_per_pixel</i>]</code> | This parameter can only be used with <i>-fullscreen</i> and a DirectDraw based engine to specify the display depth that should be used for the fullscreen Cygwin/XFree86 screen. |
| <code>[-refresh <i>refresh_rate_in_hertz</i>]</code> | This parameter can only be used with <i>-fullscreen</i> and a DirectDraw based engine to specify the refresh rate that should be used for the fullscreen Cygwin/XFree86 screen. |

| Parameter | Description |
|---|---|
| <code>[-emulate3buttons timeout_in_milliseconds]</code> | Note: scroll wheel mice often allow you to click the scroll wheel for middle mouse button functionality. Thus, most users with a scroll wheel mouse will not need to use this parameter. This option allows users with a two-button mouse to emulate a third mouse button by pressing both mouse buttons within the optional timeout specified in milliseconds. The default timeout is 50 milliseconds. |
| <code>[-nodecoration]</code> | Do not give the Cygwin/XFree86 window a Windows window border, title bar, etc. This parameter only applies to windowed mode screens, i.e., this parameter is ignored when the <i>-fullscreen</i> parameter is specified. |
| <code>[-lesspointer]</code> | Hide the Windows mouse cursor when the mouse is over any Cygwin/XFree86 window (regardless of whether that window is active or inactive). This prevents the Windows mouse cursor from being placed overtop of the X cursor. |
| <code>[-[no]winkill]</code> | Enable or disable the Alt-F4 key combo as a signal to exit Cygwin/XFree86. The Alt-F4 key combo is enabled by default. |
| <code>[-[no]unixkill]</code> | Enable or disable the Ctrl-Alt-Backspace key combo as a signal to exit Cygwin/XFree86. The Ctrl-Alt-Backspace key combo is disabled by default. |

Chapter 4. Using Cygwin/XFree86

Starting Cygwin/XFree86

There are several methods of starting the Cygwin/XFree86 X Server with a startup script that optionally starts initial clients and loads keyboard modifier maps. Several startup methods are described below.

startxwin.bat

`startxwin.bat` - Use a MS-DOS batch file as the startup script. An example `startxwin.bat` is included in `XFree86-startup-scripts`, which is extracted according to the instructions in the Section called *Installing Cygwin/XFree86* in Chapter 2. Run `/usr/X11R6/bin/startxwin.bat` by double-clicking it in Windows Explorer.

startxwin.sh

`startxwin.sh` - Use an **sh** shell script as the startup script. An example `startxwin.sh` is included in `XFree86-startup-scripts`, which is extracted according to the instructions in the Section called *Installing Cygwin/XFree86* in Chapter 2. Run `/usr/X11R6/bin/startxwin.sh` in a Cygwin shell:

```
Username@CygwinHost ~
$ sh /usr/X11R6/bin/startxwin.sh
```

startx

`startx` - Use the standard XFree86 `startx` script with its attendant `~/.xinitrc` configuration file. First you need to create `~/.xinitrc` from the template in `/etc/X11/xinit/`:

```
Username@CygwinHost ~
$ cp /etc/X11/xinit/xinitrc ~/.xinitrc
```

Now you may customize `~/.xinitrc` and start Cygwin/XFree86 with:

```
Username@CygwinHost ~
$ cd /usr/X11R6/bin && startx
```

Or, you can run **startx** by first adding `/usr/X11R6/bin/` to the search path:

```
Username@CygwinHost ~
$ PATH=%PATH:/usr/X11R6/bin
```

```
Username@CygwinHost ~
$ startx
```

Or, you can run **startx** by first changing directories to `/usr/X11R6/bin/`:

```

Username@CygwinHost ~
$ cd /usr/X11R6/bin

Username@CygwinHost /usr/X11R6/bin
$ startx

```

Switching Out of Cygwin/XFree86

Press **Alt-Tab** to switch from Cygwin/XFree86 to your Windows desktop or other running Windows applications.

Stopping Cygwin/XFree86

When you are done using Cygwin/XFree86, press **Alt-F4** to shutdown the X Server; this is the default key combination to shutdown the X Server. The `-[no]winkill` and `-[no]unixkill` parameters can change the set of key combinations that will shutdown the X Server. Using the `-unixkill` allows the **Ctrl-Alt-Backspace** key combination to shutdown the X Server, in addition to the default **Alt-F4** key combination.

Remote Sessions via XDMCP

Cygwin/XFree86 can be used login to one or several remote sessions using XDMCP (X Display Manager Control Protocol).

Start Cygwin/XFree86 with a command similar to the following to login to a single remote session using XDMCP:

```
XWin.exe -query remote_hostname_or_ip_address
```

You may login to several remote sessions with a single or multiple hosts using XDMCP. Each session will need a separate display number, specified by the `:display_number` parameter, such as `:0`. A display number is not the same as a screen number, as a single display can have multiple screens associated with it. Each display listens on a different network port number, so each display can connect to multiple machines. Start Cygwin/XFree86 with command lines similar to the following to login to several remote sessions using XDMCP:

```
XWin.exe :0 -query remote_hostname_or_ip_address_0
```

```
XWin.exe :1 -query remote_hostname_or_ip_address_1
```

Note that the `:display_number` parameter is a general X Server parameter, not specific to Cygwin/XFree86. Further documentation of the `:display_number` parameter can be found in the X Server documentation (<http://www.xfree86.org/current/Xserver.1.html>). XDMCP is a complex system that is not specific to Cygwin/XFree86; further discussion of XDMCP is beyond the scope of this document. You may wish to read the Linux XDMCP HOWTO

(<http://www.linuxdoc.org/HOWTO/XDMCP-HOWTO/>) or the X Server XDMCP Options (<http://www.xfree86.org/current/Xserver.1.html#sect6>) for more information.

Displaying Remote Clients

Displaying remote X clients with Cygwin/XFree86 is nearly identical to displaying remote X clients with any other X Server. You may use the unsecure **telnet** session, or the secure **ssh** method.

Unsecure Telnet

On your Windows machine:

1. Launch Cygwin/XFree86
2. In an X terminal type `/usr/X11R6/bin/xhost remote_hostname_or_ip_address`
3. In an X terminal type `/usr/bin/telnet remote_hostname_or_ip_address`. Use the explicit path to ensure that Cygwin's **telnet** is run instead of Microsoft's **telnet**; Microsoft's **telnet** will crash on startup when run from Cygwin/XFree86.
4. Login to your remote machine via your **telnet** session
5. In your **telnet** session type, `DISPLAY=windows_hostname_or_ip_address:0.0`
6. In your **telnet** session type, `export DISPLAY`
7. You can now launch remote X clients in your **telnet** session, for example, `xterm&` will launch an xterm running on your remote host that will display on your Cygwin/XFree86 screen.
8. Launch other remote clients in the same manner; I recommend starting the remote clients in the background, by appending `&` to the command name, so that you don't have to open several **telnet** sessions.

Secure ssh

On your Windows machine:

1. Launch Cygwin/XFree86
2. Run the following in an X terminal:


```
Username@CygwinHost ~
$ ssh -X -l username remote_hostname_or_ip_address
```
3. Enter your password when prompted by **ssh**.
4. Your **ssh** session should now show you a shell prompt for your remote machine.
5. You can now launch remote X clients in your **ssh** session, for example, `xterm&` will launch an xterm running on your remote host that will display on your Cygwin/XFree86 screen.

6. Launch other remote clients in the same manner. I recommend starting the remote clients in the background, by appending `&` to the command name, so that you don't have to open several **ssh** sessions.

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Version 1.1, March 2000

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