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For the files named `ORANGE.EXE`, `Red.doc`, and `GREENERY.ZIP` in the directory `$HOME/ColorFiles`, use the command:

```
makelower $HOME/ColorFiles
```

The program creates symbolic links `orange.exe`, `red.doc`, and `greenery.zip`, with the original files as their targets. This enables you to see more recognizable file names in your applications and when browsing directories in the Wabi program.

File Names in UNIX and DOS

The DOS operating system limits file names to a format using 8 characters, a period, and up to 3 characters in a file name extension (commonly known as the 8.3 convention). Also, DOS recognizes only a single case so it doesn't matter whether you type a name in uppercase or lowercase. The UNIX operating system accepts file names up to 128 characters and distinguishes between uppercase and lowercase. The only UNIX file name that matches the DOS file name format is all lowercase and no more than 8 characters plus 3 extension characters.

A file created in the UNIX system and named with a long descriptive file name such as `QuarterlyReport.doc` cannot be handled by DOS. The Wabi program must map UNIX file names that use uppercase or that are longer than the DOS 8.3 naming convention to names acceptable in both DOS and UNIX environments because Microsoft Windows applications expect the DOS file name format.

The Wabi program creates names that may be hard to recognize because they may include tildes, and may sometimes not include the DOS file name extension. For example, if you have files named `ORANGE.TXT`, `Red.doc`, and `GREENERY.ZIP` in the directory `$HOME/ColorFiles`, they might be mapped to names like `orang~5z`, `red~~~s2.doc`, and `green~26`. Note that these names follow the 8.3 convention, but not the all-lowercase convention.

This mapping may sometimes cause a problem if the file extension is omitted. For example, if an application you run in the Wabi program looks for files with a particular file extension, it may not be able to find them. If you run into such a problem, you run the `makelower` utility to map mixed-case file names to lowercase names, as described in the next section.

▼ Mapping File Names to Lowercase

If you find the Wabi program's mapping of file names using uppercase to be a problem, you can run the `makelower` program to create symbolic links to file names that include UNIX uppercase characters. This program only works on file names that fit the DOS 8.3 convention but include uppercase characters. To run the program, enter the following command:

`makelower` *directory*

where *directory* is a directory containing files whose names you want to map.

Text File Conversion Between UNIX and DOS Systems

The Wabi program includes two UNIX text file conversion utilities. You can use these utilities to convert simple ASCII text files created with tools such as a text editor, vi, or the Microsoft Windows Notepad, back and forth between UNIX and DOS formats. This allows you to view and print ASCII text files in either environment. The utilities are:

- `unix2dos` – Converts text files created with UNIX-based tools, such as vi or a text editor, to a common DOS format.
- `dos2unix` – Converts text files created with DOS-based tools, such as the Microsoft Windows Notepad, to a common UNIX format.

You run these utilities from the system prompt within a command window.

▼ Converting a DOS Text File to a UNIX Text File

The `dos2unix` command takes the following form, where *originalfile* is the DOS file and *newfile* is the UNIX file:

```
dos2unix originalfile newfile
```

The original DOS text file is converted from DOS format to UNIX format. The converted file is given the name represented by *newfile*. (The original file still exists.)

▼ Converting a UNIX Text File to a DOS Text File

To convert a text file from UNIX format to DOS format, enter:

```
unix2dos originalfile newfile
```

The original UNIX text file is converted from UNIX format to DOS format. The converted file is given the name represented by *newfile*. (The original file still exists.)

UNIX and DOS File Systems D

This appendix describes some utilities provided with the Wabi program to help you use DOS files in a UNIX system and vice versa.

Files Created With Applications

The files you create with an application running in the Wabi environment are the same as files created with the same application running in the DOS environment with Microsoft Windows. If you run an application in both environments, you can create a file with an application in one environment, and edit the same file in the other environment.

Text Files

Simple ASCII text files can be used in both the UNIX and DOS worlds, but there are a few slight differences in file format. For example, the UNIX operating system interprets the DOS end-of-line character as a ^M (Ctrl-M), so if you view a DOS ASCII file in a UNIX text editor, it may have a ^M at the end of each line.

5. **Rename the new font cache to a name of the format** *name*`.dflt.fc`**.**
   `mv $HOME/wabi/fc/`*computername0*`.fc` *name*`.dflt.fc`

   For example, if the X server vendor is Network Computing Devices, Inc., you might rename the font cache to something like `ncd.dflt.fc`. Continuing the example from “Building a New Wabi Font Cache” on page 172, you use the command:

   ```
   mv $HOME/wabi/fc/sibley0.fc ncd.dflt.fc
   ```

6. **Copy the font cache to the** `lib` **subdirectory of the Wabi system directory with a command using this format:**

   `cp` *name*`.dflt.fc $HOME/wabi/wabihome/lib`

   Continuing the example, use the command:

   ```
   cp ncd.dflt.fc $HOME/wabi/wabihome/lib
   ```

7. **Edit the** `$HOME/wabi/wabihome/lib/fontconfig` **file and add a line using this format:**
   “Vendor Name”, vendor release number, Y or N, default font cache name

   To continue with the example above, add the line:

   ```
   "Network Computing Devices Inc.", 3001, N, ncd.dflt.fc
   ```

   Note that in this example, the `N` indicates Wabi cannot use the font server with this X server.

8. **Save and exit the file.**

9. **Restart the Wabi program, sending the display to the device.**

   `wabi -display` *computername*`:0`

▼ Adding X Servers to `fontconfig`

The Wabi program is able to interact with any X11 server, even if it does not belong to one of the Wabi operating system platforms. However, Wabi will not use a font server or a default font cache for any X server other than those listed in the `fontconfig` file. This means that Wabi may take longer to display fonts and will have to build a font cache for each user of the display that uses a different X server.

You can add a line to the `fontconfig` file to give Wabi information about the X server. The information you provide lets Wabi know if the X server can support the Wabi font server. It also tells Wabi what to use as the default font cache for all users of this particular X server.

1. **Open a UNIX window on the display device you want to use.**
2. **Enter the following command:**

   ```
   xdpyinfo | grep vendor
   ```

   This command gives you the vendor string and release number of the X server. For example, on an NCD X terminal, the output should look something like this:

   ```
   vendor string:    Network Computing Devices Inc.
   vendor release number:     3001
   ```

   You need this information to add to the `fontconfig` file.
3. **Run Wabi on your system, sending the display to this device.**
   Wabi builds a font cache for the X server used by the display, and stores it as `$HOME/wabi/fc/`*computername*`0.fc`. The computer name used in the font cache name is the name of the computer using that display.
4. **Become superuser by entering the command:**

   ```
   su
   ```

5. **Edit the line to replace the name of the default font cache with the name of the new one.**
   The default font cache name is the last item on the line.

   If, for example, you are running Wabi with the standard X server shipped with Hewlett-Packard's version of UNIX, you could change `hp.dflt.fc` to `morefonts.dflt.fc` as shown below:

   ```
   "Hewlett-Packard Company", 506000, Y, morefonts.dflt.fc
   ```

6. **Save the file and exit the editor.**
7. **Restart Wabi.**
   Wabi uses the new font cache as the default.

▼ Enabling and Disabling the Wabi Font Server

Operating systems that use the X11R5 version of X Windows are configured to use the `wabifs` program. If you want to disable the font server, you can edit the `fontconfig` file as described below.

1. **Log in with your own user name, and type:**

   ```
   cd $HOME/wabi
   ```

2. **Become superuser.**
3. **Open the** `$HOME/wabi/wabihome/lib/fontconfig` **file with a text editor and find the line for your X server.**
4. **Change the third item in the line to either Y or N.**
   Y enables the font server, and N disables the font server.
5. **Save the file and exit the editor.**
6. **Return to normal user status by typing:**

   ```
   exit
   ```

7. **Restart Wabi.**
   To verify that the font server is enabled or disabled, list all processes while Wabi is running. If the font server is enabled, you should see processes named `wabi` and `wabifs`. If it is disabled, you should only see a process named `wabi`.

▼ Specifying a Different Default Font Cache

There may be situations where you do not want to use the default font cache supplied with the Wabi program. For example, if you add fonts that are not in the standard distribution for your operating system, you could have Wabi create a font cache that includes the additional fonts, and then specify that font cache as the default. This allows all users of Wabi on one system to use one font cache, rather than having Wabi create a font cache for each user.

To specify a different default font cache:

1. **Build a new font cache.**
   This is described in “Building a New Wabi Font Cache” on page 172.

2. **Become super user by entering the command:**

   ```
   su
   ```

   Rename the new font cache to a name of the format `name.dflt.fc.`

   ```
   mv $HOME/wabi/fc/computername0.fc name.dflt.fc
   ```

   You can name the file anything you want. For example, you might rename the font cache to `morefonts.dflt.fc`. Continuing the example from “Building a New Wabi Font Cache” on page 172, use the following command:

   ```
   mv $HOME/wabi/fc/sibley0.fc morefonts.dflt.fc
   ```

3. **Copy the font cache to the `lib` subdirectory of the Wabi system directory with a command using this format:**

   ```
   cp name.dflt.fc $HOME/wabi/wabihome/lib
   ```

   Continuing the example, use the following command:

   ```
   cp morefonts.dflt.fc $HOME/wabi/wabihome/lib
   ```

4. **Open the `$HOME/wabi/wabihome/lib/fontconfig` file with a text editor and find the line for your X server.**

The file looks something like this:

```
#   Note: Vendor String and Vendor Release Number are obtained by
#   using xdpyinfo
#   You may specify the keyword “none” for the default fontcache file
#    as is done for the standard MIT Server. This will force Wabi
#    to create a local cache file for that display
#
# Vendor String  | Vendor Release  | Supports F/S | fontcache
#                | Number          | (Y/N)        | file
#----------------------------------------------------------------------
“MIT X Consortium”, 5000, Y, none
“The Santa Cruz Operation”, 5005, Y, sco.dflt.fc
“The Santa Cruz Operation”, 5000, Y, sco30.dflt.fc
“Hewlett-Packard Company”, 507000, Y, hp.dflt.fc
“Hewlett-Packard Company”, 506000, Y, hp.dflt.fc
“International Business Machines”, 5, Y, ibm.dflt.fc
“Sun Microsystems, Inc.”, 3400, Y, sol23.dflt.fc
“Sun Microsystems, Inc.”, 3300, Y, sol24.dflt.fc
"X11/NeWS - Sun Microsystems Inc.", 3200, N, sol22.dflt.fc
"X11/NeWS - Sun Microsystems Inc.", 3100, N, sol21.dflt.fc
"X11/NeWS - Sun Microsystems Inc.", 3000, N, sol10.dflt.fc
```

You may want to edit the font configuration file to:

- Use a different font cache as the default for your system.
- Disable or enable Wabi’s use of the font server.
- Add font cache and font server support for displaying Wabi with the X server for an X terminal or an operating system not included in the file.

You can use any UNIX text editor, such as vi or emacs, to edit the `fontconfig` file. You must be superuser (root) to edit it.

Note – The Wabi program does not require an entry in the `fontconfig` file before it will display on any given X server. This file only provides information to optimize font handling on listed X servers.

▼ Building a New Wabi Font Cache

If you have added to your system some X fonts that are appended to the font path, Wabi may not realize the fonts exist, and will not build a new font cache to include them. You can make Wabi build a new font cache by creating an empty font cache file and restarting the Wabi program.

1. **Create an empty font cache file by entering this command:**

   ```
   cat > $HOME/wabi/fc/computername0.fc
   ```

   Press Ctrl+D to end the `cat` command.

   For example, if your computer's name is `sibley`, enter:

   ```
   cat > $HOME/wabi/fc/sibley0.fc
   Ctrl+D
   ```

2. **Restart the Wabi program.**
   Wabi reads the font path and creates a new font cache of all the fonts included in the font path.

If you like, you can set up the new font cache as the default by editing the `fontconfig` file for your system, as explained in "Specifying a Different Default Font Cache" on page 174.

The Font Configuration File

The font configuration file, `fontconfig`, provides information to Wabi about what default font cache to use for your X server, and whether to use the font server. The file is located in the `lib` subdirectory of the Wabi system directory. You can see the file by entering this command:

```
cat $HOME/wabi/wabihome/lib/fontconfig
```

cache is stored in the file `$HOME/wabi/fc/`*computername*`0.fc`. For example, if your computer's name is `sibley`, your font cache is `$HOME/wabi/fc/sibley0.fc.`

Each time the Wabi program starts, it looks in your personal Wabi directory for an existing font cache file for your X server. If it does not find one, it uses a default font cache file.

The Fonts Available to Your X Server

You can see which fonts are available to your X server by entering the following X command at the UNIX command line:

```
xlsfonts
```

If this command lists font names that do not appear in applications you run in the Wabi program, it means your X server has access to fonts that are not included in Wabi's default font cache for your X server. If you want to use these fonts, you can build a new font cache for your X server. See "Building a New Wabi Font Cache" on page 172 for the procedure for doing this.

Automatic Font Cache Building

The Wabi program may sometimes build a font cache for your X server automatically. There are two occasions when this might happen. One occasion is when you are using an X server for which there is no default font cache specified. If there is no font cache in your personal Wabi directory, and there is no default font cache available, Wabi must create one. This happens the first time you start the Wabi program using that particular X server. In subsequent sessions, Wabi uses the font cache it built for the server.

Wabi also builds a new font cache automatically when your X font path changes significantly. Each time the Wabi program starts, it compares the first three directories on your current X font path to the first three directories in the font path listed in the current font cache. (The current font cache is either one Wabi previously built for your X server, or a default font cache shipped with the Wabi program.) If the three directories are not the same, the Wabi program builds a new font cache.

To see your current X font path, enter this command:

```
xset q | grep font
```

If the X server is the X11R4 release or does not support the font service protocol, Wabi passes either font information or raster images of fonts to the X server, which then displays them.

When the Wabi font server is running, you see two UNIX processes rather than one. The main process is called `wabiprog`, and the font server process is called `wabifs`. The processes work together closely.

With the Wabi font server running, the Wabi program can send text rather than bitmapped images to the X server no matter what font you are using. Even if you are using a TrueType font your X server does not know about, the regular Wabi process can act as though the X server knows about the font. The X server and the Wabi font server work out the details of passing the font information.

Font processing is most efficient when the Wabi font server is running; there is no performance difference among TrueType, Microsoft Windows bitmap, or X fonts. If the font server is not running, TrueType and bitmap fonts take longer to display than X fonts because of the greater processing required.

If you have a problem with fonts and cannot tell where the problem lies, you can take a step in isolating it by disabling the font server to see if the symptom changes. See "Enabling and Disabling the Wabi Font Server" on page 175 for instructions.

The Wabi Font Cache

The font cache is a database of font names and metrics for X fonts available from an X server, and exists to speed up font matching. The Wabi software provides default font caches for X servers from several vendors. The default font cache for each X server is provided as a convenience. Each default font cache contains information for fonts that are shipped in the X server vendor's standard release, so it is often sufficient for using the fonts available to the X server.

The Wabi program can also build a font cache for the X server you are using and store it in your personal Wabi directory. In building a font cache, the Wabi program calculates the dimensions of the available X fonts so it can quickly match them to fonts an application may request. This process can place a heavy load on the X server, so Wabi does all this work at once and stores the results in the font cache file. If Wabi creates a font cache for your X server, the font the source of the font information when it prints or displays the font. This is because the fonts from different sources have to be processed somewhat differently, as explained in "Wabi Font Processing."

Wabi Font Processing

When the Wabi program finds a match for a requested font, the method for displaying the font varies depending on the source of the font: TrueType, Microsoft Windows bitmap, or X font.

The font source determines how the images are created:

- If Wabi finds a TrueType font to match an application's request, Wabi produces the font with its font rasterizer, which creates bitmap images of the TrueType font. The Wabi program converts the bitmaps to X pixmaps (a special bitmap for fonts) and passes them to the X server.
- If Wabi finds a Microsoft Windows bitmap font, the font's raster images, or bitmaps, are already created, so the Wabi program converts the bitmaps to X pixmaps and passes them to the X server.
- If Wabi finds an X font, it passes on the font information and the text to be displayed, and the X server creates and displays the raster image in the form of a pixmap on the screen.

Note – If the Wabi font server is running, the Wabi program passes to the X server only the characters it wants the X server to display. The X server obtains any necessary font images or information from the Wabi font server.

The Wabi Font Server

The Wabi font server uses the font service protocol, a method introduced in the X11R5 release of the X Window System for separating font handling from the X server's other duties. (Not all X11R5 servers support the font service protocol however.)

If the X server is the X11R5 release and supports the font service protocol, Wabi starts its font server, `wabifs`, when you start the Wabi program. When Wabi selects a font in the available fonts list, it passes the font information to `wabifs`, which takes over font processing for the request and interacts with the X server.

Fonts Included With Applications

Many applications provide additional fonts that the Wabi program can use. The application's installation program installs the fonts' `*.FON` or `*.FOT` resource files in your `C:\WINDOWS\SYSTEM` directory and lists them in the `[fonts]` section of your `WIN.INI` file. The Wabi program includes them in the list of available fonts, discussed in the next section.

The List of Available Fonts

Each time Wabi starts, it creates a list of available fonts from these sources:

See "The Wabi Font Cache" for more information about the Wabi font cache.

- A font cache of X font names and dimensions, including those for Type 1 PostScript or other scalable fonts, and any prescaled fonts available to the X server.
- The `[fonts]` section of `win.ini`, which includes both TrueType and bitmap fonts shipped with the Wabi program and may include fonts an application installed.

The list of fonts is made available to applications, just as in Microsoft Windows, so the applications can display a list of fonts to the user. When the application runs in Wabi, the font list is longer than in Microsoft Windows because of the X fonts in the font cache.

Note that when you run an application in Microsoft Windows and look at a list of fonts, TrueType fonts have a TrueType symbol in front of their names. When you run the same application in the Wabi program and look at a list of fonts, the TrueType fonts may not have the symbol by their names if Wabi has actually matched an X font to the name. If a font does have the TrueType symbol, it means Wabi is using the actual TrueType font.

How Wabi Uses the List of Available Fonts

When a Windows application requests a font, it specifies a font name and its dimensions. The Wabi program searches through the list of available fonts to match the name and dimensions and uses the closest match it finds, without regard to the source of the font information. For example, if the font the application requests is a TrueType font, Wabi may or may not match it to a TrueType font. If Wabi happens to find an X font with the correct name and dimensions first, it selects the X font. However, the Wabi program must know

Outline fonts are the same on the screen and printed. If you are using a printer that can handle outline fonts in either the Microsoft Windows or X Window environments, the outline information is passed to the printer and the printer creates the raster images. If you are using a printer than cannot handle outline fonts, Microsoft Windows or the X server create the raster images and send them to the printer. In either case, the fonts are the same printed and on the screen.

Font Handling in the Wabi Program

The Wabi program handles fonts with a combination of programs, configuration files, and database files. Briefly, Wabi font handling encompasses all of the following:

- Fonts shipped with Wabi, which include bitmap and TrueType fonts.
- Fonts loaded when you install applications.
- List of fonts created each time you start Wabi, and made available to applications.
- Wabi font cache, a precalculated database of information about X fonts available to the X server. Default font caches are provided for each UNIX platform and some X terminals. The Wabi program can also create one specific to the X server you are using.
- Wabi font server, a program that speeds up font processing by performing some of the duties of the X server (only on X Window systems using the X11R5 release).
- Font configuration file, a file containing information that lets the Wabi program know what font cache to use and whether to use the font server.

Each of these items is discussed in the sections that follow.

Fonts Shipped With Wabi

The Wabi program provides two bitmap fonts, 8514oem and Chelmsford Sans Serif in several sizes. These bitmap fonts are used in dialog boxes. It also provides several TrueType fonts from Bitstream, Inc.: Arial, Courier New, Times New Roman, Symbol, and More Wingbats SWM.

Microsoft Windows font resource files provide. Because of this, the Wabi program must perform some calculations to generate more information about the available X fonts in order to map them to fonts requested by Windows applications.

Font Display Types

Two font display types are relevant to applications running in Microsoft Windows and the Wabi program: bitmap fonts and outline fonts.

Bitmap Fonts

Bitmap fonts are stored as graphic images of characters, with each point size of a typeface stored as a separate font. Generally, in Microsoft Windows, the fonts used in dialog boxes and in an application's screen displays are bitmap fonts. Bitmap fonts cannot be *scaled* (displayed in smaller and larger point sizes) in Microsoft Windows, but can be in X Windows. However, a scaled bitmap font may display with poor resolution, so the Wabi program does not scale bitmap fonts.

A bitmap font displayed on the screen is not the same font used by a printer. Microsoft Windows and the Wabi program only use bitmap fonts that can be matched to a printer font on the printer you are currently set up to use. The font used by the printer, while not the same as the bitmap font shown on the screen, is almost indistinguishable. For example, if you use the font Courier 10 in your document you see a bitmap Courier 10 on the display. When you print your document, you see the printer's version of Courier 10.

Outline Fonts

Outline fonts are produced from stored information about the shape, or outline, of the font. Outline fonts scale better because the information about the shape is independent of the size. In both the Microsoft Windows and X Window environments, different font sizes are created by calculating the new size and reproducing the exact shape of a character in the new size. TrueType™ fonts and many X Window fonts, including those used by Adobe PostScript, are outline fonts.

Fonts from Windows to Wabi

C

This appendix describes some aspects of font handling in Microsoft Windows and in the Wabi program, so you can better understand how the Wabi program implements fonts used by your applications. It does not fully describe either system's font handling.

The Wabi program can use fonts from the Microsoft Windows environment, as well as the native fonts in the X Window System. Different ways of implementing fonts come into play, depending on several factors, including the type of X server your system is using, the fonts loaded by applications running in the Wabi program, the fonts available to the X server, and so on. (The X server is a program that runs on each UNIX system and controls all aspects of the display for X applications, of which Wabi is one.)

Differences in Microsoft Windows Fonts and X Fonts

A simple mapping of Microsoft Windows fonts to X fonts is impossible because of the different ways fonts are described in Microsoft Windows and X Windows. Fonts used in Microsoft Windows applications are described in font resource files, usually stored in `C:\WINDOWS\SYSTEM` with file name extensions such as `.FON`, `.FNT`, and `.TTF`. These files contain either the actual images of fonts and detailed numeric information about them, or precise information about how to create the font images.

Fonts used in X applications are described less precisely. The font names themselves provide all the information an X application needs to get the font it wants. However, the font names do not provide some information that

Where to Set Color Variables

To set Wabi color variables, edit your `$HOME/wabi/windows/win.ini` file and add them. None of the variables appear in `win.ini` as shipped in the Wabi program.

If you want the variables to affect your running of Wabi on any display you use, set the variables in the `[ColorMap]` section in `win.ini`. For example, if all displays you use are 8-bit, set the variables in the `[ColorMap]` section.

If you run Wabi on more than one display and you want the variables to affect Wabi only on a particular display, create a section whose title is the display name and set the variables in that section. For example, to apply the variables to Wabi only when you display it on the display jethro:0.0, create a section called `[jethro:0.0]`.

The Wabi program reads the `[ColorMap]` section first, and then the `[`*host*`:0.0]` sections, so that variables set in `[`*host*`:0.0]` sections supercede variables set in the `[ColorMap]` section for the specified displays. If you set the same variables in both sections, the `[`*host*`:0.0]` variables are used for those displays. This may be helpful if you use multiple displays and one of them is 24-bit, for example. You could set variables specific to the 24-bit display by creating a `[`*host*`:0.0]` section, and set variables for all 8-bit displays in the `[ColorMap]` section.

Table B-1 Variables for 8-Bit PseudoColor Visuals *(Continued)*

Variable	**Description**
RedCubeCount=*n* GreenCubeCount=*n* BlueCubeCount=*n*	When `Technicolor=0`, these three variables define the dimensions of the red, green, and blue components of the color cube. The color cube comprises the additional reds, greens, and blues that Wabi adds to its colormap. These variables allow you to alter the number of reds, greens, and blues, respectively, that will be used in the Wabi colormap. The range is 4 through 9, with a default of 5. You can adjust these variables if you find that applications you run need more colors of a particular shade. These variables usually do not affect color flashing.

Variable for a 24-Bit Display

The Wabi program uses an 8-bit PseudoColor visual even on 24-bit displays, so all the variables described above apply to 24-bit displays as well as 8-bit displays.

An additional variable, `UseRootWindow`, may be useful if you find Wabi has problems drawing to your 24-bit display. `UseRootWindow=`*n* tells whether or not Wabi can draw to and read from the root window (the "background" window of the desktop). The default value is 1 (yes), unless the Wabi colormap and the default colormap are of different sizes, in which case the default is 0 (no).

Most users will never need to set `UseRootWindow`, and should not set it because it may cause problems, especially on 8-bit displays. You should only consider using it if you are using a 24-bit display and Wabi appears to be having problems drawing to the screen (windows and icons do not look right, for example).

If you are experiencing such problems, experiment with `UseRootWindow` to see if it alleviates them. If this does nothing, or makes the drawing worse, remove the variable entirely.

Table B-1 Variables for 8-Bit PseudoColor Visuals

Variable	Description
`PercentFree=`*n*	When `Technicolor=0`, `PercentFree` specifies how much of the default X colormap Wabi should free up after allocating its colors. The range of acceptable values is 0 through 100, with a default of 50, which means Wabi frees 50% of the color cells. Setting `PercentFree` higher could reduce color flashing as you activate and deactivate the Wabi window, because the other X windows use most of the colors that were in effect when they started. However, setting `PercentFree` to 100 means Wabi frees all the color cells it allocated, which leaves the same number of free color cells as there were before Wabi started. This may cause flashing as the default X colormap and the Wabi colormap are swapped in and out. Setting `PercentFree` lower reduces the chance that other X applications will find insufficient free color entries available. If an X application does not find enough free color cells, it may display incorrect colors, return an error message, or detect that the default X colormap is too full and swap in its own virtual colormap. This causes more color flashing when you move the mouse out of the X application's window.
SolidColorCount=*n*	When `Technicolor=0`, this variable defines how many shades of each of the seven colors (red, green, blue, cyan, magenta, yellow, and gray) are allocated. A total of 7 shades x `SolidColorCount` colors are allocated. The range of acceptable values is 1 through 16, with a default of 7. Set this variable higher to let Wabi allocate more colors so that applications running under Wabi don't find it necessary to allocate new colors. Set this variable lower if most colors have already been defined by X applications before Wabi starts, or if you will be manually defining all your colors anyway (through a "paint" program, for example).

When `Technicolor=1`, Wabi uses a standard X colormap as its colormap. This often causes color flashing on 8-bit displays when you switch between Wabi windows and other X windows.

If your X server has more than one hardware colormap, but the colormaps are normally already in use by other X applications when you start Wabi, you can set `Technicolor` to 0 to alleviate color flashing.

If your X server has one colormap, as is the case with most 8-bit displays, you may set `Technicolor` to 1 to give Wabi, and the Windows applications running under it, the most flexibility in allocating and changing color. If you need the color flexibility and find that color flashing is annoying, try maximizing the Wabi window when you use the Windows application. This prevents the mouse pointer from drifting into other windows and causing their colormaps to be swapped in.

Other Color Variables

The other Wabi color variables affect Wabi only when it uses 8-bit PseudoColor visuals (on 8-bit and 24-bit displays) and `Technicolor` is set to 0. You can see if Wabi is using 8-bit PseudoColor by running the X program `xwininfo`, which should be present on most UNIX systems with X windows.

In a UNIX window, type the following command:

```
xwininfo
```

and then select the Wabi window when prompted.

Look for the following lines:

```
Depth:8
Visual Class: PseudoColor
```

If you see these lines, you can use the variables in Table B-1.

If `xwininfo` is not available, use the `xdpyinfo` command. This displays information about your X server, including the visuals that are available.

In a UNIX window, type the following command:

```
xdypinfo | grep class
```

If you see the class PseudoColor, you can use the variables in Table B-1.

colors — seven shades of each of the seven solid colors (red, green, blue, cyan, magenta, yellow, and gray). In addition, it allocates 15 more colors — five shades of each of the primary colors (red, green, and blue). Some of these additional reds, greens, and blues may be duplicates of the 49 shades of solid colors, so the total number of colors allocated may be something less than 64 colors. On an eight-plane display (which has 256 colors in its colormap), this leaves the majority of colors in the default colormap unchanged. Wabi then copies the changed default map into its own virtual colormap. Finally, the Wabi program frees half of the color cells it allocated in the default colormap so that they can be allocated by other X applications.

Wabi Color Variables

"Where to Set Color Variables" on page 164 explains where to set the variables in `win.ini`.

The Wabi program provides variables that influence how the Wabi colormap is created and how Wabi affects the default X colormap. One variable, `Technicolor`, affects Wabi on all display types. The other variables depend on `Technicolor` being set to 0, and apply only when Wabi is using the 8-bit PseudoColor visual. You set the variables in your `win.ini` file.

`Technicolor` *Variable*

The `Technicolor` variable allows you to make a trade-off between color flashing, or "technicolor," and flexibility in allocating and changing colors in Microsoft Windows applications running in the Wabi program. If you want applications running in the Wabi program to be able to allocate all the colors they want, you can set `Technicolor=1`, and put up with color flashing in inactive X windows. If it does not matter if applications in Wabi get the exact colors they want, you can set `Technicolor=0`, and color flashing is minimized as Wabi tries to share colors with other X applications.

The default value is 0 (color flashing off), unless there is more than one hardware colormap for the display screen. If there is more than one hardware colormap, it is assumed one will be available for Wabi, and the value defaults to 1.

When `Technicolor=0`, Wabi allocates colors from the default X colormap and then copies them to the Wabi colormap, as described in "The Wabi Colormap" on page 159, in an attempt to share as many colors as possible.

The X server has a default visual, the method used to handle color when an X application does not request a specific visual. The Wabi program uses the X server's default visual whenever possible.

On the most common types of color display, 8-bit or 8-plane, the usual default is a visual called *PseudoColor*, which is therefore the visual that the Wabi program uses most often.

Eight-plane displays generally have one hardware colormap, into which the X server loads a default colormap when it first starts up. The default X colormap is changeable, so X applications can change individual color cells in the default colormap to allocate colors they need.

X applications can also provide their own colormaps, called *virtual colormaps*, which are loaded into the hardware colormap. The X server can maintain more than one virtual colormap at the same time, but only one can be used in the hardware colormap at any given instant. This means that if the active application swaps in its own colormap, all other (inactive) applications' windows must use this same colormap. As a consequence, the color cells assigned to pixels might now contain colors completely different from those intended, resulting in undesirable color schemes for the inactive windows.

As you change focus from one window to another, colors flash as each application's colormap is loaded and used by all running applications.

To minimize color flashing, only color-intensive X applications use virtual colormaps. The Wabi program is a color-intensive X application by virtue of the many color-intensive Windows applications it runs, so color flashing can be a problem, but you can alleviate it by controlling certain aspects of the Wabi colormap.

The Wabi Colormap

When the Wabi program uses PseudoColor visuals, it creates a virtual colormap but tries to retain many of the colors already allocated in the default colormap. This reduces the number of colors that might be changed for other X applications that are running.

When the Wabi program starts, it uses the current default colormap as the starting point for creating a virtual colormap. First, the Wabi program changes some of the color cells in the default colormap to provide a range of colors needed for the Windows applications you may subsequently run. It allocates 49

Microsoft Windows and X Windows each use a color table that is hardware-dependent, so the color tables vary from one display type to another. Both window systems also let applications provide their own color tables, and here is where color handling in the two systems differs markedly.

Microsoft Windows Color Allocation

Microsoft Windows tries to match the colors in an application's color palette, called the *logical palette*, to colors already allocated in the default palette. Windows uses one of two methods for this. The method chosen depends on the particular display.

For some displays, Microsoft Windows uses a single color palette, one that cannot be changed. If an application requests a color that is not in the palette, Windows either uses the closest color it can find in the palette, or approximates the color by making a pattern composed of pixels of different colors. For example, a light yellow might be approximated using a checkerboard pattern of bright yellow and white. This is called *dithering*. Usually, if the color is for a line, Windows uses the closest color. If the color is for filling a shape, Windows dithers the color.

For other displays, Microsoft Windows uses a palette manager, and can change colors in the default palette. If an application requests a color that is not in the palette, and an unallocated color cell exists, the color is added to the palette. If there are no more unallocated color cells, Windows either matches the logical palette color to the closest color it can find in the default palette, or dithers it.

Because all windows running in Microsoft Windows use the default palette, Windows allocates colors for the active window first, to make sure its colors are correct. The inactive windows could potentially show some colors that are not exactly what the application requested. However, for the most part, colors in inactive windows are close to what was intended.

X Windows Color Allocation

X Windows color handling is more complex, and varies with the display type and the capabilities of the *X server*. The X server is a program that controls all aspects of the display for X applications. It usually supports several color handling methods, called *visuals*.

Color From Windows to Wabi

B

The subject of color handling in Microsoft Windows and the X Window System is a complicated one. This appendix gives a brief overview of the major features, and some specific information on how to influence color behavior when using the Wabi program.

A good source of detailed information about X Window color handling is the *Xlib Programming Manual*, by O'Reilly & Associates, Inc.

Color Palettes and Maps

Many popular color display devices are able to generate thousands or even millions of different colors, but can display only 256 or fewer colors at one time. Because of this, the colors available for display at a given time must be defined and listed, or *allocated*, in a place where the window system can look them up. Colors are identified by *RGB* values, which are numbers that indicate the amounts of red, green, and blue light needed to produce the color. Microsoft Windows and X Windows both use a table of RGB values stored in memory to determine what colors are available for use. Microsoft Windows calls its table of colors a *color palette*, and X Windows calls it a *colormap*. Each entry in the table is called a *color cell*, and specifies the RGB values for a particular color. Each pixel on a display is assigned a number corresponding to a color cell and the RGB value stored in the color cell determines the color displayed by the pixel.

Initialization Files

Initialization (`.ini`) files are contained within the `$HOME/wabi/windows` directory. These files are used to control certain configuration items for the Wabi program and Microsoft Windows program. Some of these files are updated automatically by the applications you install. When you install applications, the installation programs may add `.ini` files for the applications to this directory. Table A-3 lists initialization files and the functions each provides.

Table A-3 Initialization Files

Name of File	**Function of File**
`win.ini`	This file provides compatibility with Windows applications (many applications modify it automatically at the time of installation). This file also stores the window color settings you make from the Windows Control Panel. You should not edit this file.
`system.ini`	This file provides compatibility with Windows applications. By editing this file, you can specify an alternate shell program.
`wabi.ini`	This file is used to store Wabi-specific settings that you make through Configuration Manager. This file also stores default system settings for various operating system platforms. In general, you should not edit this file. Make all changes through Configuration Manager.
`progman.ini`	This file is used by Application Manager, or by Program Manager after you install Microsoft Windows. It maintains lists of groups and their contents and other miscellaneous settings. Do not edit this file.
`colorset.ini`	This file is used to provide the color set names and colors used in Configuration Manager's Color Settings.

`$HOME/wabi` *Directories and Files*

The first time you start the Wabi program, it creates a system of directories and files within a `wabi` subdirectory in your home directory. Table A-2 lists the directories and files created the first time you start the Wabi program.

Table A-2 `$HOME/wabi` Directories and Files

Name of File or Directory	**Function**
`autoexec.bat`	This file is required to complete the installation of application programs that modify it automatically. This file also contains path statements that the Wabi program uses to locate installed applications. Path statements are the *only* commands that Wabi uses in your `autoexec.bat` file. If you add commands, Wabi ignores them.
`config.sys`	This file is required to complete the installation of application programs that modify it automatically. The Wabi program ignores all statements in this file.
`fc`	This directory contains font information specific to each display on which you run the Wabi program. If a font cache is created for a display, it is stored here.
`tmp`	This directory is required by some application programs. This directory contains no Wabi program operating information, and may contain nothing at all, but you should not delete it.
`wabihome`	This file is a link to the Wabi system directory.
`windows`	This directory contains Wabi program resource and initialization files. Printer-related files are denoted by three extensions: `.pfm`, `.ppb`, and `.ebf`. The `dosprompt.pif` file is used to load a DOS emulator. This directory also contains links to various executable files residing in the Wabi system directory. Several `.ini` files are also stored in this directory; they are described in "Initialization Files" on page 156. The directory may also contain initialization (`.ini`) files installed by applications.
`windows/system`	This directory contains utilities and files related to installed printer drivers. Many are links to files in the Wabi system directory. The directory also may contain font files and dynamic link libraries (`.dll`) installed by applications.

Wabi System Directories and Files

A system of directories and files is created during the first phase of installation. These directories and files contain UNIX binary programs and other executable files. Table A-1 lists the directories created during the installation process on all operating systems. Do not alter these directories or files within them in any way unless you are following a procedure documented in this manual.

Table A-1 Wabi System Directories and Files

Name of Directory	Directory Contents
`bin`	This directory contains UNIX executable files and scripts, such as `wabi`, the Wabi startup script, `wabiprog`, the main Wabi executable, and `wabifs`, the Wabi font server.
`lib`	This directory contains font configuration files and default font caches used by the Wabi program. This directory also contains the `locale` subdirectory which contains language-specific Wabi files.
`man`	This directory contains the text pages displayed when you enter the `man wabi` command.
`printers`	This directory contains PostScript printer description files, the Adobe PostScript printer driver installation and resource files, and other files associated with printing on LaserJet and Epson printers.
`wbin`	This directory contains Wabi utility programs, executable files, libraries, and initialization files.

Your Wabi system directory may contain additional directories specific to your operating system.

Wabi File Layout A

This appendix discusses the structure and file layout of the Wabi software. This hierarchy of directories and files provides the Wabi program with the resources it needs to run your applications. There are two main areas in this file layout:

- *The Wabi system directory* – This area is created when you install the Wabi software from the distribution media. The directories within this directory contain UNIX executable and binary files, many of which are copied into other directories. The location of the Wabi system directory depends on your operating system. It could be `/usr/wabi`, `/usr/lpp/Wabi`, `/opt/SUNWwabi/wabi`, or some other directory. The installation instructions you received with the Wabi software indicates the location. This appendix describes the file layout at the level of the Wabi system directory and below.
- *The* `$HOME/wabi` *user directory* – This area is created within your home directory the first time you start the Wabi program. (However, if you set the `WABIDIR` variable, your `wabi` user directory may be located elsewhere.) The directory is expanded and modified as you install applications. The directories located within this directory contain resource, program, and initialization files. Symbolic links in this directory point to other locations.

In addition to these directories, the Wabi program uses initialization (`.ini`) files to provide application compatibility and to control program configuration. Initialization files are located in the `$HOME/wabi/windows` directory. By changing settings in these files, you can change various Wabi configuration items. Initialization files are discussed in “Initialization Files” on page 156.

Table 9-1 DOS Application Problems and Solutions *(Continued)*

Symptom	**Possible Cause**	**Solution**
Installed DOS program does not appear in any Application Group.	No icon created for this application.	You must create a program item for a DOS application. See page 148 for more information.
DOS application won't install or run.	DOS emulator not installed, or not configured correctly.	See the DOS emulator documentation to make sure you have installed and configured the emulator correctly. See page 142 for information about connecting it to the Wabi program.
Can't start DOS application by clicking its icon.	Missing placeholders in DOS emulator startup command or DOS emulator not in UNIX path.	Make sure you have inserted the correct placeholders in the DOS emulator connection. Use a full path in the emulator command if the directory is not in your UNIX path. See page 142.
	The path specified in the Command, or the Working Directory may no longer be valid.	If the DOS application files have been moved, or if you have changed the Wabi drive connection to the directory, the Program Item Properties must be changed. See page 146 for information about the Program Item Properties dialog.
Application not fully functional.	Application function incompatible with DOS emulator or X system.	See documentation for the DOS emulator for known problems. Also see any supplemental documentation included with your Wabi software.

Starting a DOS Application

- **Open the icon representing the DOS application.**
  The DOS emulator starts and loads the DOS application.

  or

- **In Windows Program Manager, open the File menu and select Run, then enter the DOS command to run the DOS application.**

Reference Material for Tasks Related to Using DOS Applications

This section provides reference material for tasks related to installing and running DOS-based applications.

Troubleshooting DOS Application Problems

Table 9-1 suggests solutions to problems you might experience during DOS application installation and use.

Table 9-1 DOS Application Problems and Solutions

Symptom	Possible Cause	Solution
DOS emulator will not start.	DOS emulator not installed on system.	You must install the DOS emulator onto your UNIX system before you can use it through the Wabi program.
	The Wabi program cannot locate the DOS emulator program.	Try specifying a full path name in the startup command, even if the emulator's directory is on your UNIX path. See page 142 for more information.
	Improperly configured startup command string.	Make sure you can start the emulator from a UNIX command line first. Use this UNIX command as the basis for your startup command string, with placeholders inserted if necessary. See page 142 for more information.

▼ Creating a DOS Program Group

1. **Open Windows Program Manager.**
2. **Open the File menu and choose New.**
   The New Program Object dialog box opens.
3. **Select Program Group and choose OK.**
   The Program Group Properties dialog box opens.
4. **Enter a description.**
   This text will appear below the group icon. You should enter something that indicates this group is for DOS applications.
5. **Enter a group file name.**
   Make this entry only if you want the group file name to be different from the identifier entry.
6. **Choose OK.**
   A group window with the name you specified opens. You can now create icons for DOS applications in this group.

▼ Creating a DOS Program Item

"A DOS Application's Icon" on page 148 provides more information about creating icons for DOS applications.

1. **Open Windows Program Manager.**
2. **Select or create a group in which you want to place a DOS application.**
3. **Open the File menu and choose New.**
   The New Program Object dialog box opens.
4. **Select Program Item and choose OK.**
   The Program Item Properties dialog box opens.

Figure 9-3 on page 146 shows this dialog box, along with information about completing it.

5. **Enter the appropriate information in the Program Item Properties dialog box.**
   The text you enter in the Description field appears under the icon.
6. **Choose OK.**
   An icon representing the DOS application appears in the group selected in Step 2.

A DOS Application's Icon

See "Create a Program Group and Item for a DOS Application" on page 145 if you want to create an icon for a DOS application.

The simplest way to use a DOS application under the Wabi program is by double-clicking an icon representing the application. When you open the icon, the Wabi program detects that the application is a DOS application, starts your DOS emulator program, and the DOS emulator runs the DOS application.

Instructions for Tasks Related to DOS Applications

This section provides detailed, step-by-step instructions for performing a variety of tasks related to the installation and use of DOS-based applications.

▼ Entering a DOS Emulator Startup Command

1. **Open Configuration Manager.**
2. **Open the DOS icon.**
   Alternately, open the Options menu and choose DOS or press Alt, s, d.

   The DOS Emulator Connection dialog box opens.

Read "DOS Emulator Connection" on page 142 for more information about the startup command and placeholders in the command.

3. **Enter a path name, startup command, and optional placeholder parameters for your DOS emulator.**
   This is the command you would use to start the emulator in your native operating system. If you do not include the complete path name to the executable file, you must have the DOS emulator directory in your path in the UNIX environment. Note that the default emulator command the Wabi program provides assumes your path includes the DOS emulator directory.
4. **Choose OK to save your settings.**
   The DOS Emulator Connection dialog box closes and your entry is validated. An error box appears if the entry is invalid. Follow the instructions in the error box or Help to clear the error condition.

"Entry Validation" on page 34 discusses when and why your entries are validated.

▼ Installing a DOS Application

Read "DOS Emulator Connection" on page 142 for more about setting up and using a DOS emulator program.

1. **Configure a DOS emulator for use with the Wabi program.**
2. **Using the DOS emulator, install the DOS application as described in the application's documentation.**

To Run a DOS Application

To run an installed DOS-based application, you must have a DOS emulator configured to run with the Wabi program. See “DOS Emulator Connection” on page 142 for more about setting up and using a DOS emulator.

You can use the Wabi program to start DOS applications the same way as Microsoft Windows 3.1 applications—either through Windows Program Manager’s Run item on the File menu or by opening an icon.

An Application’s Startup Command

See “Starting a DOS Application” on page 150 for the steps required.

You can run a DOS application with the File menu’s Run option in the Windows Program Manager by entering in the Run dialog the command to run the application. This is the same command you would use to run the application on a PC running DOS, except that the drive letter indicates a path in your UNIX file system.

To run a DOS application, open the File menu and choose Run. The Run dialog box opens, as shown in Figure 9-4.

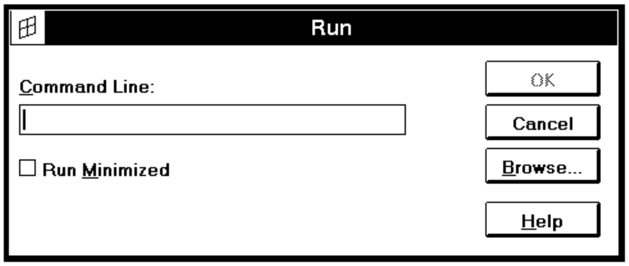
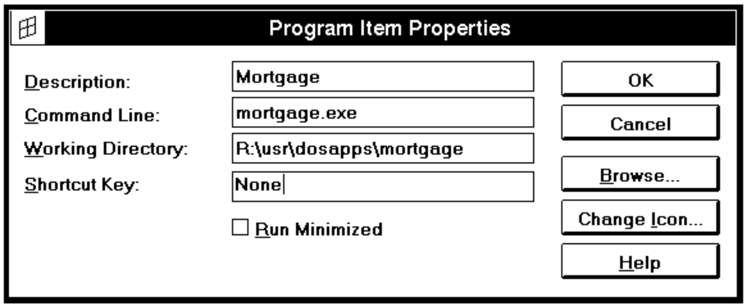


Figure 9-4 Run Dialog Box

The Command entry field in the Run dialog box is where you tell the Wabi program the location and the name of the application’s startup command.

When you choose OK, the Wabi program detects that the application requires DOS, starts your DOS emulator, and loads and runs the DOS application.

To create an icon that represents a DOS application, you choose the Program Item button in the New Program Object dialog box. When you do, the Program Item Properties dialog box shown in Figure 9-3 opens.



Description: Mortgage
Command Line: mortgage.exe
Working Directory: R:\usr\dosapps\mortgage
Shortcut Key: None
☐ Run Minimized

Figure 9-3 Program Item Properties Dialog Box

See “Creating a DOS Program Item” on page 149 for the steps required.to create a program item for a DOS application.

Note that for a DOS application, the command you enter in the Command Line entry field is the same command you would use to start the application in DOS. It must be in DOS format and include the Wabi drive location, and may include parameters or switches. Do not include the DOS emulator command. When you start the application from the icon, the Wabi program detects that the application requires DOS, starts your DOS emulator, and passes it the command you enter here.

Microsoft Windows applications generally have icons associated with the executable files, but DOS executables do not. When you create a program item for a DOS application, the Windows Program Manager uses a generic icon indicating that the program is a DOS program. However, you can use a different icon if you like. The Change Icon button opens a dialog box that lets you select a different icon image to represent the application when it is minimized or displayed in a group window.

Note – DOS applications used with a DOS emulator through the Wabi program do not use a Program Information File (PIF).

Caution – You should not install any applications in the Wabi drive C or the DOS emulator's drive C. You should connect drives for both programs to the same directories in your UNIX file system, and install applications in those drives. If you want the Wabi program to access files already stored in your DOS emulator's drive C, read "The DOS Emulator's Drive C" on page 142.

Create a Program Group and Item for a DOS Application

After the application is installed, you should create a program group and item for the application so you can start it within the Wabi program by opening an icon. Microsoft Windows applications create their own program groups and items when you install them, but DOS applications do not because they are not designed to run in a window environment.

You can create program groups and items for DOS applications the same way you create them for Microsoft Windows applications, using the New option in Windows Program Manager's File menu.

When you choose New in the File menu, the New Program Object dialog box shown in Figure 9-2 opens.

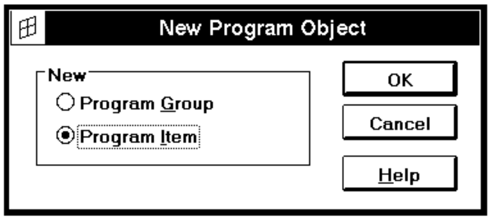


Figure 9-2 New Program Object Dialog Box

See "Creating a DOS Program Group" on page 149 for the steps required.

You use this dialog box to create groups and items. To create a group, select Program Group and enter a Description in the Program Group Properties dialog that opens.

For example, suppose you want to run a DOS application called `CLEANUP.EXE` on a file called `PRICE.LST`, and you want to send the display to the same system where you are displaying the Wabi program. The DOS command line you normally use to run this program on `PRICE.LST` looks like this:

```
CLEANUP.EXE PRICE.LST /X /Y
```

Your DOS emulator command must include the `%f` and `%c` placeholders so the Wabi program can pass the DOS command line as arguments to the UNIX command that starts the DOS emulator. Wabi uses the `CLEANUP.EXE` file name in the `%f` placeholder, and the `PRICE.LST` file name and `/X` and `/Y` parameters in the `%c` placeholder.

In the example below, the `-c` switch instructs the emulator to execute the command that follows (`CLEANUP.EXE PRICE.LST /X /Y`, for example). If your DOS emulator is called `myemulator,` the DOS emulator command might look like this:

```
/usr/myemulator -display %d -c %f %c
```

The `-c` switch is just an example; your emulator may require a different switch for passing commands. See the emulator's documentation for information about command-line switches.

Note – If you do not include the complete path name to the emulator's executable file, you must have the DOS emulator directory in your UNIX search path. The default emulator command that the Wabi program provides assumes your path includes the emulator directory.

DOS Application Installation

After you install the DOS emulator, you can install DOS applications using the DOS emulator. You can start the emulator from the operating system, or open the Wabi Tools group and open the DOS Session icon. Once you are running a DOS session, proceed to install the DOS application as indicated in the application's installation instructions.

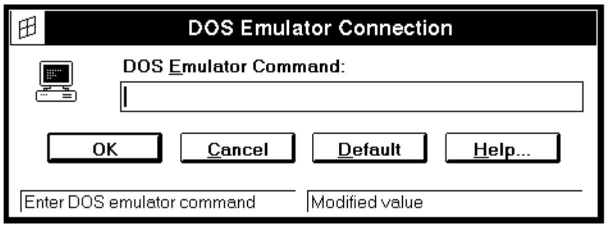


Figure 9-1 DOS Emulator Connection Dialog Box

In the DOS emulator command, you should include three placeholders for parameters that enable the Wabi program to start a DOS application running under the DOS emulator:

See "Displaying the Wabi Program on a Remote System" on page 15 for instructions for setting the `DISPLAY` variable.

- `%d` – This placeholder is used with the `-display` switch of the emulator command. (The `-display` switch works with most X-based DOS emulators.) Including `%d` with the `-display` switch makes the DOS session appear on the same display screen as the Wabi window. The Wabi program replaces `%d` with a display name. If you start the Wabi program with the `-display` switch, the same remote host display name is substituted for `%d` in the DOS emulator command. If you do not start the Wabi program with the `-display` switch, `%d` is replaced by the name specified by the `DISPLAY` variable in your UNIX environment.
- `%f` – This placeholder is used as a parameter for a DOS emulator switch that starts a DOS program. Including `%f` with a switch in the command line allows you to start a DOS application through the Wabi program using the Run menu item or by double-clicking the program's icon. The switch you use with `%f` is specific to the emulator. It is likely to be `-c` or `-s`. The Wabi program replaces `%f` with the name of an executable DOS program. The Wabi program uses the name of the executable file that you supply when you create a program item for the application, or when you run the application through the Run item in Windows Program Manager's File menu.
- `%c` – This placeholder is used to specify more parameters to the DOS emulator switch that starts a DOS program. Including `%c` allows you to specify an argument such as a file name or some other parameter used in the DOS command line to start the DOS application. You should use `%c` only if you use the `%f` placeholder. The Wabi program replaces `%c` with the remainder of the DOS command line that follows the `.EXE` command.

Before you run a DOS application through the DOS emulator under the Wabi program, check all drive mappings in both the DOS emulator and Wabi to be sure they are consistent.

The DOS Emulator's Drive C

The DOS emulator's drive C cannot be mapped to a Wabi drive because it is likely a special file that the Wabi program cannot access. You should store any files you want to use in both the Wabi program and the DOS emulator in your home directory. Make sure both programs connect the same drive (H, for instance) to your home directory. If you want to use the Wabi program and your DOS emulator to run applications installed in your DOS emulator's drive C, you should:

- Start the DOS emulator.
- Map a DOS emulator drive to your home directory if you don't already have one.
- Copy the application directories and files from drive C to the drive connected to your home directory.
- Start the application from the drive connected to your home directory to make sure the application runs correctly.
- When you are sure the application runs correctly, delete the application files from drive C.

Then, both programs can access the files through the same drive letter.

DOS Emulator Connection

For instructions on connecting a DOS emulator, read "Entering a DOS Emulator Startup Command" on page 148.

The Wabi program must know the UNIX command used to start your DOS emulator. You provide this information by running Configuration Manager and choosing the DOS icon. Indicate in the DOS Emulator Connection dialog box, shown in Figure 9-1, your DOS emulator's UNIX path name, startup command, and startup parameters. Once your DOS emulator is functional under the Wabi program, you can use it to install and run a DOS application.

Tasks Done Once for Each DOS Application

To install a DOS application after you've set up for using DOS applications:

- Start the DOS emulator.
- Install the DOS application from the DOS session, following the DOS application's instructions.
- Create a program item and, optionally, a program group.

"Creating a DOS Program Item" on page 149 gives detailed steps for creating an application icon.

After you have done these tasks, you do not have to start the DOS emulator before starting a DOS application. The Wabi program does it for you.

Installation of a DOS Emulator

You do not use the Wabi program to install a DOS emulator. You should install the emulator using the instructions provided with it. Make note of the path and command needed to start it, along with any parameters to the command that you might want to use.

Before you use the emulator with the Wabi program, make sure it is correctly installed, and you are able to run it by entering a command in the operating system.

Caution – Drive mappings (for emulated hard drives, or virtual drives) that you use in the DOS emulator must match the drive mappings you use in the Wabi program (except for drive C, and possibly D, which are likely to be permanently assigned by the DOS emulator). If the drive letters do not connect to the same file system or directory on the host computer, the emulator may not work correctly. See Chapter 3, "Setting Up Drives," for more about drive mappings.

As the caution specifies, you must coordinate the drive mappings that you assign in the Wabi program with the drive mappings you assign in your DOS emulator. For example, if you have assigned Wabi drive G to the native operating system directory, `/home/blue/green`, the DOS emulator drive G must also be assigned to `/home/blue/green`. If drive G is not mapped identically in both programs, an error will occur if an application running under the DOS emulator tries to access drive G through the Wabi program.

About DOS Applications

The Wabi program cannot run DOS-based applications by itself, but it does provide a method for running them that is similar to the method used for running Microsoft Windows applications. However, you must have a DOS emulator installed on your system before you can run DOS applications through the Wabi program. A DOS emulator is a program that simulates a DOS environment while running in another operating system.

The advantage to using the Wabi program to run DOS applications, rather than using a DOS emulator alone, is that the Wabi program lets you group your DOS applications as you do with your Microsoft Windows applications, and start them by opening an icon. You do not have to create a program information file (PIF) to run a DOS application through the Wabi program. Once you have a DOS emulator installed and connected to Wabi, installing and using DOS-based applications is as easy as installing and using Microsoft Windows applications.

Preparation for Using DOS Applications

To use DOS applications with the Wabi program, you must prepare your Wabi environment to be able to use DOS applications. The tasks are divided here into tasks you do one time only, and tasks you do once for each DOS application you want to use through the Wabi program. Instructions for the tasks are included later in the chapter. See the margin notes for references to related information.

One-Time Tasks

To set up the Wabi program for installing and running DOS applications, you must:

For information on installing a DOS emulator, read "Installation of a DOS Emulator" on page 141.

Read "DOS Emulator Connection" on page 142 for detailed information about connecting the DOS emulator.

- Install a DOS emulator if you do not have one already installed.
- Connect the DOS emulator to the Wabi program through the DOS icon in Configuration Manager.

Installing and Using DOS Applications

9

Although the Wabi program is intended primarily for running Microsoft Windows application programs, you can also use it to run DOS applications if you have a DOS emulator installed on your system. This chapter discusses using the Wabi program to install and run DOS applications after you have a DOS emulator installed.

If you are not familiar with the installation and use of DOS emulators and applications under the Wabi program and would like to learn more about it, read the next section, "About DOS Applications."

If you want instructions for specific tasks related to DOS application installation or use, skip the first section of this chapter and use the table below to locate the instructions you need.

Task	**Page**
Entering a DOS Emulator Startup Command	148
Installing a DOS Application	148
Creating a DOS Program Group	149
Creating a DOS Program Item	149
Starting a DOS Application	150

Table 8-1 Windows Application Problems and Solutions *(Continued)*

Symptom	**Possible Cause**	**Solution**
Application does not start.	Incorrect executable name or directory path.	Make sure you have entered the correct path name. See page 131.
Application not fully functional.	Application function not compatible with Wabi or X Window System.	See the Release Notes or supplementary manual you may have received with the Wabi program for information about the application.
"Not enough memory" message from application.	Application encountered an unrecoverable error.	This error message is often used by applications for undetermined errors. Memory shortage is seldom the actual cause. Contact Wabi support.

Troubleshooting General Application Problems

You may encounter problems when installing and using a Windows application. Table 8-1 suggests solutions to common problems you might experience during application installation and use.

Table 8-1 Windows Application Problems and Solutions

Symptom	**Possible Cause**	**Solution**
Application will not fully install.	Not certified to run in Wabi program.	Only certified applications are sure to install correctly. Uncertified applications may use nonstandard installation procedures or data compression methods that Wabi has not been designed to translate.
	You are running install program in unsupported way.	All certified applications install correctly when you use Windows Program Manager's Run command. Some applications may not install correctly if you use the Windows File Manager's Run command, or some other method to install.
Application does not install correctly.	Special installation procedures required.	See the Release Notes or supplementary manual you may have received with the Wabi program.
Application installation fails with error "ACMSETUP Caused a General Protection Fault in Module MMSETUP.DLL."	Some Microsoft applications' setup programs alter the `system.ini` file incorrectly.	With a DOS or UNIX text editor, edit `$HOME/wabi/windows/system.ini`and insert a blank line before each section title. Section titles are enclosed in square brackets. (Note that UNIX editors display blank lines in DOS text files as ^M. You do not need to remove them.) Save the file, restart the Wabi program, and reinstall the application.

2. Read through the application documentation to see if there is an installation option that lets you do a partial installation to decompress the files. If there is, do the partial installation, and store the decompressed files in a network directory where other users can use them to do the second half of the installation.

3. Investigate the possibility of all the users on the network referencing a single copy of the application, so you only have to install the application once.

Caution – If you do this, remember you *must* have a license for every user of the application. You are responsible for adhering to the terms of the software license of each application you run in the Wabi program.

The application installation program takes over the whole screen. How can I work in other windows while the installation is proceeding?

First, try reducing the size of the window by restoring it. To restore, click on the Wabi logo in the upper left corner of the window (if it's visible) and choose Restore in the pull-down menu, or press Alt+Spacebar, R. This does not work for all installation programs.

Second, if your keyboard has a key or key combination that raises windows, try pressing it once to make the installation window go to the back so you can see other windows. It may take Wabi several seconds to respond to key strokes if the application installation is loading your computer heavily. This technique does not work with all installation programs.

▼ Copying and Pasting From X Applications to Windows Applications

1. **Copy the text in the X application using the application’s copying method.**
2. **Click the title bar of the Windows application to make it the active window.**
3. **Click in the work area of the Windows application to set the insertion point.**
4. **Paste the text using the application's paste method.**
   For example, press Ctrl+V or choose the Paste command from the Edit menu. The text is pasted at the insertion point.

Reference Material for Tasks Related to Using Applications

This section provides reference material for tasks related to installing and running Windows-based applications and the Microsoft Windows software.

Application Installation Q & A

Why do some applications install slowly, and some install quickly?

Most Windows application installation diskettes contain compressed files that are decompressed during installation. Applications that install quickly use standard Windows routines for compression, which the Wabi program supports by translating to UNIX routines. Applications that install slowly do not use standard routines, so the Wabi program must execute the custom decompression one instruction at a time.

What can I do to make a slow application installation easier?

If you find an application installation intolerably slow, try some of these ideas:

1. Obtain the application on CD-ROM if possible. The much larger capacity of CD-ROMs makes file compression unnecessary, so software vendors do not compress files on CD-ROM. The Wabi program does not have to execute any custom compression routines, so the installation is faster.

use drive letters, but be sure to use accurate capitalization. If you want, you can use a UNIX path for the command, and enclose a DOS path and drive in quotes for the file name.

For example, to start the Excel program and open your file `sched.xls` in your `h:\excel\files` directory, you could enter any of the following commands:

```
wabi -s 'h:\excel\excel.exe h:\excel\files\sched.xls'
wabi -s $HOME/excel/excel.exe $HOME/excel/files/sched.xls
wabi -s $HOME/excel/excel.exe 'h:\excel\files\sched.xls'
```

When the Excel window opens, it displays the `sched.xls` file.

Note – The application startup command and optional file name must be the last arguments on the `wabi` command line.

▼ Copying and Pasting From Windows Applications to X Applications

1. **Click in the X application window to set the insertion point for pasting.**
2. **Copy the text in the Windows application using the application's normal copying method.**
   For example, select the text and press Ctrl+C or choose the Copy command from the Edit menu.
3. **Click the title bar of the X application window to make it the active window.**
   In some X applications, if you click in the work area of the window, the copied text is lost because Wabi interprets this as a new text selection and erases the contents of the clipboard.
4. **Paste the text into the X application window using the application's normal pasting method.**
   The text is pasted at the insertion point you set in the first step.

For example, suppose you have installed Microsoft Excel in your `$HOME/excel` directory. The Wabi drive H is connected to your home directory. To start the Excel program, you could enter either of the following commands:

```
wabi -s 'h:\excel\excel.exe'
```
or
```
wabi -s $HOME/excel/excel.exe
```

or if `H:\EXCEL` is in the PATH statement of your `autoexec.bat`,

```
wabi -s excel.exe
```

Note – If you want to use Wabi tools, you can start them using this method. For example, to start Configuration Manager, enter:

```
wabi -s 'w:\wbin\config.exe'*
```
The Wabi process that is already running will start Configuration Manager.

▼ Opening a File When Starting an Application

♦ **With any of the startup methods, add the name of the file as an argument to the application startup command.**
You should always use a complete path for the file name.

If you are starting the application from within Windows Program Manager, add the file name in DOS format, including drive letter, to the command you enter in the Command field of the dialog box. For example, the Wabi Release Notes icon uses the command:

```
write w:\wbin\readme.wri
```

If you are starting the application from the UNIX command line, and use a DOS path for the file to open, include the drive letter and file name within the quotes along with the startup command. If you use a UNIX path, do not

You can use either a DOS path enclosed in quotes, or a UNIX path. If the directory containing the application program is not in the path in your `$HOME/wabi/autoexec.bat`, you must include a full path name.

For example, suppose you have installed Microsoft Excel in your `$HOME/excel` directory. The Wabi drive H is connected to your home directory. To start the Excel program, you could enter either of the following commands:

```
wabi 'h:\excel\excel.exe'
```

or

```
wabi $HOME/excel/excel.exe
```

or if `H:\EXCEL` is in the PATH statement of your `autoexec.bat`,

```
wabi excel.exe
```

Program Manager runs minimized and opens the initial Excel window.

Note – The application startup command and optional file name must be the last arguments on the `wabi` command line.

▼ Running an Application Transparently

This method starts your application when the Wabi program starts, without starting the Windows Program Manager.

Read "Application Startup at the UNIX Command Line" on page 125 for reasons you might want to do this.

♦ **At the system prompt, enter the Wabi startup command followed by** `-s` **and the application startup command.**
You can use either a DOS path enclosed in quotes, or a UNIX path. If the directory containing the application program is not in the path in your `$HOME/wabi/autoexec.bat` file, you must include a full path name.

5. **Choose OK in the Run dialog box.**
   The installation or workstation setup program starts.

6. **Follow the program's instructions to set up your computer to run the application.**

▼ Running an Application From an Icon

1. **Install the application.**

2. **In Windows Program Manager, locate the icon representing the application.**

3. **Open the application icon.**
   The Wabi program loads the application. When the application is loaded, a window opens, displaying the application.

▼ Running an Application From a Command in Wabi

1. **Install the application.**

2. **In Windows Program Manager, open the File menu and choose Run.**
   The Run dialog box opens.

3. **In the Command entry field, type the full path name of the application's startup command.**
   Alternately, choose the Browse button to search your directories for the executable file. When you find the executable, select it. The file name is displayed in the Command entry field.

4. **Choose OK to run the command you typed.**
   The Wabi program loads the application. When the application is loaded, a window opens displaying the application.

▼ Running an Application From a UNIX Command Line

If you want to open a data file when starting an application, see "Opening a File When Starting an Application" on page 133.

This method starts your application when the Wabi program starts, with the Windows Program Manager and Wabi Tools group available to you.

♦ **At the system prompt, enter** `wabi` **followed by the path name of an installed application executable.**

See “Assigning a Drive” on page 59 for steps required to connect a drive.

3. **Connect a Wabi drive to the server directory where you want to install the application.**

4. **Select the Network Drive option for the drive.**

5. **Select the File Sharing option for the drive if users will be working on shared files stored on this drive.**

6. **Choose the Run command from the File menu in Windows Program Manager.**

7. **In the Run dialog box, enter the command needed to install the application onto a network server.**
   Refer to the application’s documentation for the command you need to run, along with any necessary switches. Enter the drive letter plus the full directory path to the command. If the path is long, or you’re not sure what it is, choose the Browse button and search for the directory and command on the server.

8. **Choose OK in the Run dialog box.**
   The installation or workstation setup program starts.

9. **Follow the program’s instructions to place the application files on a network server.**

▼ Installing an Application to a Workstation From a Network Server

See “Application Installation From a Network Server Through a Wabi Drive” on page 124 for more details about installing applications from servers.

1. **Make sure the network server directory where the application is installed is accessible to your operating system.**

2. **Start the Wabi program on your computer.**

3. **Choose the Run command from the File menu in Windows Program Manager.**

4. **In the Run dialog box, enter the command needed to install the application from the network.**
   Refer to the application’s documentation for the command you need to run, along with any necessary switches. Enter the drive letter plus the full directory path to the command. If the path is long, or you’re not sure what it is, choose the Browse button and search for the directory and command on the server.

▼ Installing a Windows Application From CD-ROM

1. **Determine the directory in which you want to install the application.**
   If necessary, assign a Wabi drive to the directory.

Note – You should install applications on a drive other than the C drive to separate Wabi files from application files.

See “Accessing a CD-ROM Drive” on page 62 for instructions on assigning a Wabi drive to the CD-ROM.

2. **Open Configuration Manager and assign a Wabi drive to the CD-ROM directory.**
3. **In Windows Program Manager, open the File menu and choose Run.**
   The Run dialog box opens.
4. **In the Command entry field, type the CD-ROM drive letter and the name of the installation program.**
   For example, if you connected drive M to the CD-ROM directory, and the installation program is SETUP, type **`M:\setup`**.
5. **Choose OK.**
   An application-specific dialog box opens providing additional instructions.
6. **When prompted for a location in which to install the application, indicate an assigned Wabi drive (and path name, if necessary).**
   Most applications provide a default path name on the C drive, so you should not accept the default. Replace it with the drive and directory name you decided on in Step 1. For example, if you connected drive D to `$HOME/winapps`, and want to install the application in `$HOME/winapps/mailapps`, enter `D:\mailapps`. The application is placed in your `$HOME/winapps/mailapps` directory.
7. **Follow the instructions in the installation dialog box to complete installation.**

▼ Installing an Application on a Network Server

See “Application Installation on a Network Server” on page 122 for more details about installing applications on servers.

1. **Refer to the application’s documentation for specific information about installing on a network.**
   Some applications include on the installation diskettes a Read Me file describing network installation.
2. **Start the Wabi program on your computer.**

Instructions for Tasks Related to Applications

This section provides detailed, step-by-step instructions for performing a variety of tasks related to the installation and use of Microsoft Windows applications.

▼ Installing a Windows Application From Diskette

1. **Determine the directory in which you want to install the application.**
   If necessary, assign a Wabi drive to the directory.

Note – You should install applications on a drive other than the C drive to separate Wabi files from application files.

2. **In Windows Program Manager, open the File menu and choose Run.**
   The Run dialog box opens.

3. **In the Command entry field, enter the diskette drive letter and the name of the installation program.**
   For example, to install Microsoft Word for Windows, enter `A:\SETUP`.

See "About Application Installation" on page 120 and "Application Installation From Diskettes" on page 122 for more details about installing applications.

4. **Choose OK.**
   An application-specific dialog box opens providing additional instructions.

5. **When prompted for a location in which to install the application, indicate an assigned Wabi drive (and path name, if necessary).**
   Most applications provide a default path name on the C drive, so you should not accept the default. Replace it with the drive and directory name you decided on in Step 1. For example, if you connected drive D to `$HOME/winapps`, and want to install the application in `$HOME/winapps/mailapps`, enter `D:\mailapps`. The application is placed in your `$HOME/winapps/mailapps` directory.

6. **Follow the instructions in the installation dialog box to complete installation.**

Note – If your diskette drive does not provide an eject button, you can eject diskettes by clicking in the Wabi window and pressing the Meta and E keys. ◇ + E

In Microsoft Windows, you must click in a window before you can type into it. When you do, the window automatically rises to the top, overlaying other windows. Wabi's behavior matches that of Microsoft Windows.

If you set your window focus so that it follows the mouse without clicking, the Wabi windows must still use the click-to-focus policy because it's the only one Microsoft Windows applications can use. If you want consistent behavior, you should configure your X desktop to use the click-to-focus mode to make all windows behave the same way.

Cut, Copy, and Paste

You can cut, copy, and paste text and graphics between applications running in the Wabi environment just as you do in the Microsoft Windows environment. Generally, applications use menu commands (e.g., Edit, Cut) or accelerator keys (e.g., Ctrl+X) to cut, copy, and paste. You should use the same methods when using the applications in the Wabi environment.

See "Copying and Pasting From Windows Applications to X Applications" on page 134 and "Copying and Pasting From X Applications to Windows Applications" on page 135 for the copying and pasting procedures.

You can also copy and paste text between Windows applications running in Wabi and X applications running on your X desktop. You should follow each application's normal methods to cut, copy, and paste. For example, some UNIX desktops support the use of keyboard keys and menu commands to cut, copy, and paste. You can use the special keys or commands in the X applications to copy text and then paste it into a Windows application in Wabi using that application's pasting method. You cannot use the UNIX desktop special keys to paste into the Windows application.

Note – You cannot copy and paste graphics between Windows applications and X applications because they use incompatible graphics formats.

You can use the `-s` switch plus the application startup command to make the Wabi user interface transparent, so all you see is your application. This is the recommended format to use when including an application in a UNIX desktop menu. Note that you can access Windows Program Manager or Wabi tools such as Configuration Manager by starting them just as you would an application. For example, the command line below starts Configuration Manager:

```
wabi -s 'w:\wbin\config.exe'
```

Application Startup With an Open File

See "Opening a File When Starting an Application" on page 133 for sample command formats for specifying a data file to open.

With any of the application startup methods, you can specify a file name to open with the application, if the application startup command allows it (as most do). Just include the file's full name as an argument to the startup command. If the directory containing the file is not on your path in your `autoexec.bat` file, you must include the full path to the file.

The `wabi` command supports additional switches allowing you to display Wabi on a remote system, and to display Wabi with smaller or larger system fonts. These switches, which are described in Chapter 1, "Getting Started," must be specified before an application startup command. The application startup command and optional file name must be the last arguments on the `wabi` command line.

Using Microsoft Windows Applications in an X Window Desktop

The Wabi program is an X Window application, but in many ways it behaves like a Microsoft Windows application. Window focus, and cut, copy, and paste methods are areas where Wabi behaves like Microsoft Windows rather than an X application.

Window Focus and Raising

X Window desktops let you choose your window focus policy. You can configure your X desktop so that you must click on a window to activate it, or so that you can move your mouse into a window to activate it. In addition, you can also specify whether you want a window to be raised to the top when activated. Each UNIX vendor's desktop has its own terminology for these desktop properties and its own utility for changing them.

Using Microsoft Windows Applications

You can run applications in several different ways: from within the Windows Program Manager, by opening an icon or using the Run command; and from your operating system command window, using the `wabi` command along with some parameters.

When you install a Microsoft Windows application, the Wabi program creates an item representing the application. This item, represented by an icon, is stored in a group. Usually, the application's install program creates its own group.

See "Running an Application From an Icon" on page 131 for specifics on getting an application to run.

Running an installed application using an icon is straightforward. Open the icon representing the application and the application starts. Once the application starts, a window opens revealing the initial application screen.

You can minimize any application, including the Program Manager. The icons of minimized applications are automatically placed in the upper-left corner of your desktop. You can restore a minimized application by opening its icon. You can also restore a minimized application by single-clicking its icon and selecting Restore from the window control box.

Application Startup Command Within Wabi

When the Wabi program is already running with Windows Program Manager, you can start an application using the Run option from the File menu in Program Manager. The command you enter is the same command you would use to run the application on a PC, except that the drive letter indicates a path on your UNIX system.

Application Startup at the UNIX Command Line

See "Running an Application From a UNIX Command Line" on page 131 or "Running an Application Transparently" on page 132 for the command formats.

You can run an application directly with the `wabi` command by specifying the application startup command as an argument to the `wabi` command. Depending on how you specify the application startup command, you can make the Wabi user interface, i.e., the Windows Program Manager and Wabi Tools, visible or transparent. If you want to see the Wabi user interface, simply add the application startup command to the `wabi` command.

Application Installation From a Network Server Through a Wabi Drive

Once an application has been installed on a network server, users can install application files to their computers through a Wabi drive.

Note – You are responsible for adhering to the terms of the application's software license. Each user who installs an application, whether from a drive or from diskette, must be licensed to use the software.

If you want to install an application from a network server, see "Installing an Application to a Workstation From a Network Server" on page 130.

The method for installing an application from a Wabi drive is the same as installing from diskette — you use the Run command from the File menu in Windows Program Manager. However, the drive you specify is a Wabi drive through which you access the directory where the application is located.

You can use the preconfigured drive R and specify a complete path name to the directory. You can also use Configuration Manager to connect a different Wabi drive letter to the directory containing the files. In either case, you enter in the Run dialog box (shown in Figure 8-1) the Wabi drive letter and the path to the application files.

For example, if the application files are located in directory path `/usr/apps/install/hg20`, you could enter the following in the entry field of the Run dialog box:

```
R:\usr\apps\install\hg20\setup
```

You could also assign drive letter F to `/usr/apps/install/hg20` and enter:

```
F:\setup
```

The type of slash character you use depends on whether a UNIX or a DOS path name is involved. The backslash (\) is used in DOS path names. The forward slash (/) is used in UNIX path names. The Wabi program accepts both types of slash characters, but you should use one type within a command line.

Most Wabi-certified applications can be used in both standalone and network environments and provide a way to install to a network file server. The method used for a network installation varies from application to application. Some installation programs require a switch on the command line, which instructs the installation program to place the files on a network server so that users can then install the application from that location to their own workstations. Other application installation programs offer a server installation option you can select in a dialog box.

Some applications let users run the application from the network server without installing all the application files to their workstations. In this case, the installation program copies the minimum files needed to run the application on to the workstation.

Before you install an application to a shared network location:

- Refer to the application's manuals for specific information about installing on a network. Some applications include on the installation diskettes a Read Me file describing network installation.
- Make sure the Network Drive option is selected on the Wabi drive you connect to the network directory.
- If users will be using the application in a workgroup arrangement (e.g., working on shared reports, spreadsheets, and so on), you should probably use file sharing. Look through the application's documentation to see if you should *not* use file sharing. The DOS program `SHARE.EXE` enables file sharing in the Microsoft Windows environment, so look for a discussion about using `SHARE.EXE`. If there are no warnings against using `SHARE.EXE`, select the File Sharing option on the Wabi drive where the shared files are stored.
- Make sure that everyone allowed to install the application has a license to use it. For most applications, this requirement can be fulfilled by purchasing a single-user copy for each user, or by purchasing a "license pack" for multiple users.

Caution – Some Wabi-certified applications are created for single-user, single-tasking, nonprotected environments, and do not function well in a network environment. In addition, sharing may be prohibited by the application's software license agreement. You are responsible for adhering to the terms of the software license of each application you use under the Wabi program.

`setup` and `install` programs, `install` is likely used for DOS systems, and `setup` for Microsoft Windows systems. See the application's documentation for the command to begin installation.

Application Installation From Diskettes

See"Installing a Windows Application From Diskette" on page 128 for step-by-step procedures.

If you are installing an application from diskettes, the drive letter will be A or B, depending on the diskette drive you are using. If there is one diskette drive, it is usually A.

The command that you use to install a typical application from diskette is often:

```
A:\SETUP
```

When you type this command in the Run dialog box and choose OK, the Wabi program passes control to the application's installation program. What you see next depends on the installation program. Follow the instructions presented by the installation program, inserting program disks as required throughout the installation process.

Application Installation from CD-ROM

If you want to install an application from CD-ROM, see "Installing a Windows Application From CD-ROM" on page 129.

If you are installing an application from CD-ROM, you must first make sure the CD-ROM drive is accessible from the operating system. See "CD-ROM Drives" on page 54 for information about using CD-ROM drives in the Wabi program.

When you have assigned a Wabi drive letter to the CD-ROM directory, you can install the application using the Run command in Program Manager, as described in "The Run Command" on page 121.

Application Installation on a Network Server

If you want to install an application on a network server, see "Installing an Application on a Network Server" on page 129.

Because the Wabi program runs in a networked UNIX environment with a distributed file system, it is easy to share applications over the network. You do not need any additional software for file sharing as you would on a PC because your operating system provides that function. You simply connect a Wabi drive to a directory on the network server where you want to install the application, and specify this drive and directory when prompted for the installation location.

directory. If you intend to store the files you create with the application in the same directory as the application, make sure the extra space required for these files is available in the directory.

- Many installation programs tell you to reboot your computer after installing the application. This is not necessary under the Wabi program. You need only stop and restart the Wabi program.

Caution – The Wabi program does not support Adobe Type Manager® (ATM®) fonts. If your application includes a disk containing ATM fonts, do not install this disk.

The Run Command

You install applications using the Run command. You'll find this command in the Windows Program Manager's File menu. To install an application, open the File menu and choose Run. The Run dialog box opens, as shown in Figure 8-1.

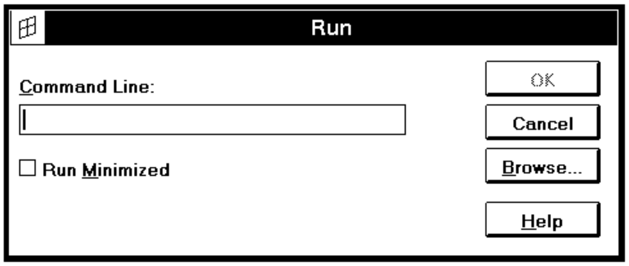


Figure 8-1 Run Dialog Box

The Command entry field in the Run dialog box is where you tell the Wabi program the location of the application files, and the name of the application installation program.

The location includes the drive letter, which depends on whether you are installing from diskette, the network, or CD-ROM. It may also include a directory path on the diskette, network, or CD-ROM.

The name of the application's installation program depends on the application you are installing. Many applications use `setup` or `install` as the name of the program that starts the installation process. If the application includes both

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Copying and Pasting From Windows Applications to X Applications	134
Copying and Pasting From X Applications to Windows Applications	135

About Application Installation

Installing an application requires you to place the application in a directory on your system or on a network file server by using the application's `install` or `setup` program through the Microsoft Windows Program Manager.

Here are some important points to consider before installing an application:

- You are responsible for adhering to the terms of the software license of each application you use under the Wabi program.
- You should use the Run command in the File menu of Microsoft Windows Program Manager to install applications.
- Before you begin installing an application, be sure to read the Wabi release notes or supplementary guide you received with your version of the Wabi program. It may contain important information about installing particular applications.
- Some application installation windows fill the screen, preventing you from using other windows on your desktop. For this reason, you should plan to be unable to use your system for other work while you install an application. See the "Application Installation Q & A" on page 135 about a possible workaround.
- In general, you should not install applications in drive C, even if the application provides drive C as the default location for installation. Drive C is connected to `$HOME/wabi`, which contains Wabi program files that should be kept separate from application files. You should only use drive C for files of which users must have their own copy, and for applications that must access a simulated hard drive for their copy protection scheme to work.

  You can install an application in any other location you like. The only limitations are that you must have adequate space in the directory in which you install the application, and you must have permission to write to the

"Application Installation on a Network Server" on page 122 discusses special considerations for installing to network locations in order to share an application.

Installing and Using Microsoft Windows Applications

8

This chapter discusses using the Wabi program to install and run Microsoft Windows application programs. You cannot install DOS-based applications using the procedures described here. Chapter 9, "Installing and Using DOS Applications," discusses DOS-based applications.

If you are not familiar with the installation and use of software under the Wabi program and would like to learn more about it, read the next section, "About Application Installation."

If you want instructions for specific tasks related to application installation or use, skip the next section of this chapter and use the following table to locate the instructions you need.

Task	Page
Installing a Windows Application From Diskette	128
Installing a Windows Application From CD-ROM	129
Running an Application From an Icon	131
Installing an Application on a Network Server	129
Installing an Application to a Workstation From a Network Server	130
Running an Application From a Command in Wabi	131
Running an Application From a UNIX Command Line	131
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Table 7-1 Port Problems and Solutions *(Continued)*

Symptom	**Probable Cause**	**Solution**
Can't connect COM port to serial device	Inadequate permissions to device file or directory.	You must have read and write access to your UNIX system's device files and directories. Change permissions in the operating system using the `chmod` command.
No devices appear in COM Port Connections device driver list	Invalid device directories or file patterns.	Locate the device files in your operating system. Make sure the COM device directories and COM device file patterns that Wabi uses to find COM devices are set correctly. See page 111 for more information.

4. **Choose the Advanced button.**
   The Advanced COM Port Options dialog box opens.

5. **Choose the Defaults button.**
   Default device directory and file pattern settings are restored.

6. **Choose OK.**
   Your change is saved.

Reference Material for Tasks Related to Ports

This section provides reference material for various tasks related to configuring and using Wabi ports.

Troubleshooting Problems With Ports

You may encounter problems when attempting to use a port. Table 7-1 suggests solutions to problems you might experience when working with ports.

Table 7-1 Port Problems and Solutions

Symptom	**Probable Cause**	**Solution**
Can’t assign COM1, device busy	Serial port is being used by another device, such as a mouse or terminal, or by a UNIX TIP connection.	Try using a different COM port, if you have one that is not in use.
Can’t access COM2	Serial port not configured at operating system level.	See your operating system documentation for information about configuring serial ports.
Settings are disabled (appear dimmed) in Port Settings dialog	LPT port selected in Port list.	Wabi LPT ports connect to printers controlled by UNIX only. The serial port settings (baud rate, etc.) do not apply to LPT ports. If you are trying to set up a serial printer directly connected to your system, select a COM port.

▼ Entering an Alternate COM Device File Pattern

1. **Open Configuration Manager.**
2. **Open the Ports icon.**
   Alternately, choose Ports from the Options menu or press Alt, s, p.

   The Port Settings dialog box opens.
3. **Choose the Connect button.**
   The COM Port Connections dialog box opens.
4. **Choose the Advanced button.**
   The Advanced COM Port Options dialog box opens.

"Advanced COM Port Options" on page 111 provides details on using alternate COM device file patterns.

5. **Select the COM Device File Patterns edit box and type one or more file patterns (naming conventions).**
   Separate multiple patterns with commas; do not include space characters.
6. **Choose OK to save your entry.**
   Alternately, choose Cancel to exit the dialog box without changing settings.

   When you choose OK, the Wabi program validates your entry. If the entry is valid, the Wabi program searches for serial device files using the file-naming patterns you entered.

   An error message is displayed if your entry contains an invalid device file pattern. Follow the instructions in the error message to clear the error condition and then enter a valid COM device file pattern. If you need more help clearing the error condition, choose the Help button in the error message dialog box.

▼ Restoring Advanced COM Port Options Defaults

1. **Open Configuration Manager.**
2. **Open the Ports icon.**
   Alternately, choose Ports from the Options menu or press Alt, s, p.

   The Port Settings dialog box opens.
3. **Choose the Connect button.**
   The COM Port Connections dialog box opens.

3. **Choose the Defaults button.**
   The default connection is restored for the port. The default connection is to the operating system default printer.

4. **Choose OK to save your change.**
   Alternately, choose Cancel to exit the dialog box without changing settings.

▼ Entering an Alternate COM Device Directory

1. **Open Configuration Manager.**

2. **Open the Ports icon.**
   Alternately, select Ports from the Options menu or press Alt, s, p.

   The Port Settings dialog box opens.

For information about using an alternate COM devices path, read "Advanced COM Port Options" on page 111.

3. **Choose the Connect button.**
   The COM Port Connections dialog box opens.

4. **Choose the Advanced button.**
   The Advanced COM Port Options dialog box opens.

5. **Select the COM Device Directories edit box and type the directory or directories in which COM devices are located.**
   Separate multiple entries with commas; do not include spaces.

6. **Choose OK to save your entry.**
   Alternately, choose Cancel to exit the dialog box without changing settings.

   When you choose OK, the Wabi program validates your entry. If the entry is correct and all directories are valid, these directories are searched each time you assign a device to a COM Port.

   An error message is displayed if you enter an invalid directory. Follow the directions in the error message to clear the error condition, then enter a valid COM device driver directory. If you need more help clearing the error condition, choose the Help button in the error message dialog box.

3. **Choose OK to save your choices.**
   The settings you've specified apply to the selected port.

   Alternately, choose Cancel to exit the dialog box without changing settings.

▼ Resetting COM Port Settings to Defaults

1. **Select a COM port.**
   The settings in the dialog box reflect the current values for the selected port.
2. **Choose the Defaults button.**
   The default settings are restored for the port.
3. **Choose OK.**
   Your changes are saved.

▼ Connecting a COM Port to a Serial Device Name

1. **Select a COM port.**
   The settings in the dialog box reflect the current values for the selected port.

For information about COM port connections to serial devices, read "COM Port Connections" on page 110.

2. **Choose the Connect button.**
   The COM Port Connections dialog box opens.
3. **Open the drop-down list.**
   A list of available serial devices for the selected port appears.
4. **Select a device name.**
5. **Choose OK to save your change.**
   The selected device is connected to the port.

   Alternately, choose Cancel to exit the dialog box without changing settings.

▼ Resetting a COM Port Connection to the Default

1. **Select a COM port.**
   The settings in the dialog box reflect the current values for the selected port.
2. **Choose the Connect button.**
   The COM Port Connections dialog box opens.

LPT Ports and Printing

The Port drop-down list in the Port Settings dialog box provides access to Wabi LPT ports. You use an LPT port to connect to a printer through your operating system. This is the recommended way to print.

While you can choose an LPT port for printing from the Port Settings' Port list, it is usually easier to manage printing operations from the Printer Settings dialog box. This dialog box, and many other issues related to printing, are discussed in detail in Chapter 4, "Printing."

Instructions for Tasks Related to Ports

This section provides detailed, step-by-step instructions for performing a variety of tasks related to ports.

▼ Selecting a Port

1. **Open Configuration Manager.**
2. **Open the Ports icon.**
   Alternately, choose Ports from the Options menu or press Alt, s, p.

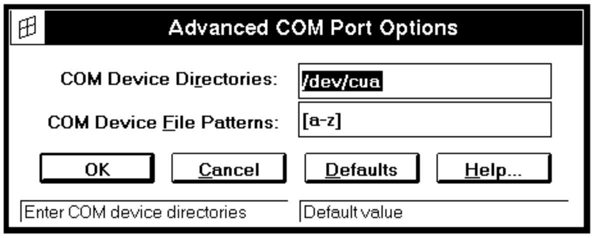
   The Port Settings dialog box opens.
3. **Open the Port drop-down list and select a port.**
   If you select a COM port, the settings in the Port Settings dialog box apply to the selected COM port.

   If you select an LPT Port, the settings are disabled (dimmed) since they do not apply to LPT ports. Only the Connect button is functional.

▼ Changing COM Port Settings

1. **Select a COM port.**
2. **Open the drop-down list of each setting you want to change and select an item from the list.**

For an overview and description of COM Port settings, read "COM Port Settings" on page 109.



COM Device Directories: /dev/cua

COM Device File Patterns: [a-z]

Enter COM device directories

Default value

Figure 7-3 Advanced COM Port Options Dialog Box

You enter two pieces of information in this dialog box:

For instructions on using advanced options, see "Entering an Alternate COM Device Directory" on page 115 and "Entering an Alternate COM Device File Pattern" on page 116.

- *COM Device Directories* – This is the list of directories in the native operating system that the Wabi program searches for serial device drivers. You can include more than one directory in the list, provided you use commas to separate directory names. Do not include spaces.
- *COM Device File Patterns* – This is the serial device driver file-naming pattern used. You can include more than one file pattern in the list, provided you use commas to separate the patterns. Do not include spaces.

  Wildcard characters are allowed in file pattern entries. An asterisk (*) can replace a group of characters, and a question mark (?) can replace a single character. You can indicate a range of possible values for a single character by using brackets. For example, you can use [0–9] to match a value from 0 through 9, or [b–g] to match a value from b through g. If you enter the pattern tty[a–z]*, the Wabi program finds file names such as `ttya`, `ttyb20`, or `ttyzxt23`, if they exist in the device directories.

COM Ports and Printing

The Wabi program allows you to print to a COM port as well as to an LPT port. When you print to a COM port, you bypass your native operating system's print facility. This allows you to access a printer directly, rather than through the operating system's print spooler. Your printer must be physically connected to your workstation's serial communications port. In general, it's best to use an LPT port for printing.

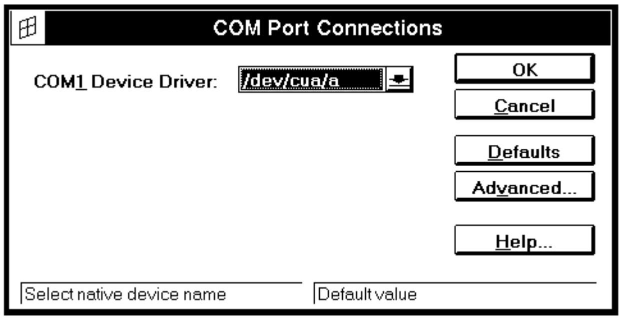


Figure 7-2 COM Port Connections Dialog Box

Advanced COM Port Options

The Wabi program searches for serial device directories and files based on default locations and file-naming patterns. In most cases, these defaults match the directories and naming patterns used by your operating system. In some cases, they may not.

For example, if you rename a serial device using a nonstandard naming convention, the Wabi program will not be aware of the naming convention. If you relocate a serial device to a directory not normally used to store it, the Wabi program will not know where to look for the device file.

When these situations occur, you must tell the Wabi program the directories to search and the naming patterns to recognize when searching for serial device drivers. Think of these entries as “search templates” that are used whenever a device driver is called for.

You use the Advanced COM Port Options dialog box, shown in Figure 7-3, to provide the Wabi program with the information it needs to find and use serial devices named or located in a nonstandard manner. You access this dialog box by choosing the Advanced button in the COM Port Connections dialog box.

Six settings apply to each COM port:

- *Port* – Identifies the COM port to which the displayed settings apply.
- *Baud Rate* – Determines the speed at which information is sent and received.
- *Data Bits* – Determines the number of bits used to represent each character.
- *Parity* – Determines the method of error checking.
- *Stop Bits* – Represents a time interval between transmitted characters.
- *Flow Control* – Selects the method used to control the flow of information.

Each setting provides access to a drop-down list, offering a range of values for the setting. You change a setting by selecting a value.

Note – In the Port Settings dialog box, when you select an LPT port from the Port list, most other settings in the dialog box are disabled (dimmed). This is because these settings apply only to COM ports, not to LPT ports. Only the Connect button applies to an LPT port.

COM Port Connections

The serial communications ports COM1 through COM4 connect to serial devices located in your native operating system. You decide which port to connect to which operating system device.

To make a COM port connection, see "Connecting a COM Port to a Serial Device Name" on page 114.

Use the COM Port Connections dialog box, shown in Figure 7-2, to make or change a COM port connection. You access this dialog box by choosing Connect in the Port Settings dialog box. The Wabi program supplies a default COM Device Driver name for each COM port. You can change this default by selecting another name from the COM Device Driver list.

This list displays the available device drivers for the port selected in the Port Settings dialog box. Open the COM Device Driver list to view the device driver names. You change a COM port's connection by selecting a device driver name in the list.

Two Parts of COM Port Configuration

Configuring a COM port is a two-part process:

- Specify COM port settings
- Connect the COM port to an operating system serial device

You perform both these tasks within Configuration Manager.

You'll find the default COM port settings appropriate for most serial communications situations. When using a COM port, try the default settings first. If these settings do not work, change them as necessary to establish and maintain communication.

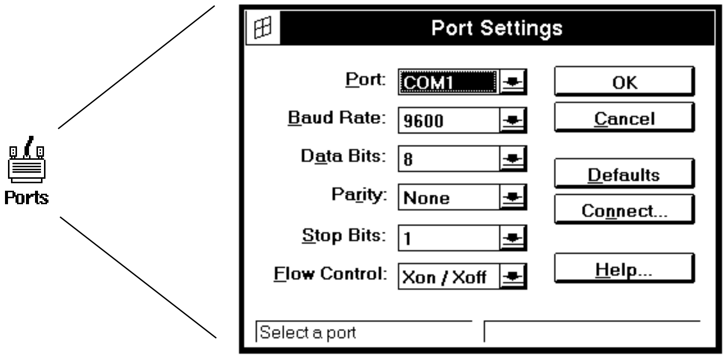
You might have to change a COM port setting if you connect to an information service through a modem. The baud rate setting of the COM port must match the baud rate (speed) at which the service operates. For example, this might require you to change the baud rate from the default setting of 9600 baud to 2400 baud.

Note that many applications automatically adjust COM port settings by determining the settings required and overriding the Wabi COM port settings.

COM Port Settings

For the steps required to make or change port settings, see "Changing COM Port Settings" on page 113.

You change COM port settings in the Port Settings dialog box, shown in Figure 7-1. This dialog box contains basic settings that apply to each COM port.



Port: COM1
Baud Rate: 9600
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: Xon / Xoff
Select a port

Figure 7-1 Port Settings Dialog Box

About Wabi Ports

A port is a gateway through which you access the world beyond the Wabi program. For example, you can use a port to connect the Wabi program to an information service located in a distant city, or to a local or remote printer. The Wabi program provides two types of ports:

For the steps required to make or change port settings, see "Changing COM Port Settings" on page 113.

- *COM Ports* – Provide a way for you to connect to a serial device such as a modem or a serial printer. A Wabi COM port corresponds to a serial device in your native operating system. A serial device is an operating system program that enables your computer to interact with physically connected devices such as modems and serial printers. There are four Wabi COM ports available: COM1, COM2, COM3, and COM4. (Your computer probably supports fewer than four COM ports.)
- *LPT Ports* – Provide a way for you to connect to a system printer. A Wabi LPT port is a port you can assign to any printer your operating system can access. There are three LPT ports available: LPT1, LPT2, and LPT3.

Chapter 4, "Printing," discusses the uses of LPT ports and explains how to connect them to printers in your operating system. The remainder of this chapter discusses COM ports.

COM Port Configuration

Before you can use a COM port, you must be able to access serial devices located in your native operating system. Your operating system documentation contains instructions for accessing devices. Once you have access to a serial device in your native operating system, you can configure a Wabi COM port to access the device.

Note – If a COM port is being used by a native operating system function, the port is not available for use by the Wabi program. This could occur if your mouse connects through COM1 or if you connect your computer to a remote system using the UNIX `TIP` command.

Using Wabi Ports

7

This chapter discusses working with Wabi ports. A port provides a way to connect your computer to an external device, such as a printer or a modem.

If you are not familiar with COM ports and LPT ports and would like to learn more about them, read the next section, "About Wabi Ports."

If you want to go directly to instructions for specific tasks related to ports, skip the next section of this chapter. Use the following table to locate the instructions you need.

See “Setting a Network Drive” and “Setting a Local Drive” on page 62 for the steps to set up drives as local or remote.

application, the printer seems locally connected to a port on a PC, but in reality, it may be in another wing of the building, connected to a print server on your network. The Wabi program can make any drive, local or remote in reality, appear to an application as either local or remote. You must determine which type of drive an application needs and set the drive accordingly.

Windows Sockets Networking

Windows Sockets is a network interface allowing Microsoft Windows applications to exchange data over a network. Windows Sockets is based on the sockets interface, a network interface used by most UNIX operating systems, and is tailored for the Microsoft Windows environment.

Applications can make Windows Sockets calls, and Wabi carries them out using TCP/IP. The Wabi program’s Windows Sockets capability is always available to applications, and no configuration is necessary. Note that the Wabi program runs only the client version of applications that use Windows Sockets.

The Wabi program is not guaranteed to support every application that uses the Windows Sockets network interface. Only certified applications, such as Lotus Notes, are supported for Windows Sockets.

Networking for E-Mail Applications

Wabi-certified electronic mail applications do not use a PC network interface to exchange messages. When Microsoft Mail and cc:Mail clients run in Microsoft Windows, they use a distributed file system provided by PC network software. When they run in the Wabi program, they use the distributed file system provided by your operating system. Therefore, the Configuration Manager does not present any network options that affect electronic mail programs.

Network-Aware Applications

Some applications that run in the Wabi program, while not actually communicating over the network, are “network-aware.” Such applications take steps to prevent problems caused by multiple users having access to the same files: locking files when open, creating temporary files for each user, storing times in Greenwich Time for accurate time stamps across time zones, and so on. Network-aware applications may need to know if they are using a local or network drive. Chapter 3, “Setting Up Drives,” discusses network drives.

On the Network

6

The Wabi program gives Windows applications access to your computer's network capabilities, and provides some PC network interface support. This chapter explains Wabi network support.

About Wabi Networking

The Wabi program provides a networked environment in ways that combine UNIX networking and PC networking. A computer running UNIX is very likely connected to a TCP/IP network, and probably uses distributed file system software, which allows the computer to access directories on remote computers as if those directories were on a local hard drive. A personal computer running DOS and Microsoft Windows is often connected to a PC network, through one of several PC network products using one of several networking interfaces. The Wabi program uses the TCP/IP network and a distributed file system to provide some of the services of a PC network, such as shared file systems and devices. The Wabi program also supports the Windows Sockets networking interface to allow certified applications, such as Lotus Notes, to communicate through the network directly.

The Invisible UNIX Network

The Wabi program makes abundant use of the UNIX host's TCP/IP network and distributed file system capabilities, but this is mostly transparent to the applications running in Wabi. The printers and drives that you connect through Configuration Manager are often residing on the network. To an

Table 5-1 Locales Used for Environment Variables *(Continued)*

Language – Country	**Locale**	**Equivalent DOS Variable**
French – Canada	`fr_CA`	`KEYB_cf`
French – France	`fr`	`KEYB_fr`
French – Switzerland	`fr_CH`	`KEYB_sf`
Spanish - Latin America	`en_LA`	`KEYB_la`
Spanish – Spain	`es`	`KEYB_sp`
German – Germany	`de`	`KEYB_gr`
German – Switzerland	`de_CH`	`KEYB_sg`
Italian – Italy	`it`	`KEYB_it`
Norwegian – Norway	`no`	`KEYB_no`
Portuguese – Portugal	`pt`	`KEYB_po`
Swedish – Sweden	`sv`	`KEYB_sv`

4. **Open the Negative list, and select a format for showing negative values.**
   The choices vary according to the symbol you selected.
5. **Open the Digits list, and select the number of digits you want displayed after the decimal point.**
   You can choose from 0 through 9 digits. This affects only currency values, not all numbers.
6. **Choose OK to save your changes.**
   Alternately, choose Cancel to leave the currency settings as they were when you entered the dialog box.
7. **Choose OK in the International Settings dialog if you do not want to change any other settings.**
   Alternately, choose Cancel to leave all the international settings as they were when you entered the International Settings dialog box.

Reference Material for International Settings

This section provides reference material for tasks related to international settings.

Locales For `LANG` and `WABI_KEYB` Variables

See "Setting the LANG Environment Variable" on page 97 and "Setting the WABI_KEYB Environment Variable" on page 97 to see how to set the variables.

Table 5-1 lists the locale names available for use with the `LANG` and `WABI_KEYB` variables and the languages and regions these variables represent. It also includes the equivalent DOS keyboard variables.

Table 5-1 Locales Used for Environment Variables

Language – Country	**Locale**	**Equivalent DOS Variable**
English – United States	`en_US or C`	`KEYB_us`
English – United Kingdom	`en_UK`	`KEYB_uk`
Danish – Denmark	`da`	`KEYB_dk`
Dutch – Netherlands	`nl`	`KEYB_nl`
Finnish – Finland	`fi`	`KEYB_su`
French – Belgium	`fr_BE`	`KEYB_be`

▼ Changing Number Settings

1. **In the International Settings dialog, choose Modify in the Number Settings panel.**
   The Number Settings dialog opens.

See “Number Settings” on page 95 for a discussion of the Number Settings dialog box.

2. **Open the Decimal Digits list and select the number of digits you want displayed after a decimal point.**
   Choose from 0 to 6 decimal digits.
3. **Open the Decimal Indicator list and select a character to indicate a decimal point.**
   Most locales use a comma or a period.
4. **Open the Separator list and select a character to separate thousands.**
   Most locales use a comma or a period.
5. **Select Display Leading Zero to include a leading zero in numbers less than 1.**
   A number such as .95 will display as 0.95 if you check this box.
6. **Choose OK to save your changes.**
   Alternately, choose Cancel to leave the number settings as they were when you entered the dialog box.
7. **Choose OK in the International Settings dialog if you do not want to change any other settings.**
   Alternately, choose Cancel to leave all the international settings as they were when you entered the International Settings dialog box.

▼ Changing Currency Settings

1. **In the International Settings dialog, choose Modify in the Currency Settings panel.**
   The Currency Settings dialog opens.

See “Currency Settings” on page 96 for a discussion of the Currency Settings dialog box.

2. **Open the Symbol list, and select a symbol to use for currency.**
   The symbol you select is used in the Placement and Negative fields.
3. **Open the Placement list, and select a format for placing the currency symbol relative to the amount.**
   The choices vary according to the symbol you selected.

6. **Choose OK in the International Settings dialog if you do not want to change any other settings.**
   Alternately, choose Cancel to leave all the international settings as they were when you entered the International Settings dialog box.

▼ Changing Time Settings

1. **In the International Settings dialog, choose Modify in the Time Settings panel.**
   The Time Settings dialog opens.

See "Time Settings" on page 94 for a discussion of the Time Settings dialog box.

2. **In the Time Settings dialog, choose 12 for 12-hour time, or 24 for 24-hour time.**
   If you select 12 hours, the fields Before Noon and After Noon are displayed.

   If you select 24 hours, the field Suffix is displayed.
3. **If you selected 12 hours, use the Before Noon and After Noon entry fields to enter characters you want to follow the morning and afternoon/evening times.**
   For example, in the Before Noon field, you might enter AM and your time zone. In the After Noon field, you might enter PM and your time zone.
4. **If you selected 24 hours, use the Suffix entry field to enter characters you want to add to the time.**
   For example, you might enter your time zone.
5. **In the Separator field, select a character from the drop-down list, or type one of your choice. This character separates hours and minutes.**
   Common separators are the slash (/), period (.), and hyphen (-).
6. **Select Display Leading Zero if you want single-digit hours to be displayed using two digits.**
   One o'clock will display as 01:00 instead of 1:00.
7. **Choose OK to save your changes.**
   Alternately, choose Cancel to leave the time format as it was when you entered the dialog box.
8. **Choose OK in the International Settings dialog if you do not want to change any other settings.**
   Alternately, choose Cancel to leave all the international settings as they were when you entered the International Settings dialog box.

3. **Select the Separator entry field and enter a character to separate date, month, and year.**
   Common separators are the slash (/), period (.), and hyphen (-).

4. **For each component of the date, open the Format list and select a format to use.**
   The Sample panel shows how your selections affect the date format.

5. **Choose OK to save your changes.**
   Alternately, choose Cancel to leave the date as it was when you entered the dialog box.

6. **Choose OK in the International Settings dialog if you do not want to change any other settings.**
   Alternately, choose Cancel to leave all the international settings as they were when you entered the International Settings dialog box.

▼ Changing the Long Date Format

1. **In the International Settings dialog, choose Modify in the Date Settings panel.**
   The Date Settings dialog box opens.

See "Date Settings" on page 93 for a discussion of the Date Settings dialog box.

2. **In the Long Date panel, select the part of the date to display first in the Display First field.**
   The components of the date are rearranged in the Format section of the dialog. The Sample panel shows how your selections affect the date format.

3. **For each component of the date, open the Format list and select a format to use.**
   The formats are displayed in the Sample panel.

4. **For each component of the date, select the Separator field and type the character you want to follow that part of the date.**
   The separators are displayed in the Sample panel.

5. **Choose OK to save your changes.**
   Alternately, choose Cancel to leave the date as it was when you entered the dialog box.

In the Bourne or Korn shell:

```
WABI_KEYB=fr;export WABI_KEYB
```

Or, to set the environment variable statements required to establish French international settings with an English-language (U.S.) keyboard, enter the following at the command line:

In the C shell:

```
setenv LANG fr
setenv WABI_KEYB C
```

In the Bourne or Korn shell:

```
LANG=fr;export LANG
WABI_KEYB=C;export WABI_KEYB
```

2. **Start the Wabi program.**

▼ Changing International Settings

1. **Open Configuration Manager.**
2. **Open the International icon.**
   Alternately, open the Options menu and choose International or press Alt, s, i.

   The International Settings dialog box opens.

Read "About International Settings" on page 91 for more information about International Settings.

3. **Change the settings you want.**
4. **Choose OK.**
   The International Settings dialog box closes.

   Alternately, choose Cancel to remove any changes you made in the dialog.

▼ Changing the Short Date Format

1. **In the International Settings dialog, choose Modify in the Date Settings panel.**
   The Date Settings dialog box opens.
2. **In the Short Date panel, select the part of the date to display first in the Display First field.**
   The Sample panel shows how your selections affect the date format.

See "Date Settings" on page 93 for a discussion of the Date Settings dialog box.

Instructions for Tasks Related to International Settings

This section provides detailed, step-by-step instructions for performing a variety of tasks related to international settings for your Wabi environment.

▼ Setting the `LANG` Environment Variable

1. **At the operating system prompt, enter one of the following commands before starting your X Window desktop:**

Table 5-1 on page 102 lists the locales you can use to set the `LANG` and `WABI_KEYB` variables.

In the C shell:

```
setenv LANG locale
```

In the Bourne or Korn shell:

```
LANG=locale;export LANG
```

For example, to specify French as the locale/keyboard type, enter one of the following commands:

In the C shell:

```
setenv LANG fr
```

In the Bourne or Korn shell:

```
LANG=fr;export LANG
```

2. **Start your X Window desktop.**

▼ Setting the `WABI_KEYB` Environment Variable

1. **At the operating system prompt, enter one of the following commands before starting the Wabi program:**

"About Localizing Wabi" on page 90 explains why you might set these variables.

In the C shell:

```
setenv WABI_KEYB locale
```

In the Bourne or Korn shell:

```
WABI_KEYB=locale;export WABI_KEYB
```

For example, to specify French as the locale for the keyboard in the Wabi program, enter one of the following commands:

In the C shell:

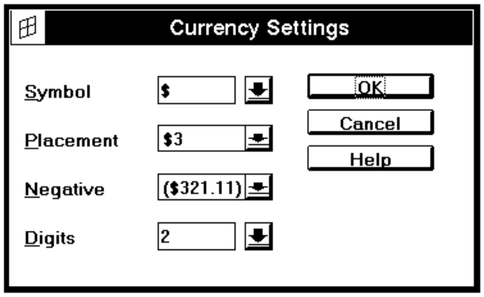
```
setenv WABI_KEYB fr
```

The Decimal Indicator, Separator, and Display Leading Zero selections also affect numbers used in currency amounts. The Decimal number does *not* affect the currency formats because the Currency Settings dialog has its own setting for the number of digits following a decimal point.

When you choose OK and exit the dialog, your new settings are reflected in the Number Settings panel of the International Settings dialog box.

Currency Settings

The current currency format is displayed in the Currency Settings panel of the International Settings dialog box. To change the currency format, you choose the Modify button in the Currency Settings panel. The Currency Settings dialog box shown in Figure 5-5 opens.



Symbol: $
Placement: $3
Negative: ($321.11)
Digits: 2

See “Changing Currency Settings” on page 101 for the steps to change the currency format.

Figure 5-5 Currency Settings Dialog Box

The Currency Settings dialog contains these fields:

- *Symbol* – Specifies the character to use as the monetary symbol. You can select an item from the list, or select the entry field and type a character. The symbol you specify is used in the Placement and Negative fields.
- *Placement* – Determines where to place the symbol character, relative to the amount. You must select a placement format from the list.
- *Negative* – Indicates how to display negative values. You must select a negative format from the list.
- *Digits* – Determines how many digits to display after the decimal character. You must select a number from 0 through 9 in the list.

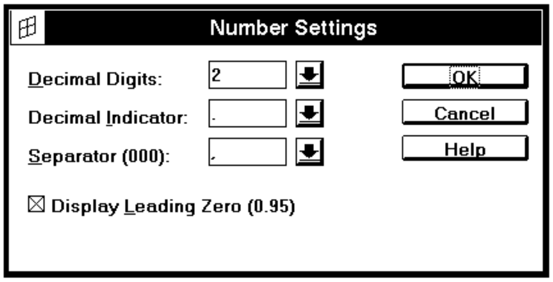
When you choose OK and exit the dialog, your new settings are reflected in the Currency Settings panel of the International Settings dialog box.

- *Separator* – Specifies what character(s) to place between hours and minutes. This is a text entry field, so you can type in any characters (up to nine, including spaces) to use as separators.
- *Display Leading Zero* – Determines how single-digit hours are displayed. Checking the box makes a zero appear before single-digit hours. A leading zero makes times align better in columns.

When you choose OK and exit the dialog, your new settings are reflected in the Time Settings panel of the International Settings dialog box.

Number Settings

The current number format is displayed in the Number Settings panel of the International Settings dialog box. To change the number format, choose the Modify button in the Number Settings panel. The Number Settings dialog box shown in Figure 5-4 opens.


Number Settings

Decimal Digits: 2

Decimal Indicator: .

Separator (000): ,

☒ Display Leading Zero (0.95)

Figure 5-4 Number Settings Dialog Box

See “Changing Number Settings” on page 101 for the steps to change the number format.

The Number Settings dialog contains these fields:

- *Decimal Digits* – Determines how many digits to display after the decimal character. You can select a number from 0 through 6 in the list.
- *Decimal Indicator* – Specifies which character to indicate a decimal point. You can select a character from the list, or select the entry field and type a character.
- *Separator* – Indicates the character to use after the thousands digit. You can select a character from the list, or select the entry field and type a character.
- *Display Leading Zero* – Specifies whether to display a zero before the decimal point, in numbers less than one.

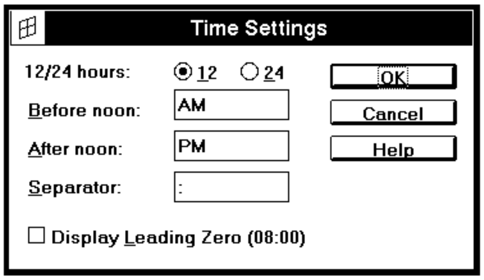
- *Format* – Determines how to display each component of the date. These are list boxes from which you select the format of the month, date, and year. In the Long Date panel, you also select a format for the day of the week.

As you make changes, the Sample panels show the effects of your selections on the date formats. When you choose OK and exit the dialog, your new settings are reflected in the Date Settings panel of the International Settings dialog box.

Time Settings

The current time format is displayed in the Time Settings panel of the International Settings dialog box. To change the time format, you choose the Modify button in the Time Settings panel. The Time Settings dialog box shown in Figure 5-3 opens.

See “Changing Time Settings” on page 100 for the steps to change the time format.



12/24 hours: ● 12 ○ 24
Before noon: AM
After noon: PM
Separator: :
☐ Display Leading Zero (08:00)

Figure 5-3 Time Settings Dialog Box

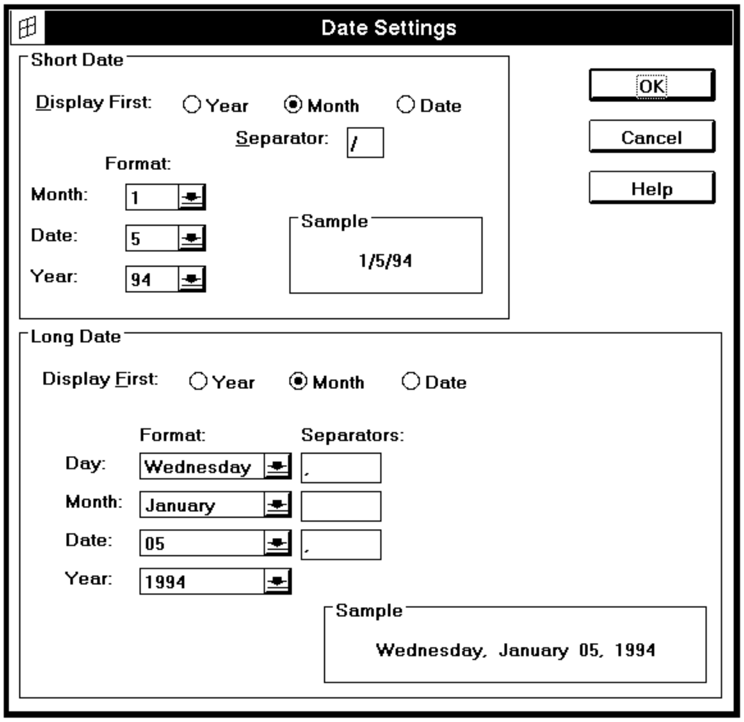
The Time Settings dialog contains these fields:

- *12/24 hours* – Specifies either 12-hour or 24-hour format.
- *Before noon* – Specifies characters to place after A.M. times in 12-hour time. This is a text entry field, so you can type in any characters (up to five, including spaces). If you like, you can add the time zone after AM, or remove AM.
- *After noon* – Specifies characters to place after P.M. times in 12-hour time. This is a text entry field, so you can type in any characters (up to five, including spaces). If you like, you can add the time zone after PM, or remove PM.
- *Suffix* – Specifies characters to place after 24-hour times. This is a text entry field, so you can type in any characters (up to five, including spaces). You can enter the time zone, for example. This field is visible only when you select 24-hour time.

Date Settings

The current date format is displayed in the Date Settings panel of the International Settings dialog box. To change the date format, choose the Modify button in the Date Settings panel. The Date Settings dialog box shown in Figure 5-2 opens.

See “Changing the Short Date Format” on page 98 and “Changing the Long Date Format” on page 99 for the steps to change the date formats.



Date Settings

Short Date

Display First: ○ Year ● Month ○ Date

Separator: /

Format:

Month: 1

Date: 5

Year: 94

Sample

1/5/94

Long Date

Display First: ○ Year ● Month ○ Date

Format: Separators:

Day: Wednesday ,

Month: January

Date: 05 ,

Year: 1994

Sample

Wednesday, January 05, 1994

Figure 5-2 Date Settings Dialog Box

In the Date Settings dialog, you can specify different formats for the short and long versions of the date. The dialog contains these fields for the Short Date and Long Date:

- *Display First* – Determines which component of the date to display first. When you select one, the other parts of the date are rearranged in the correct order.
- *Separator* – Specifies what character(s) to place after date components. These are text entry fields, so you can type in any characters (up to five, including spaces) to use as separators.

The International Settings dialog contains several fields, list boxes, and panels:

- *Locale* – Specifies the locale currently in effect. The locale is the language library that the Wabi program uses to determine default values for the other items in the dialog. You cannot change the locale here. You can only change it with the `LANG` variable as described in "Setting the LANG Environment Variable" on page 97.
- *Separator* – Defines the character separating items in a list. You enter whatever character you want to use.
- *Metric/English* – Specifies the measurement system used by applications, either metric (meters and liters) or English (inches and ounces). Depending on which locale you are using, the measurement system is preset to one of these values. You can change it to the one you want to use. For example, if you are using the locale en_us (English, United States), the measurement system is set to English automatically, but you can change it to metric.
- *Date Settings* – Determines the format applications use for displaying the date. The Wabi program provides two formats: short, which is numbers only, and long, which can include the words for month and day of the week. You can customize each of these formats. You determine the order of day, month, and year, the character separating each component of the date, and the format of each component of the date.
- *Time Settings* – Specifies the format of the time displayed in applications. You specify 12-hour or 24-hour time, the character separating hours, minutes, and seconds, and whether to use a leading zero in single digit hours.
- *Number Settings* – Determines how numbers are displayed in applications. You can specify the character separating thousands, the decimal character and the number of digits displayed after it, and whether to include a leading zero in numbers less than one.
- *Currency Settings* – Defines the character to use as the currency symbol, where to place the symbol in relation to the amount, how to depict negative amounts, and how many decimal places to display after the decimal character.

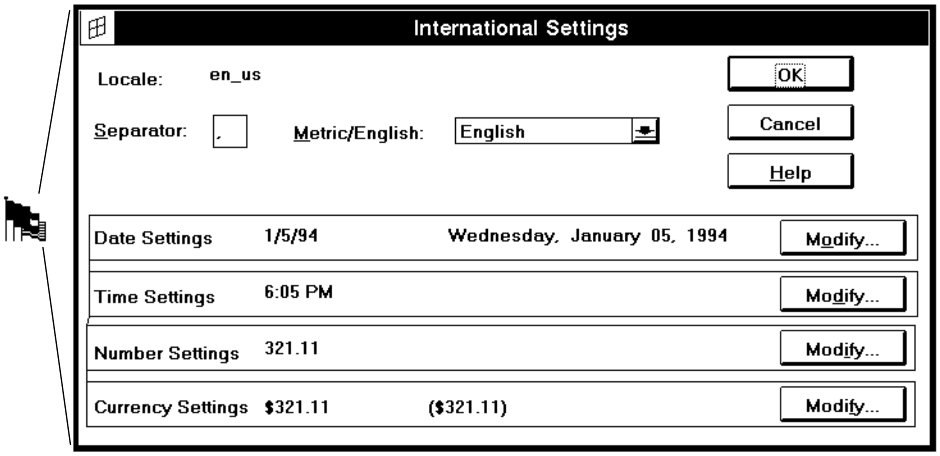
Current settings for Date, Time, Number, and Currency are shown through samples displayed in the International Settings dialog. You can change any of these settings by choosing the Modify button beside each one, to bring up an additional dialog. The following sections describe the dialogs.

About International Settings

Applications running in the Wabi program use the international conventions set by the locale assigned to the `LANG` variable. You can customize these international conventions to your preferences using the Wabi Configuration Manager's International Settings. The international settings that you can change are: separator for lists, metric or English measurement, and formats for date, time, numbers, and currency. If your UNIX system also lets you adjust any of these settings, make sure your Wabi International Settings agree with the UNIX settings.

International settings affect applications that run with the Wabi program if the application is designed to use similar settings when it runs with Microsoft Windows 3.1. Some applications have their own menus or commands for setting some formats. For example, a spreadsheet program may provide its own date, time, and number formats. An application's settings take precedence over the Wabi program's settings.

You use the International Settings dialog box shown in Figure 5-1 to change international settings. You open this dialog box from within Configuration Manager by opening the International icon, or by choosing International from the Options menu.



Locale: en_us

Separator: ,

Metric/English: English

Date Settings 1/5/94 Wednesday, January 05, 1994

Time Settings 6:05 PM

Number Settings 321.11

Currency Settings $321.11 ($321.11)

Figure 5-1 International Settings Dialog

Task	Page
Changing Time Settings	100
Changing Number Settings	101
Changing Currency Settings	101

About Localizing Wabi

The Wabi program can be localized through two environment variables: `LANG` and `WABI_KEYB`. The `LANG` variable affects your entire X Window desktop, while the `WABI_KEYB` variable affects only the Wabi program.

The procedure for setting these variables is on page 97. Table 5-1 on page 102 lists the locales you can use to set the `LANG` and `WABI_KEYB` variables.

If your version of the UNIX operating system contains international language libraries, you can use the UNIX language (`LANG`) environment variable to enable the Wabi program to use a particular language, or *locale*, as it is called in the UNIX world. Wabi uses the locale to determine sorting order and to obtain default values for conventions such as time, date, and number formats, and currency symbols. Setting the `LANG` variable does not convert the Wabi user interface to another language. It enables applications running in UNIX and in Wabi to accept input that contains special characters and sort them correctly, and display the conventions appropriate to the locale.

The `LANG` environment variable also sets the keyboard to the locale you specify. The Wabi program supports the `WABI_KEYB` variable to let you specify a keyboard that is different from that specified by the `LANG` variable. The `WABI_KEYB` variable overrides the keyboard specified by the `LANG` variable. The `WABI_KEYB` variable affects only the Wabi program.

The `LANG` and `WABI_KEYB` variables use a two-letter or four-letter abbreviation to identify the locale. Table 5-1 on page 102 lists the locale abbreviations.

Compose Key Sequences

The Wabi program supports Compose key sequences. If your keyboard provides a Compose key, you can use it to produce special characters. See your keyboard documentation for details about using the Compose key to make special characters.

International Settings

5

This chapter discusses international settings, which are options that vary with your language, nation, or geographical region.

The Wabi program can be adapted for international use at two levels: in the UNIX environment, where you set variables that specify the language library you use and the keyboard type, and in Configuration Manager, where you set your individual preference for international settings used by applications running in the Wabi program.

If you are unfamiliar with Wabi international settings and dialog boxes and want to learn more about them, read the section, "About International Settings" on page 91.

If you want instructions for specific tasks related to international settings, skip the next section of this chapter. Use the following table to locate the instructions you need.

Table 4-1 Printing Problems and Solutions *(Continued)*

Symptom	**Possible Cause**	**Solution**
Desired printer driver not listed in Available Printer Drivers panel	Printer not officially supported.	If the printer is PostScript, you should be able to use one of the listed printer drivers. The printer's documentation may list other drivers you can use, or tell you what printer is emulated. If it doesn't, contact the printer vendor, who might suggest other drivers to use. You might also contact Adobe Systems, Inc. (the developer of PostScript) for advice, or customer support from your UNIX vendor. You may also try out different drivers on your own to see which works. You can view the PostScript printer definition files (`*.ppd` files) in the directory `$HOME/wabi/wabihome/printers` to see what printer features are supported. This could be time consuming, however. If the printer is not PostScript, Epson, HP LaserJet, or a text-only printer, you cannot use it with Wabi. See page 70 for a list of supported printers.
Generic/Text Only printer driver does not appear in Available Printer drivers list	Microsoft Windows not installed.	To be able to print on a text-only printer, you must install Microsoft Windows to get the Generic/Text Only driver. Note that you can print simple text to a PostScript printer if you configure it correctly in the operating system.

Reference Material for Printing

This section provides reference material for tasks related to printing.

Troubleshooting Problems With Printing

Table 4-1 suggests solutions to problems you might experience when working with printers.

Table 4-1 Printing Problems and Solutions

Symptom	**Possible Cause**	**Solution**
Can't print	Invalid native printer name or print command.	Make sure you can print to the same printer outside Wabi, using a UNIX print command such as `lp` or `lpr`. If you can print in UNIX, try resetting Wabi's printer connection (the UNIX printer name and command) to the default value. See "Restoring Printer Name and Command Defaults" on page 84 for instructions. If you cannot print using these defaults, the problem is probably outside Wabi.
	Printer not configured correctly in operating system.	If the printer is not configured correctly, you cannot print outside Wabi with a UNIX print command. If this is the case, see your system administrator or your UNIX system documentation for help in configuring the printer.
	Printer port connected to wrong printer.	Check the Printer Output Connection to make sure the port is connected to the UNIX printer you want to print on. See *page 82* for more information.
Desired operating system printer not listed in the Native Printer Name list.	Printer not configured in operating system.	See your system administrator or your UNIX system documentation for help in setting up a printer in the operating system.

▼ Printing to a File

1. **Open Configuration Manager.**
2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   See "Print to a File" on page 80 for more on this topic.

   The Printer Settings dialog box opens.
3. **Select a printer in the Installed Printers panel.**
   The selected printer is highlighted.
4. **Choose the Port button.**
   The Printer Port Selection dialog box opens.
5. **Select FILE in the scrollable list.**
   FILE is highlighted.
6. **Choose OK.**
   The Printer Port Selection dialog box closes, and the installed printer is assigned to FILE in the Installed Printers panel of the Printer Settings dialog box.
7. **Choose OK to close the Printer Settings dialog box.**
8. **Issue a Print command from within an application.**
   A dialog box prompts you for an output file name.
9. **Enter an output file name and choose OK.**
   The printed output is directed to a file and saved under the name you provide.

▼ Restoring Printer Name and Command Defaults

1. **Open Configuration Manager.**
2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.
3. **Select an installed printer in the Installed Printers panel for which you want to reset defaults.**
   The item is highlighted.
4. **Choose the Port button.**
   The Printer Port Selection dialog box opens and displays a list of available ports, with the currently assigned port highlighted. Do not select anything unless you want to use a different port.
5. **Choose the Connect button in the Printer Port Selection dialog box.**
   The Printer Output Connection dialog box opens.

   "Connect the Port to a Printer" on page 76 discusses the Printer Output Connection dialog box.
6. **Choose the Defaults button.**
   Default Native Printer Name and Native Print Command entries replace existing settings.
7. **Choose OK to save your selection.**
   Alternately, choose Cancel to exit the dialog box without making changes.

▼ Accessing the Printer Setup Dialogs

1. **Open Configuration Manager.**
2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.
3. **Select the printer in the Installed Printers panel for which you want to view dialog boxes or Help.**
   The item is highlighted.

   Read "Printer Driver Setup Dialog Boxes and Help Screens" on page 79 to learn about driver-specific dialogs and Help screens.
4. **Choose the Setup button.**
   The initial dialog box provided by the printer driver opens. If you need help with the printer setup, choose the Help button in this dialog box.

Note – You must designate a default printer at the operating system level before you can use <DefaultPrinter>.

8. **In the Assign Connection panel, open the Native Print Command list and select a printer command.**
   The command is highlighted.

   Alternately, select the entry field and type in a different print command.

   If you make no selection, the default print command is used.

9. **Choose OK.**
   The printer name and command you selected are assigned to the driver/port combination. The Printer Output Connections dialog box closes.

10. **Choose OK in the Printer Settings dialog box.**
    Your assignment is saved and the Printer Settings dialog box closes.

▼ Defining the Wabi Default Printer

1. **Open Configuration Manager.**

“Wabi Default Printer” on page 78 discusses the default printer.

2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.

3. **Select a driver/port combination in the Installed Printers list.**
   The item is highlighted.

4. **Choose the Set As Default button.**
   The selected driver/port combination is assigned as the default. The word [Default] appears after the printer/port combination in the Installed Printers panel.

5. **Choose OK to close the Printer Settings dialog box and save your selection.**
   Alternately, choose Cancel to close the dialog box without making changes.

3. **Select an installed printer in the Installed Printers panel.**
   The printer is highlighted.
4. **Choose the Port button.**
   The Printer Port Selection dialog box opens and displays a list of available ports.
5. **Select a port.**
   The port appears highlighted.
6. **Choose OK.**
   The installed printer driver you specified is assigned to the selected port.

   Alternately, choose Cancel to close the dialog box without making changes.
7. **Choose OK in the Printer Settings dialogs box.**

▼ Connecting a Printer to a Driver/Port Combination

1. **Open Configuration Manager.**
2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.
3. **Select an installed printer in the Installed Printers panel.**
   The printer is highlighted.
4. **Choose the Port button.**
   The Printer Port Selection dialog box opens and displays a list of available ports.

See "Connect the Port to a Printer" on page 76 for background information about assigning a printer to a Wabi port.

5. **Select an LPT port.**
6. **Choose Connect in the Printer Port Selection dialog box.**
   The Printer Output Connections dialog box opens.
7. **In the Assign Connection panel, open the Native Printer Name list and select a printer name.**
   The name is highlighted.

   Select <DefaultPrinter> if you want to connect to your operating system's default printer.

Installing a Printer Driver

1. **Open Configuration Manager.**

Refer to “About Printer Drivers” on page 74 for more information about printer drivers.

2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.

3. **Select a printer driver appearing in the Available Printer Drivers panel.**
   The driver appears highlighted.

4. **Choose Install.**
   Driver installation begins. When installation is complete, a dialog box opens informing you the driver was successfully installed.

5. **Choose OK.**
   The Printer Settings dialog box updates the list of Installed Printers to include the driver.

Removing an Installed Printer

1. **Open Configuration Manager.**

2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.

3. **Select an installed printer in the Installed Printers panel.**
   The printer appears highlighted.

4. **Choose Remove.**
   The highlighted printer is removed from the Installed Printers panel.

Assigning an Installed Printer Driver to a Port

1. **Open Configuration Manager.**

See “Printer Drivers and Ports” on page 75 for background information about assigning a driver to a Wabi port.

2. **Open the Printers icon.**
   Alternately, open the Options menu and choose Printers or press Alt, s, r.

   The Printer Settings dialog box opens.

Print to an LPT Port or a COM Port

You can assign a printer to either an LPT port or a COM port. In most cases, you should assign a printer to an LPT port because this method of printing makes use of your operating system's print resources, such as spooling. Once the Wabi program hands off the print job to the print spooling system, printing takes place in the background, so you are free to do other work in Wabi.

You can also print to a COM port. Doing so bypasses your operating system print services and results in printed output being sent directly to a serial device. You might want to print to a COM port if you have a dedicated serial printer attached directly to your system's serial port. However, this method of printing directly to a printer is not faster than printing through the operating system's print system, and you must wait for the print job to finish before continuing to work in the Wabi program.

Print to a File

You can direct printed output to a file, rather than to an LPT port or a COM port. When you print to a file, you create a print-ready file that can be printed on any printer of the same type. For example, if you print using the Adobe Default Printer, a PostScript file is created, and you can print it on any PostScript printer. You might want to print to a file so you can send the file electronically to someone who wants to print the file but not alter it.

Refer to "Printing to a File" on page 85 to learn how to direct printed output to a PostScript file.

To print to a file, you assign the installed printer driver to the FILE list item in the Printer Port Selection dialog box. When you issue the print command from within an application, a dialog box opens, prompting you for an output file name. The print-ready file is saved under this name.

Instructions for Tasks Related to Printing

This section provides detailed, step-by-step instructions for performing a variety of tasks related to setting up the Wabi program for printing.

Note – For information about tasks related to a specific printer driver, refer to the on-line Help provided in the driver's Setup dialog.

There are two parts to a Wabi default printer assignment:

- *A Printer Type* – the type of printer assigned as the default. In Figure 4-1, an Adobe Default Printer appears as the default printer type.
- *A Port* – the Wabi port to which the default printer driver is assigned. In Figure 4-1, the default printer port is LPT1.

See "Defining the Wabi Default Printer" on page 83 for the steps required to assign a default printer driver.

The printer driver/port combination you deem the default should connect to the printer you use most frequently. For example, if most of your printing is done on an Apple® LaserWriter® II NTX printer named "speedy" located near your office, attach the Apple LaserWriter II NTX v47.0 printer driver to a port such as LPT1, and then set this printer driver/port combination as your default. Then connect "Apple LaserWriter II NTX v47.0 on LPT1" to the "speedy" printer. When you choose Print within an application's File menu, the application sends the job to LPT1, and the Wabi program redirects the print job to "speedy."

Printer Driver Setup Dialog Boxes and Help Screens

Refer to a print driver's on-line Help for information about using specific features and functions of the print driver.

The Printer Settings dialog box, shown in Figure 4-1, includes a button labeled Setup. This button provides access to the dialog boxes and Help screens supplied with specific printer drivers. These dialog boxes are unique to each printer driver and are supplied by the printer driver vendor.

For example, let's assume you are working with the Adobe Default Printer driver. When you choose Setup, the initial dialog box supplied with the Adobe Default Printer driver opens. From this initial dialog box, you can change a variety of settings specific to your printer.

Note – The Wabi program does not support the downloading of fonts to a printer. The button representing this function appearing in the Adobe Printer Driver Setup dialog box is not functional.

Refer to "Accessing the Printer Setup Dialogs" on page 84 to learn how to view driver-specific dialogs and Help.

Each printer driver supplies on-line Help specific to the driver. For information about using a particular feature or function of a printer driver, refer to the driver's on-line Help. You can access Help for a particular printer driver by choosing the Setup button in the Printer Settings dialog box. A dialog box associated with the printer driver opens. Choose Help in this dialog box to view the printer driver's Help information.

Connecting a printer to a Wabi LPT port is as simple as opening the Native Printer Name list and selecting a printer name.

In most cases, you will not have to alter the Native Print Command entry. The default entry supplied with the Wabi program will usually be correct. However, you can select the entry field and type in a command if you want. You can change the native print command to any command line that you know works in your operating system to get the output you want from the printer. See your operating system user manuals for information about commands used for printing.

After you select a printer by name and choose OK in the Printer Output Connections dialog box, the printer name and command is assigned to the LPT port indicated at the top of the dialog box.

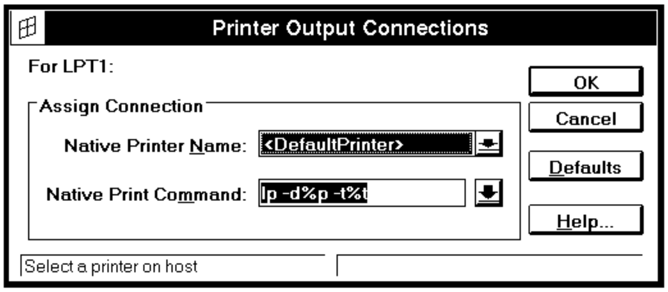
The Defaults button in the Printer Output Connections dialog box restores the Wabi program default printer connection. This connection assigns the default printer specified in the Printer Settings dialog box to Wabi port LPT1. The default also specifies a generic print command.

The default print command includes two placeholders for parameters used with arguments to the print command:

- `%p` – The Wabi program replaces `%p` with a printer name. If the printer name is <DefaultPrinter>, the Wabi program omits the argument using `%p` when a print command is issued to the operating system. This makes the operating system use its default printer.
- `%t` – The Wabi program replaces `%t` with the print job title. Many operating systems require a print job title statement.

Wabi Default Printer

The Installed Printers panel in the Printer Settings dialog box displays a list of installed printers and labels one [Default]. This default printer is the Wabi default printer, the one used when you print from within an application running in Wabi and do not specify a particular printer. The Wabi default printer is different from the operating system default printer. However, you can connect the Wabi default printer to the operating system default printer so that all print jobs (both Wabi and UNIX) automatically go to the same printer when you do not specify a printer.



For LPT1:

Assign Connection

Native Printer Name: <DefaultPrinter>

Native Print Command: lp -d%p -t%t

Select a printer on host

Figure 4-3 Printer Output Connections Dialog Box

“Connecting a Printer to a Driver/Port Combination” on page 82 describes how to assign a printer to a port.

Your operating system recognizes and addresses printers by their names. That means that every printer you can use has a name. In addition, your operating system uses a specific command to initiate a print job. When you connect a printer to a Wabi LPT port, you indicate the name of the printer you want to assign to the port and the command required to start the printer printing.

It’s all done from the Printer Output Connections dialog box. As Figure 4-3 illustrates, this dialog box contains a panel labeled Assign Connection. The connection you specify in this panel applies to the port whose name appears in the upper-left corner of the dialog box.

The Assign Connection panel has two entry fields with drop-down lists:

- *Native Printer Name* – Displays a list containing the names of all the printers your operating system is configured to recognize and which you can access. The first name, <DefaultPrinter>, specifies your operating system default printer, which is the printer used when you print from the operating system without specifying a printer name. When you assign a port to <DefaultPrinter>, print jobs sent to that port go to the current operating system default printer. If you change the default printer in your operating system, the Wabi program immediately uses the new default printer for <DefaultPrinter>.
- *Native Print Command* – Displays a list of operating system print commands.

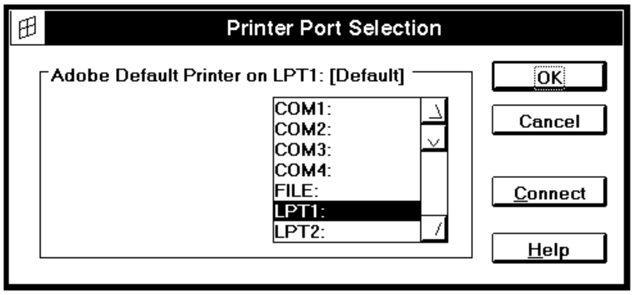


Figure 4-2 Printer Port Selection Dialog Box

This dialog box displays a list of Wabi ports. You select an item from the list by clicking on the item. When you choose OK, the printer driver you've selected is assigned to the port you've selected. The driver/port combination is displayed in the Installed Printers panel of the Printer Settings dialog box.

From now on, any time you direct a print job to this port, the job will be controlled by the printer driver assigned to the port.

If you select FILE in the Printer Port Selection dialog box, the job will be printed to a file. You will be prompted for the file name when you issue a print command in an application.

Connect the Port to a Printer

The final step to printing is connecting a Wabi port to an operating system printer (if you are using an LPT port). You make this connection from the Printer Output Connections dialog box shown in Figure 4-3. You access this dialog box by choosing the Connect button in the Printer Port Selection dialog box.

Follow the steps in “Connecting a Printer to a Driver/Port Combination” on page 82.

The Epson FX-1050 driver can be used with any Epson printer in the FX-series, and also with the LX and MX models. However, you should install a driver from the Available Printer Drivers that matches the model printer you have. Note that if you have an Epson PostScript printer, you should use the appropriate PostScript driver, not the Epson FX-1050 driver.

After you've installed the Microsoft Windows software using the Wabi program's Windows Install tool, you can also access a generic (text only) printer driver supplied with the Microsoft Windows program. This driver appears in the list of installed printers after Windows installation is complete. You can use this driver to print text (not graphics) to most printers. Note that if your application lets you save a document as an ASCII text file, you can print a text file without the generic printer driver. PostScript printers can print text-only documents if they are configured in the operating system to accept simple text input.

Note – The Wabi program does not support the downloading of fonts to a printer. If you choose the button representing this function in a printer driver Setup dialog box, a Wabi error message box is displayed.

Printer Drivers and Ports

Once you've installed a printer driver, the next step is assigning the printer driver to a Wabi port. (The Wabi program automatically assigns a newly installed printer to LPT1, but you can change this if you want.)

"Assigning an Installed Printer Driver to a Port" on page 81 describes how to link a driver to a COM port or an LPT port.

Assigning a printer driver to a port means that any time an application sends a print job to that port, the driver you've assigned to the port processes the document for printing on a particular printer.

You can assign multiple drivers to the same port, and designate one as the default driver for that port. The default will be used in most cases. However, some applications will automatically select the driver they require from the drivers assigned to the port.

You assign an installed printer driver to a Wabi port by selecting the driver in the Installed Printers panel and then choosing the Port button. When you choose Port, the Printer Port Selection dialog box shown in Figure 4-2 opens.

- *Set as Default* – Designates the selected printer/port combination as your Wabi default printer.
- *Install* – Allows you to install an available printer driver. Once installed, the driver name appears in the Installed Printers list.

About Printer Drivers

See "Installing a Printer Driver" on page 81 for the steps required to install a printer driver.

The first step in setting up the Wabi program to print is installing a printer driver. A printer driver is a software program that exploits the features and functions of a printer. The Available Printer Drivers panel of the Printer Settings dialog box displays a list of approximately 200 available printer drivers supplied with the Wabi program. You scroll through this list to select the driver that matches or supports your printer. In some cases, a single driver supports many types of printers. Refer to your printer manual for information about the driver required by your printer.

Note – The only printer drivers you can install and use are the drivers in the Available Printer Drivers panel in the Printer Settings dialog box.

You install a printer driver by selecting it in the list of Available Printer Drivers and choosing the Install button to the right of the list. The Wabi program installs the driver you selected and displays the driver's name in the Installed Printers panel of the Printer Settings dialog box.

The Wabi program uses an Adobe PostScript printer driver, Adobe Default Printer, by default. This driver provides PostScript printing functionality and supports many printers manufactured by a variety of vendors. However, you probably can find an exact match for your printer model in the list of available printer drivers. The driver for a specific printer model provides support for most of the printer's features. The default driver may not be able to use all the printer's built-in fonts, paper trays, etc.

The Printer Settings dialog includes the HP LaserJet III and Epson FX-1050 in the list of Installed Printers. The HP LaserJet III driver can be used with any LaserJet III printer, and also with LaserJet IV printers, although the driver may not be able to use all the LaserJet IV's capabilities. The driver cannot be used with LaserJet II printers.

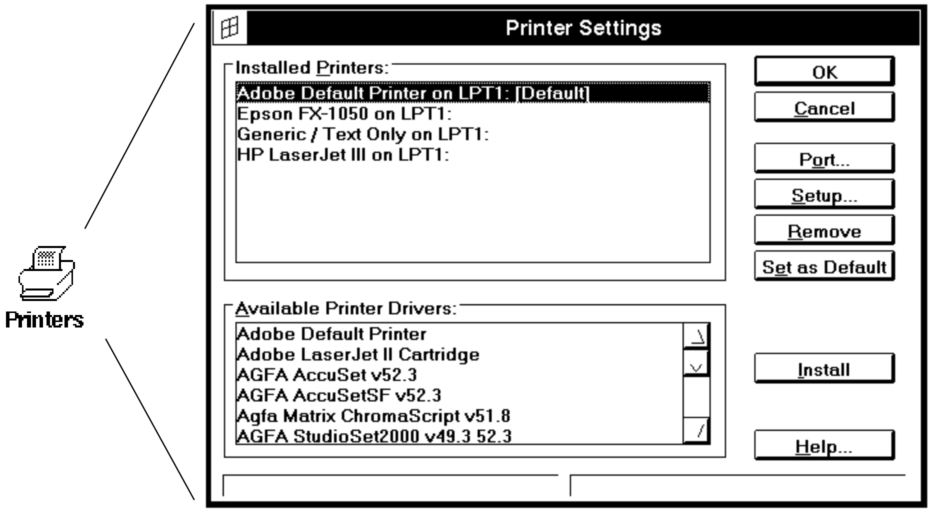


Figure 4-1 Printer Settings Dialog Box

In the Printer Settings dialog box you can:

- View a list of installed printers
- Identify and change the Wabi default printer
- View a list of available printer drivers
- Install and remove a printer driver
- Access a dialog box from which you set up a printer driver
- Access a dialog box from which you assign a printer driver to a Wabi port
- Access a dialog box from which you connect a Wabi port to a UNIX printer

The Printer Settings dialog box has several unique buttons:

- *Port* – Opens the Printer Port Selection dialog box where you assign the selected printer driver to a Wabi port.
- *Setup* – Opens printer setup dialog boxes and Help screens supplied by the specific printer drivers. You use these dialogs to change printer settings such as page size, paper sources, and page orientation.
- *Remove* – De-installs a printer driver by removing it from the Installed Printers list.

If you use one printer most often, you should designate it as your system default printer. That way the Wabi program will know where to send a print job when you do not specify the print destination.

See your operating system documentation for more information about installing and accessing printers, and designating a default printer.

The Steps to Printing

The Wabi program is ready to print in many environments without any action on your part. By default, the Wabi program assigns a PostScript driver, the Adobe® Default Printer, to port LPT1, and connects LPT1 to your operating system's default printer. These settings will work for printing to PostScript printers in most situations. However, you should install the printer driver that matches your printer model exactly. This lets your Windows applications tailor themselves according to your printer's capabilities for paper size, multiple paper trays, envelopes, and so on. It also gives the application access to all the fonts on the printer.

You can change the print settings so you can print on any supported printer that you can access from your operating system. Changing the print settings involves three procedures:

- Select and install an available printer driver, if it is not in the current list of installed printers
- Assign the installed driver to a Wabi port, such as LPT1
- Connect the port to a printer defined in the operating system

You accomplish these tasks through the Printer Settings dialog box and related dialogs. You access the Printer Settings dialog box by opening the Printers icon in the Configuration Manager window. The Printer Settings dialog box is shown in Figure 4-1.

The Concept of a Wabi Port

The Wabi program directs printed output through *ports*. A Wabi port is an artificial concept, not an actual physical cable connection on the back of your computer, as a port is in the DOS world. The names COM1 and LPT1 have no meaning to your native operating system, so the Wabi program translates them to something your operating system understands. A COM port is assigned to a serial communications device name in the Wabi program. An LPT port is assigned to a software-defined combination of a named printer and a native print command.

The Wabi program provides eight ports: four serial ports (COM1 through COM4); three parallel printer ports (LPT1, LPT2, LPT3); and FILE for printing to a file. Any of these ports can be used by your application programs when you issue a print command.

A printer driver is a software program that exploits the features and functions of a printer.

Part of setting up a printer in the Wabi program involves assigning a printer driver to a Wabi port. You can assign a printer driver to a COM port, an LPT port, or the FILE port. In addition, you can declare any driver/printer combination the default printer. This default printer is the location to which your applications send printed output when you choose “Print” within an application’s File menu.

If you assign a printer to an LPT port, the final step in setting up printing is to connect a printer from the world outside the Wabi program (your operating system) to a Wabi LPT port. You do this by selecting a printer (by name) and assigning it to an LPT port to which you’ve assigned a printer driver.

If you assign a printer driver to a COM port or to FILE, the operating system’s print system is not used, so the step of assigning a native printer to the port has no meaning, and is omitted.

Before You Can Print

Before you can print from applications running in the Wabi program, you must be able to use a printer from the operating system. You (or your system administrator) must configure your operating system to recognize the printer by name. If you can print on a printer using a print command in your operating system, you will be able to access the printer from the Wabi program.

Task	Page
Restoring Printer Name and Command Defaults	84
Accessing the Printer Setup Dialogs	84
Printing to a File	85

About Printing

Wabi print functions bridge the gap between an application's printing method and the printing mechanism of your operating system. Print functions are *transparent*. That means once you establish Wabi printer settings and connections, you can issue a print command from within an application and your document is printed. You do not need to go back to the Configuration Manager and use print-related dialog boxes.

When you issue a print command from within an application, the application passes your print request to a printer driver which, in turn, passes the print request to an assigned printer port. Up to this point, the print process is the same as in the Microsoft Windows environment. However, instead of sending the print request to an LPT port, the Wabi program redirects the request to the native printing system, along with the name of a printer and a print command.

Your UNIX printing system processes print jobs from all applications you run on your desktop, whether they run in the Wabi program or in your operating system. Printing is done in the background, so you never have to stop your work while a print request is carried out.

You manage printers, print queues, and print jobs with the same UNIX printer management utilities or commands you normally use to manage printing on your UNIX system. You do not need a separate tool such as the Windows Print Manager to manage printing from the Wabi program.

Supported Printer Models

The Wabi program supports more than 200 printers, including PostScript, Hewlett-Packard LaserJet III series, and Epson FX series printers. You can install drivers for each of them in the Available Printer Drivers panel in the Printer Settings dialog box. You cannot add extra printer drivers to use with the Wabi program.

Printing 4

This chapter discusses printing operations and tasks. The Wabi program supports a wide range of printers, including PostScript printers, Epson FX-series printers, and Hewlett-Packard LaserJet III series printers. You can also use generic text-only printers if you install Microsoft Windows. In a network setting, the Wabi program allows you to direct printed output to a variety of destinations, including local and network printers and files.

If you are unfamiliar with Wabi printing concepts, procedures, or dialog boxes and want to learn more about them, read the next section, “About Printing.”

If you want instructions for specific tasks related to printing, skip the next section of this chapter. Use the following table to locate the instructions you need.

Task	**Page**
Installing a Printer Driver	81
Removing an Installed Printer	81
Assigning an Installed Printer Driver to a Port	81
Connecting a Printer to a Driver/Port Combination	82
Defining the Wabi Default Printer	83

Troubleshooting Problems With CD-ROM Drives

Table 3-3 suggests solutions to problems you might experience when attempting to access and use a CD-ROM drive.

Table 3-3 CD-ROM Drive Problems and Solutions

Symptom	Possible Cause	Solution
Can't mount CD-ROM	CD-ROM not in format supported by operating system.	The Wabi program can only use CD-ROMs that your operating system can use. See your operating system documentation for information about CD-ROMs.
Can't run application off CD-ROM	Application detects network environment.	Some applications on CD-ROM will not work in Wabi because they determine the drive is a network drive. There is no way to use such applications. See page 54 for more information.

Table 3-2 Wabi Drive Problems and Solutions *(Continued)*

Symptom	Possible Cause	Solution
Can't change connection for drive C, R, or W.	Permanent drive connections cannot be changed.	There is no way to change the C, R, or W connections. If you want to change the C connection because you do not want your user `wabi` directory in your home directory, do *not* simply move or copy your existing `wabi` directory to another location because the numerous symbolic links will not be preserved. Instead, try the following procedure: • Exit Wabi • Rename your existing `wabi` directory to `wabi.old` • Create a directory named `wabi` in the desired new location • Create a symbolic link named `wabi` in your home directory, with the new directory as the target • Restart Wabi The Wabi program creates a new `wabi` directory, placing it in the new location. If you added any files to your original `wabi` directory, move them from `wabi.old` to the new directory, and then delete `wabi.old`.
Drive errors when using a DOS Emulator	Dissimilar drive mappings.	Assign the same drive letters to the same path names in both the DOS Emulator and Wabi. See *page 141* for more information.

Troubleshooting Problems With Wabi Drives

Table 3-2 suggests solutions to problems you might experience when attempting to connect Wabi drives to directories.

Table 3-2 Wabi Drive Problems and Solutions

Symptom	Possible Cause	Solution
Can't connect a drive to a local directory	Inadequate file permissions.	You must have read permission or more to any directory you want to access. Use the UNIX `chmod` command to change permissions if necessary.
	Incorrect path assignment.	If you entered the path name manually, make sure the path is a directory, not a file.
Can't connect a drive to a remote directory	Inadequate file permissions.	You must have read permission or more to any directory you want to access. Contact your system administrator or the owner of the directory.
Remote directory not in Available Directory Paths	Remote file system not mounted.	You must be able to access the directory from the operating system before you can access it in Wabi. If your UNIX system automatically mounts remote file systems, open a UNIX command window and use the `cd` command to go to the directory to which you want to connect. This mounts the file system. If your UNIX system does not automatically mount remote file systems, see your UNIX manuals for procedures to make remote file systems accessible. Once the file system is accessible from the operating system, open the Drives icon in Configuration Manager and connect a drive to the directory.

Table 3-1 Diskette Drive Problems and Solutions *(Continued)*

Symptom	Possible Cause	Solution
Can't access drive A or B	Another program is controlling the drive.	Eject the diskette with a command from the other program, reinsert the diskette, and try accessing it through Wabi again.
	Invalid device name specified in Configuration Manager's Diskette Connections dialog.	Specify a raw diskette device file. See your UNIX documentation for information about diskette (or floppy) devices.
	Inadequate file permissions to device file or directory.	You must have read and write permission to your UNIX system's device files and directories. Use the UNIX `chmod` command to change permissions if necessary.
Can't locate diskette devices	Wabi is searching the wrong directory for the diskette devices, or using an incorrect file name pattern.	Determine the location and names of the raw diskette device files in your operating system, and then specify the directory and a file naming convention in the Advanced Diskette Options dialog as explained on page 46.
Diskette will not eject using special keys (e.g., Meta+E)	Wabi window does not have input focus.	Place mouse pointer in Wabi window, click to make it the active window, and then press keys.
Can't format DOS diskette	Not supported under Wabi program.	You should use preformatted diskettes or format them on a PC running DOS.

7. **If it is not already running, start the Wabi program.**

8. **Open Configuration Manager and open the Drives icon (or choose Drives from the Configuration Manager Options menu).**

9. **In the Drive Connections dialog, select an unassigned drive letter.**

10. **In the Directory Path for Selected Drive panel, type `/cdrom` (or whatever directory name the CD-ROM is using).**

11. **Choose Connect.**
    The drive letter is assigned to the CD-ROM directory.

12. **If you want the CD-ROM drive to be seen as a network drive, select the Network Drive check box.**
    See the application's documentation to determine if the CD-ROM can be used on a network.

13. **Choose OK to save the drive connection.**
    The Drive Connections dialog box closes.

    Access the CD-ROM through the drive letter you assigned. For example, if you connected F to `/cdrom`, you can run a `setup` program on the CD-ROM with the command `F:\setup`.

Reference Material for Drives

This section presents material you may find useful when you work with diskette drives, Wabi drives, and CD-ROM drives.

Troubleshooting Problems With Diskette Drives

Table 3-1 suggests solutions to problems you might experience when working with diskette drives A and B.

Table 3-1 Diskette Drive Problems and Solutions

Symptom	**Possible Cause**	**Solution**
"Device Not Ready (Abort, Retry, or Ignore)" error	Diskette may not be seated properly in the drive.	Remove diskette and reinsert it. Try to access the diskette again.

▼ Setting a Local Drive

1. **Open Configuration Manager.**
2. **Open the Drives icon.**
   Alternately, choose Drives from the Options menu or press Alt, s, v.

   The Drive Connections dialog box opens.
3. **Select the drive letter of the drive that you want to appear as a local drive.**
   The drive path is displayed in the Directory Path for Selected Drive panel.
4. **Select the Network Drive check box to disable it.**
   The box is empty.
5. **Choose OK to save your changes.**
   The drive now appears to applications as a local drive, whether it is connected to a local directory or a remote directory.

   Alternately, choose Cancel to exit the dialog box without making changes.

▼ Accessing a CD-ROM Drive

Follow these general steps to access a CD-ROM. The precise commands required vary, depending on your operating system. Some operating systems automatically make a compatible CD-ROM available when you insert the CD-ROM into the drive. If your operating system does this, begin with Step 7.

“CD-ROM Drives” on page 54 discusses specifics of using these drives in the Wabi program.

1. **Open an operating system command window.**
2. **Change to the root (/) directory.**
3. **Become superuser (`su`).**
4. **Create a directory named `cdrom`.**
5. **Mount the CD-ROM.**
   Make sure you can read the CD-ROM from the operating system before proceeding. For example, try to do an `ls` command on the `/cdrom` directory.
6. **Exit from superuser status.**

Some cautions apply to CD-ROM drives. Learn about them in “Potential CD-ROM Problem” on page 54.

▼ Enabling File Sharing for a Drive

Read “File Sharing” on page 52 for more about the issues involved with shared files.

1. **Open Configuration Manager.**
2. **Open the Drives icon.**
   Alternately, choose Drives from the Options menu or press Alt, s, v.

   The Drive Connections dialog box opens.
3. **Select the drive letter of the drive on which you want to enable sharing.**
   The drive path is displayed in the Directory Path panel.
4. **Select the Sharing Enabled check box.**
   An “X” appears in the box.
5. **Choose OK to save your changes.**
   Sharing is enabled for the drive. Drive performance may be reduced.

   Alternately, choose Cancel to exit the dialog box without making changes.

▼ Setting a Network Drive

For more about Wabi network drives, read “Wabi Network Drives” on page 53.

1. **Open Configuration Manager.**
2. **Open the Drives icon.**
   Alternately, choose Drives from the Options menu or press Alt, s, v.

   The Drive Connections dialog box opens.
3. **Select the drive letter of the drive that you want to appear as a network drive.**
   The drive path is displayed in the Directory Path for Selected Drive panel.
4. **Select the Network Drive check box to enable it.**
   An “X” appears in the box.
5. **Choose OK to save your changes.**
   The drive now appears to applications as a network drive, whether it is connected to a local directory or a remote directory.

   Alternately, choose Cancel to exit the dialog box without making changes.

4. **Select the Directory Path for Selected Drive panel.**
   The text entry area becomes active.

5. **Edit or enter a directory path.**
   Alternately, choose the Restore button to return the path to what it was when you entered the dialog box.

6. **Choose Connect.**
   The path displayed in the Directory Path for Selected Drive panel is assigned to the selected drive, and is also displayed next to the drive letter in the Drives panel.

7. **Choose OK to save your entry.**
   Alternately, choose Cancel to close the Drive Connections dialog box without making changes.

▼ Disconnecting a Drive

1. **Make sure the drive is not being used by any running applications.**

2. **Open Configuration Manager.**

3. **Open the Drives icon.**
   Alternately, choose Drives from the Options menu or press Alt, s, v.

   The Drive Connections dialog box opens.

Before disconnecting a drive, you may want to read “Disconnect a Drive” on page 51.

4. **Select the drive letter of the drive you want to disconnect.**
   The Disconnect button is activated.

   If you select one of the permanent drives, C, R, and W, the Disconnect button is not activated because you cannot disconnect these drives.

5. **Choose Disconnect.**
   The path assignment is cleared for the selected drive.

6. **Choose OK to save your changes.**
   Alternately, choose Cancel to close the dialog box without making changes.

Assigning a Drive

1. **Open Configuration Manager.**

"Wabi Drives" on page 48 provides an overview of Wabi drives.

2. **Open the Drives icon.**
   Alternately, choose Drives from the Options menu or press Alt, s, v.

   The Drive Connections dialog box opens.

Read "New Drive Assignments" on page 50 and "Default Drive Assignments" on page 50 for details on working with Wabi drives.

3. **Select an unassigned drive letter in the Drives panel.**
   The letter is highlighted.
4. **In the Available Directory Paths panel, navigate through the list of directories and files until you reach the file system you want.**
   Click a directory name to place it in the path. Double-click a directory name to place it in the path and view the directory's contents.

   The selected path appears in the Directory Path for Selected Drive panel.
5. **Choose Connect.**
   The path displayed in the Directory Path for Selected Drive panel is assigned to the drive.

   The path appears next to the drive letter in the Drives panel.
6. **Choose OK to save your assignment.**
   Alternately, choose Cancel to close the dialog box without making changes.

Editing or Entering a Drive Path Directly

1. **Open Configuration Manager.**
2. **Open the Drives icon.**
   Alternately, choose Drives from the Options menu or press Alt, s, v.

   The Drive Connections dialog box opens.

See "Edit the Directory Path" on page 51 for more about editing and entering drive assignments.

3. **Select a letter representing the drive assignment you want to edit or enter.**
   The drive assignment highlights and the path is displayed in the Directory Path for Selected Drive panel.

   If you select one of the permanent drives, C, R, or W, no path is displayed in the Directory Path for Selected Drive panel because you cannot change this path.

▼ Accessing an Alternate Diskette Device File Pattern

1. **Open Configuration Manager.**
2. **Open the Diskettes icon.**
   Alternately, choose Diskettes from the Options menu or press Alt, s, k.

   The Diskette Connections dialog box opens.

"Advanced Diskette Drive Options" on page 46 provides details on using alternate diskette device file patterns.

3. **Choose the Advanced button.**
   The Advanced Diskette Drive Options dialog box opens.
4. **Select the Diskette Device File Pattern text-entry field.**
   The field becomes active.
5. **Type one or more file patterns.**
   Separate multiple patterns with commas; do not use spaces.
6. **Choose OK to save your entry.**
   Alternately, choose Cancel to close the dialog box without making changes.

   When you choose OK, the Wabi program validates your entry. If the entry is valid, each time you connect a diskette drive to a diskette device the Wabi program searches for diskette device files using the naming patterns you entered.

   You will see an error message if the entry you typed contains an invalid device file name. Follow the instructions included in the error message to clear the error condition and then enter a valid diskette device file pattern. Choose the Help button in the error message box if you need more help clearing the error condition.

To reset the diskette device file pattern to the default:

1. **Choose Defaults in the Advanced Diskette Drive Options dialog box.**
   The default diskette device file pattern is restored.
2. **Choose OK.**
   Your change is saved.

▼ Accessing an Alternate Diskette Devices Directory

For background on using an alternate diskette device directory, see “Advanced Diskette Drive Options” on page 46.

1. **Open Configuration Manager.**
2. **Open the Diskettes icon.**
   Alternately, choose Diskettes from the Options menu or press Alt, s, k.

   The Diskette Connections dialog box opens.
3. **Choose Advanced.**
   The Advanced Diskette Drive Options dialog box opens.
4. **Select the Diskette Device Directories text entry field.**
   The field becomes active.
5. **Type the directory or directories in which diskette devices are located.**
   Separate multiple entries with commas; do not use spaces.
6. **Choose OK to save your entry.**
   Alternately, choose Cancel to close the dialog box without making changes.

   When you choose OK, the Wabi program validates your entry. If the entry is valid and the directories exist, each time you connect a diskette drive to a diskette device, the Wabi program searches for device files in the directories you entered.

   You will see an error message if the entry you typed includes an invalid path name. Follow the directions in the error message to clear the error condition, then enter a valid diskette device directory. Choose the Help button in the error message box if you need more help clearing the error condition.

To reset the diskette device directories to the default:

1. **Choose Defaults in the Advanced Diskette Drive Options dialog box.**
   The default diskette devices directories are restored.
2. **Choose OK.**
   Your change is saved.

▼ Manually Entering a Diskette Device Name

1. **Open Configuration Manager.**
2. **Open the Diskettes icon.**
   Alternately, choose Diskettes from the Options menu or press Alt, s, k.

   The Diskette Connections dialog box opens.

To determine when you might need to do this, see "To Use an Unlisted Diskette Device" on page 46.

3. **Select the Diskette Drive A or B text entry field.**
   The entry field becomes active.
4. **Type the path and name of a diskette device file.**
5. **Choose OK to save your entry.**
   Alternately, choose Cancel to close the dialog box without making changes.

   When you choose OK, the Wabi program validates your entry. If the entry is valid (the path and name you typed are correct), the diskette device you entered is connected to the diskette drive. You will see an error message if the entry you typed is not a valid device name. Follow the instructions in the error message to resolve the error condition.

▼ Formatting a DOS Diskette

You must format a diskette outside of the Wabi program. "Diskettes and DOS" on page 47 explains why.

If your native operating system provides a DOS formatting command, the general procedure to format a DOS diskette is:

1. **Open an operating system command window.**
2. **Place a diskette in the diskette drive.**
3. **Type your operating system diskette format command and press Enter.**
   See your operating system user's guide for more information.
4. **When formatting is complete, eject the diskette.**
   Press the Eject button on the drive or enter the command required to remove the diskette from the drive.

Note – If you have a DOS emulator, you can also format a DOS diskette by using the DOS `format` command in the emulator.

Instructions for Tasks Related to Setting Up Drives

This section provides detailed, step-by-step instructions for performing a variety of tasks related to diskette drives and Wabi drives. For certain tasks, you will see samples of the command input and output associated with the task. Margin notes refer to sections of this manual related to the task described.

▼ Connecting a Diskette Drive

1. **Open Configuration Manager.**

Read "Diskette Drives" on page 44 for background information about how Wabi uses diskette drives.

2. **Open the Diskettes icon.**
   Alternately, choose Diskettes from the Options menu or press Alt, s, k.

   The Diskette Connections dialog box opens.

3. **Open the Diskette Drive A list or Diskette Drive B list.**
   A list of prevalidated diskette device names appears.

4. **Select a diskette device name in the list.**

5. **Choose OK to save your choice.**
   Alternately, choose Cancel to close the dialog box without making changes.

   When you choose OK, the diskette device you've chosen is connected to the diskette drive.

▼ Changing the Diskette Drive Timeout Period

1. **Open Configuration Manager.**

Read "Diskette Timeout" on page 46 for more about the diskette drive timeout.

2. **Open the Diskettes icon.**
   Alternately, choose Diskettes from the Options menu or press Alt, s, k.

   The Diskette Connections dialog box opens.

3. **Select the Diskette Timeout field and type the number of seconds the diskette should be idle before the Wabi program releases control of the drive.**

4. **Choose OK to save your entry.**
   Alternately, choose Cancel to close the dialog box without making any changes.

CD-ROM Drives

"Accessing a CD-ROM Drive" on page 62 provides the general steps required to mount and use a CD-ROM drive.

The Wabi program allows you to access a CD-ROM device, provided the CD-ROM uses a media format the native operating system recognizes. For example, if your operating system can read only CD-ROMs that use the Rock Ridge and High Sierra File System (HSFS) format, the Wabi program has this same limitation.

Connecting to a CD-ROM drive with the Wabi program is much like connecting any Wabi drive. You mount the device on a mount directory in the native operating system, and then assign a drive letter to the mount directory in the Drive Connections dialog in the Wabi Configuration Manager.

Note – The Wabi program does not currently support multimedia. You cannot use a CD-ROM drive to play music or video.

Potential CD-ROM Problem

If you install an application that uses Microsoft CD-ROM extensions, and you have purchased the rights to use that application on your local system (not on a network), you may not be able to run your CD-ROM application.

This is due to a protection mechanism that the Microsoft Corporation has incorporated in much of its CD-ROM-based application software. This mechanism ensures that a CD-ROM application purchased for use on a local system is not capable of running on a network. Because the Wabi program accesses a local CD-ROM drive through a path in your operating system, it appears to a CD-ROM application running under the Wabi program that the application is being used on a network, not on a local CD-ROM drive.

This limitation cannot be overcome by disabling the Network Drive option in the Drive Connections dialog box.

The `clear_locks` program removes all file, record, and share locks between two machines, regardless of who created or who "owns" the locks. To run `clear_locks` on the machine on which the Wabi program terminated unexpectedly, enter the command `clear_locks` followed by the host name of the system on which the shared files are located.

Wabi Network Drives

In the Wabi environment, the directory to which a drive letter is connected may reside on a local disk or on a remote disk on the network. To the Wabi program, and to UNIX programs in general, it does not matter where a directory path leads; the underlying operating system and network software keep track of file systems.

However, it does matter to some Microsoft Windows applications whether a given drive letter is a local drive, or is located somewhere else on the network. These applications may check to see if a particular drive letter is local or networked, and may behave differently in each case. For example, when you install an application onto a drive, the installation program may try to determine if the drive is networked. If it finds that the drive is networked, the installation program may present you with a number of installation options specific to servers, such as the location of shared program files and user directories. Also, some applications may not use file locking if they detect that the drive is local.

To set up a drive as a network drive, see "Setting a Network Drive" on page 61.

The Wabi program lets you control how the Wabi drives appear to applications. The Drive Connections dialog includes a Network Drive option that, when enabled, specifies that the selected drive is seen by applications as a network drive. When this option is not enabled, the drive appears to be a local hard drive to an application running in the Wabi program.

By default, Wabi makes each drive appear as a network drive. In most cases you should leave the Network Drive option enabled so applications that can use file locking will detect a network environment and lock files as you open them. However, if you install or use an application that requires a local drive, you can disable the Network Drive option.

File Locking

Wabi file locking depends on the capabilities of the applications you run. If an application requests a file or record to be locked, Wabi locks it. If an application never uses locking because it assumes a single-user environment, Wabi does not lock files or records for the application. You do not have to enable file and record locking because Wabi always does it at the application's request. Wabi clears file locks when you close a file or exit the Wabi program. This includes files that are open when the Wabi program is terminated unexpectedly.

File Sharing

Wabi file sharing allows users and applications to access files simultaneously, yet safely. File sharing occurs only if you enable it. When file sharing is enabled, each file opened can be shared. An application does not need to request it. The ways in which you can share files are determined by the application, not by the Wabi program. For example, while you are using a particular file, an application may allow another user to view that file but not write to it. An application's sharing methods are integral to the application, and cannot be controlled by users.

To set a drive up for file sharing, see "Enabling File Sharing for a Drive" on page 61.

You enable file sharing drive-by-drive, using the Drive Connections dialog box. The default setting on all Wabi drives is sharing disabled. This is because file sharing can increase file access time on a drive, and also may limit the number of files that all applications running in Wabi can have open at one time. You should enable file sharing only on drives where you really need it.

When file sharing is enabled on a drive, every file that applications open on that drive is shared. This means that for every open file, the Wabi program creates a share lock, which controls what can be done to the file. Share locks are cleared when you close a file or exit the Wabi program. However, unlike file locks, share locks are not automatically removed when the Wabi program terminates unexpectedly on some operating systems. If this happens, you may have to clear share locks manually. On some operating systems, the Wabi program includes a UNIX program that clears all locks. This program, named `clear_locks`, should be used with care.

When you reach the destination directory, choose the Connect button. The Wabi program assigns the drive letter you selected to the path you constructed. To save assignments you make, choose the OK button.

You need adequate file permissions to access the files and directories you assign to Wabi drives. You will see an error message indicating that a permission problem exists if you attempt to access a file or directory for which you do not have adequate permissions. See your operating system documentation for information about checking and changing file permissions.

Edit the Directory Path

In certain situations, you may want to edit a drive path assignment or enter a drive path directly, rather than define one by sequentially clicking on directories in the Available Directory Paths panel. This might be the case if you know the path, or you want to include a variable such as $HOME in the path.

Follow the steps in “Editing or Entering a Drive Path Directly” on page 59 to accomplish this task.

The Directory Path for Selected Drive panel allows you to enter a path directly. To activate this panel, select an assigned or unassigned drive letter. If you select an assigned drive letter, the path assigned to the drive appears in the panel. If you select an unassigned drive letter, the panel is activated but is blank. Once the I-beam cursor appears in the panel, you can edit an existing path or type a new path.

Disconnect a Drive

See “Disconnecting a Drive” on page 60 for the steps required to break a drive connection.

You can remove the connection for an individual Wabi drive, except for drives C, R, and W, by selecting a drive letter and choosing the Disconnect button in the Drive Connections dialog box. Before you disconnect a drive, make sure it is not being used by any running applications.

File Locking and File Sharing

The Wabi program supports both file locking and file sharing. Each is important and is described as follows:

- *File Locking* – Prevents multiple users from accessing a file or a record at the same time.
- *File Sharing* – Enables you to share files and data with others by controlling who can do what with a file at a given time.

Default Drive Assignments

When you first open the Drive Connections dialog box, notice that several drives are already assigned. Some of these assignments are permanent and you cannot change them.

The drives you cannot change are:

`C: -> $HOME/wabi`	The directory in which your Wabi user files are installed.
`R: -> /`	The root directory. Drive R serves as a gateway to network file systems, and to all directories on your system.
`W: -> $WABIHOME`	The directory used to store Wabi program files.

If you select the C, R, or W drive, the Available Directory Paths panel is blank, and the Restore, Connect, and Disconnect buttons are disabled.

The preassigned drives you can change are:

`E: -> $PWD`	The directory that was current when the Wabi program was started.
`H: -> $HOME`	Your home directory.

New Drive Assignments

Making a new drive connection is a simple process. You must:

- Select a drive letter.
- Specify a drive path.
- Connect them.

To connect a network drive, follow the steps in “Assigning a Drive” on page 59.

Selecting a drive letter is easy: you click on any unassigned letter in the Drives panel. This activates the Available Directory Paths panel which displays a scrolling list of root-level directories. Single-clicking a directory in this list places the directory in the assigned drive path. Double-clicking a directory in this list places the directory in the path and also opens the directory. The subdirectories available within the first directory are now displayed in the Available Directory Paths panel. By sequentially navigating remaining directories you can construct a path to the desired file system.

The Drive Connections dialog box includes three panels:

Connect a drive to a file system by following the steps in "Assigning a Drive" on page 59.

- *Drives* – Presents a list of Wabi drives and their assignments. Drive letters that are not connected to a file system appear with no assignment.
- *Available Directory Paths* – Displays a list of mounted file systems and directories contained within the current directory. The highest level directory available for viewing is the root (/) directory. When you click on a subdirectory within the root directory, the directories within the subdirectory are displayed. Double-click on a directory to see the directories within it, and to add it to the drive path. By double-clicking on subsequent directories, you construct a path that you can assign to a drive. Double-clicking ../ takes you up a level in the directory hierarchy.
- *Directory Path for Selected Drive (x)* – Displays a scrolling text-entry field that indicates the path assignment of the selected drive. You can edit the path displayed in this field, or type a path assignment into the field.

Drive Connections Dialog Box Elements

The Drive Connections dialog box contains the following unique buttons and check boxes:

- *Restore* – Returns the selected drive's path to the path assigned when you opened the dialog box. Restore is not the same as Cancel — it resets only the selected drive.
- *Connect* – Assigns the path appearing in the Directory Path for Selected Drive panel to the drive letter selected in the Drives panel. This button is activated when a path is selected.
- *Disconnect* – Removes the path assignment of the drive selected in the Drives panel. This button is activated when a drive letter with an assigned path is selected.

The section "File Sharing" on page 52 explains when and why you enable file sharing.

The section "Wabi Network Drives" on page 53 explains what this option means to applications.

- *Sharing Enabled* – This check box is used to enable file sharing on the selected drive. An "X" indicates file sharing is enabled on the selected drive.
- *Network Drive* – Checking this box makes the drive appear to an application as a network drive, whether the assigned directory is local or on the network. An "X" indicates the selected drive is viewed as a network drive. By default, all drives except C are viewed as network drives.

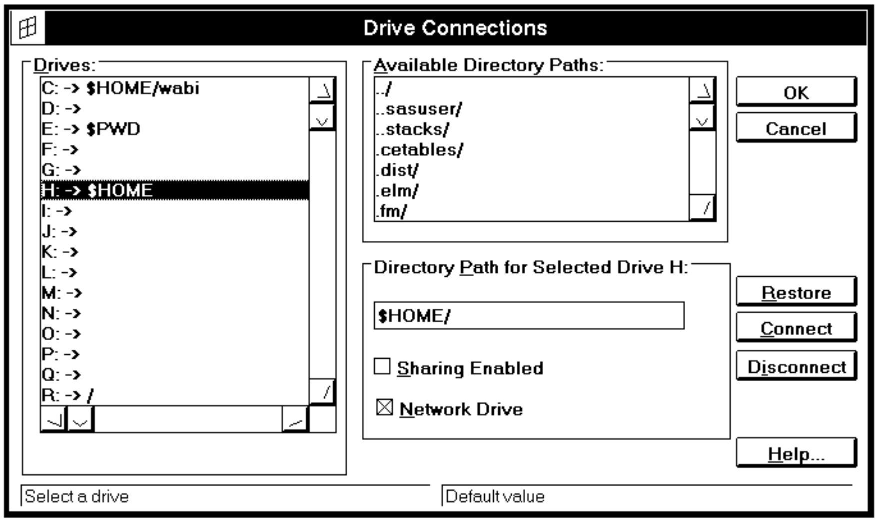
Wabi Drives

To learn more about designating a drive as a network drive, read “Wabi Network Drives” on page 53.

Wabi drives are represented by the letters C through Z. These drives serve as a gateway to the mounted file systems and directories of your operating system. By assigning drives to directories, you can access information on your computer’s local hard disk, or across a network on a remote file server. The Wabi program cannot tell for sure if a drive is local or on the network, because it accesses the drive through a directory path. The physical location of the directory is transparent to you and to the Wabi program. However, when you connect a drive to a directory, you can tell the Wabi program to represent the drive to applications as a network drive, whether the drive is local to your system or on the network. This feature is important to some applications that you may run in the Wabi program.

Drive Connections

You create and change drive assignments in the Drive Connections dialog box as shown in Figure 3-3. When you assign a drive to a directory, the Wabi program retains your drive assignment for all subsequent Wabi sessions, or until you change the assignment.



Drives:
C: -> $HOME/wabi
D: ->
E: -> $PWD
F: ->
G: ->
H: -> $HOME
I: ->
J: ->
K: ->
L: ->
M: ->
N: ->
O: ->
P: ->
Q: ->
R: -> /

Available Directory Paths:
../
..sasuser/
..stacks/
.cetables/
.dist/
.elm/
.fm/

Directory Path for Selected Drive H: $HOME/

☐ Sharing Enabled
☒ Network Drive

Select a drive
Default value

Figure 3-3 Drive Connections Dialog Box

You can enter two items in this dialog box:

To add a device directory to the list of directories searched, see "Accessing an Alternate Diskette Devices Directory" on page 57.

- *Diskette Device Directories* – This is a list of directories that the Wabi program searches for operating system diskette devices. You can include more than one directory in the list, provided you use commas to separate directory entries. Do not include spaces in this list.

To add a diskette device file pattern to the list of patterns searched, see "Accessing an Alternate Diskette Device File Pattern" on page 58.

- *Diskette Device File Pattern* – This is the device file-naming pattern (convention) used in your operating system. You can include more than one pattern in the list, provided you use commas to separate file-naming patterns. Do not include spaces in this list.

  Wildcard characters are allowed in file pattern entries. An asterisk (*) can replace a group of characters, and a question mark (?) can replace a single character. You can indicate a range of possible values for a single character by using brackets. For example, you can use [0–9] to match a value from 0 through 9. If you enter the pattern rfd[0–9]*, the Wabi program will find file names such as `rfd0`, `rfd1floppy`, `rfd3c`, and `rfd9xyz` if they exist in the device directories. Remember that Wabi uses raw diskette devices.

Diskettes and DOS

See "Formatting a DOS Diskette" on page 56 for more about diskette formatting procedures.

You cannot format a DOS diskette within the Wabi program. Before you can use a diskette with the Wabi program, it must already have a DOS file format.

Some operating systems provide a command for formatting DOS diskettes. Please refer to your operating system manuals for information about formatting DOS diskettes. If your operating system is not able to format DOS diskettes, you can use preformatted diskettes, or format diskettes yourself on a PC running DOS.

If you have a DOS emulator installed on your system, you could also start a DOS session and use the DOS `format` command.

Note – You cannot use the Windows File Manager's Disk Format command to format diskettes.

Diskette Timeout

To learn how to change the diskette timeout, go to "Changing the Diskette Drive Timeout Period" on page 55.

You can also specify a timeout period for the diskette device. The Wabi program gives up control of the diskette drive if the device has not been used after this period of time, allowing other programs to use the diskette drive while the Wabi program is running. Wabi regains control the next time you access the diskette through the Wabi program.

To Use an Unlisted Diskette Device

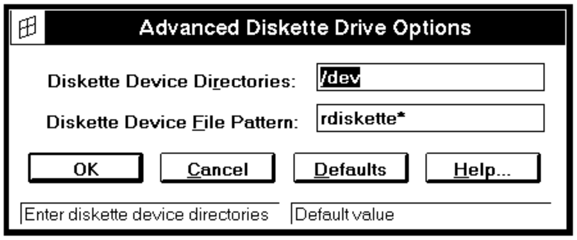
It's easy to enter a diskette device name. Read "Manually Entering a Diskette Device Name" on page 56 for specifics.

If you prefer, you can connect a diskette drive to a diskette device by typing a device path and name directly in the text box associated with diskette drive A or B. You can use this technique to connect to a diskette device that you know exists, but does not appear in the list.

Advanced Diskette Drive Options

The Wabi program is supplied with default diskette device locations and naming patterns. In most cases, these defaults match those used by your operating system. In some cases, however, they may not. For example, if you relocate diskette devices to a directory not normally used to store them, the Wabi program will not know where to look for these device files. When this is the case, you must tell the Wabi program where the devices are located.

You use the Advanced Diskette Drive Options dialog box to provide the Wabi program with the information it needs to find and use diskette devices that are named or located in a nonstandard manner. You access the Advanced Diskette Drive Options dialog box by choosing the Advanced button in the Diskette Connections dialog box. Figure 3-2 shows the Advanced Diskette Drive Options dialog box.



Diskette Device Directories: /dev

Diskette Device File Pattern: rdiskette*

Enter diskette device directories

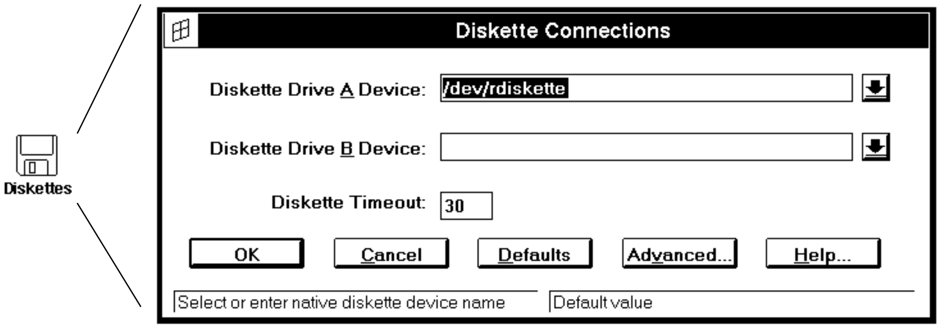
Default value

Figure 3-2 Advanced Diskette Drive Options Dialog Box connection. Most likely, the Wabi program’s default connection will work for your operating system, and you can use the diskette drive without changing the diskette connection to the device.

Diskette Connections

Learn how to make a diskette drive connection by reading “Connecting a Diskette Drive” on page 55.

You use the Diskette Connections dialog box shown in Figure 3-1 to make and change diskette drive connections, and to specify a timeout period for the Wabi program’s control of your diskette drive. You open this dialog box from within Configuration Manager by clicking the Diskettes icon, or by choosing Diskettes from the Options menu. As the Diskette Connections dialog box opens, the Wabi program scans your operating system device directories for diskette devices.



Diskette Drive A Device: /dev/rdiskette

Diskette Drive B Device:

Diskette Timeout: 30

Select or enter native diskette device name

Default value

Figure 3-1 Diskette Connections Dialog Box

As device file names are scanned, they are validated. If a device name is valid, the Wabi program adds it to the list of selectable diskette drives that appear in the drop-down list associated with diskette drive A and diskette drive B. Note that the Wabi program uses raw device files. See your UNIX operating system documentation for information about raw devices.

In the Diskette Connections dialog box, you select diskette device assignments for drives A and B, and specify a diskette timeout period.

The Wabi program provides a default assignment for drive A, which you can change. No default assignment is provided for drive B. The field to the right of each Diskette Drive name displays the current assignment. If you click the down-arrow to the right of a field, a list opens displaying additional diskette device names. You select a name by clicking it.

About Drives

The Wabi program uses two kinds of drives:

- *Diskette drives* – Drives A and B are diskette drives. These drives connect (map) to diskette devices defined in your operating system. You can use diskette drives to install software and save programs and files. Diskette drive A is set up for you and assigned automatically as a default diskette drive. (You can change this assignment.) If your computer has a second diskette drive, use diskette drive B to represent this drive.
- *Wabi drives* – Drives C through Z represent Wabi drives, which are functionally similar to the local disk drives and network drives used on DOS-based systems. A Wabi drive can be assigned to a directory on a drive physically located within your computer, or to a directory that is physically located on a remote system and accessed, or mounted, over the network by your operating system.

  The Wabi program determines if a drive's assigned directory is local or on the network, because it accesses the drive through a directory path. The physical location of the directory is transparent to you and to the Wabi program.

To learn about designating a drive as a network drive, read "Wabi Network Drives" on page 53.

Diskette Drives

To use a diskette drive, you must connect it to an operating system diskette device. A *device* is an operating system file that allows you to access a physical device, such as a diskette drive. Once you make this connection, the Wabi program retains it for all subsequent sessions, or until you change the

Setting Up Drives

3

Drives provide access to your operating system devices, files, and directories. Before you can use a drive, you must configure it. Configuring a drive means telling the Wabi program the type of drive you want, as well as some specifics about the drive. Once you configure a drive, you can access it.

If you are not familiar with drive concepts in the Wabi program and would like to learn more about them, read the next section, “About Drives.”

If you want instructions for specific tasks related to drives, skip the next section of this chapter. Use the following table to locate the instructions you need.

Task	**Page**
Connecting a Diskette Drive	55
Changing the Diskette Drive Timeout Period	55
Manually Entering a Diskette Device Name	56
Formatting a DOS Diskette	56
Accessing an Alternate Diskette Devices Directory	57
Accessing an Alternate Diskette Device File Pattern	58
Assigning a Drive	59
Editing or Entering a Drive Path Directly	59

Troubleshooting Configuration Manager Problems

Table 2-3 suggests solutions to common problems you might experience when using Configuration Manager, or the Sound, Mouse, or Color functions.

Table 2-3 Configuration Manager Problems and Solutions

Symptom	**Possible Cause**	**Solution**
Warning beep inaudible	Beep turned off	Enable the warning beep for Wabi windows, as described on page 35.
Mouse does not work in Wabi windows, but does in other windows	Left/right button functions swapped	Try using the right mouse button to pull down a menu. If it works, the mouse buttons are swapped. See page 35 for the procedure to swap them back.

Reference Material Related to Configuration Manager

This section provides reference material for the tasks associated with Configuration Manager.

Using Accelerator Keys

Table 2-2 lists the accelerator keys available for functions you can access from Configuration Manager.

Table 2-2 Configuration Manager Accelerator Keys

Function	Key Sequence
Options menu	Alt, s
Ports	Alt, s, p
Printers	Alt, s, r
Drives	Alt, s, v
Diskettes	Alt, s, k
Mouse	Alt, s, m
Sound	Alt, s, s
DOS	Alt, s, d
Color	Alt, s, c
International	Alt, s, i
Exit Configuration Manager	Alt, s, x
Help menu	Alt, h
Help contents	Alt, h, c
Searching Help	Alt, h, s
Using Help	Alt, h, h
About Configuration Manager	Alt, h, a

▼ Turning the System Warning Beep On and Off

1. **Open Configuration Manager.**
2. **Open the Sound icon.**
   Alternately, open the Options menu and choose Sound or press Alt, s, s.

   The Sound Settings dialog box opens.

The section titled "Sound Settings" on page 35 provides details about the sound function.

3. **Select the check box to the left of the entry field.**
   An "X" appears in or disappears from the box.

   When an "X" appears in the check box, the warning beep is on in all Wabi windows.
4. **Choose OK to save your setting.**
   Alternately, choose Cancel to exit the dialog box without making changes.

▼ Changing Wabi Colors

1. **Open Configuration Manager.**
2. **Open the Color icon.**
   Alternately, open the Options menu and choose Color or press Alt, s, c.

   The Color Settings dialog box opens

The section titled "Color Settings" on page 36 provides details about the Color Settings function.

3. **Open the Color Set list and select a set of colors to use in Wabi windows.**
   The colors are displayed immediately, but are not yet saved. If you select Initial Color Set in this list, the colors return to what they were when you opened the dialog.
4. **Choose OK to save your setting.**
   Alternately, choose Cancel to exit the dialog box without making changes.

Note – You can also use the Windows Control Panel to change Wabi colors.

▼ Opening Configuration Manager

1. **Open the Tools Group.**
   The Configuration Manager icon is displayed, along with several others.
2. **Open the Configuration Manager icon.**
   The Configuration Manager window opens and displays an icon associated with each function.

   Open an icon to select a function and open the related dialog box.

▼ Swapping Mouse Buttons

1. **Open Configuration Manager.**
2. **Open the Mouse icon.**
   Alternately, open the Options menu and choose Mouse or press Alt, s, m.

   The Mouse Settings dialog box opens.

For more on swapping mouse buttons, see "Mouse Settings" on page 35.

3. **Select the check box to the left of the entry field.**
   An "X" appears in the box.
4. **Choose OK to save your setting.**
   The functions of left and right mouse buttons are swapped in all Wabi windows.

   Alternately, choose Cancel to close the dialog box without making changes.

Additional Configuration Manager Functions

Wabi Configuration Manager contains settings for several functions other than mouse, sound, and color functions. Due to their complexity, these additional functions are described in detail in individual chapters in this guide. Use the following table to locate detailed information about these functions.

Table 2-1 Additional Configuration Manager Function Information

To find information about...	**See...**
Wabi Drives	Chapter 3, “Setting Up Drives”
Wabi Diskette Drives	Chapter 3, “Setting Up Drives”
Printing	Chapter 4, “Printing”
International Settings	Chapter 5, “International Settings”
COM and LPT Ports	Chapter 7, “Using Wabi Ports”
DOS Emulator Settings	Chapter 9, “Installing and Using DOS Applications”

Instructions for Tasks Related to Configuration Manager

This section provides step-by-step instructions for performing tasks related to the following Configuration Manager functions:

- Sound Settings
- Mouse Settings
- Color Settings

Margin notes cross-reference material related to the task being described.

For information about Configuration Manager functions not covered in this chapter, refer to the chapters in this guide that cover individual functions. Table 2-1 lists these functions and the chapters that cover them.

Color Settings

You can change the colors displayed in Wabi windows by using the Color Settings dialog box, shown in Figure 2-7.

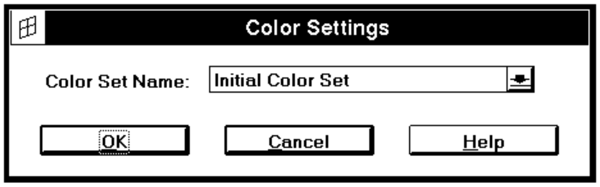


Figure 2-7 Color Settings Dialog Box

See "Changing Wabi Colors" on page 39 for step-by-step instructions.

You choose from a list of names of color combinations designed for the Wabi program. A monochrome color set is provided, too. You can also use monochrome on a color monitor if you like to use a white, gray, and black color scheme.

The colors change as soon as you select a color set so you can try them out before applying them. The new colors are not saved until you choose the OK button. If you select a color set whose colors are not to your liking, you can choose the Cancel button before applying the color set or select a different color set.

See Appendix B, "Color From Windows to Wabi," for information about color variables you can set in your `win.ini` file.

The Color Set Name is always "Initial Color Set" when you open the Color Settings dialog box. If you select Initial Color Set, the last color set you saved is put into effect. This allows you to undo any selections you make in the dialog box before you choose the OK button.

The "Factory Settings" color set matches the colors that the Wabi program uses when you first start it.

Wabi color sets affect only Wabi windows.

Note – If you are bothered by colors changing in inactive windows on your desktop when you move the mouse pointer into the Wabi window, you may want to read Appendix B, "Color From Windows to Wabi," to understand why this happens and to find out how you may alleviate it.

Sound Settings

See "Turning the System Warning Beep On and Off" on page 39 for step-by-step instructions.

You can use the Sound Settings dialog box, shown in Figure 2-5, to turn on and off your computer's warning beep. When you turn on the sound, your applications will generate warning beeps when an error occurs or when you attempt an illegal procedure, such as entering a value in a protected spreadsheet cell.

The sound setting you select in this dialog box is effective in the Wabi environment only. Outside the Wabi environment, such as in other windows on your desktop, your computer's warning beep functions normally.

Mouse Settings

See "Swapping Mouse Buttons" on page 38 for step-by-step instructions.

You can swap the left and right mouse button assignments by using the Mouse Settings dialog box, shown in Figure 2-6. You might want to swap mouse buttons if you are left-handed, or if you prefer a mouse button convention other than that followed by Windows 3.1 software.

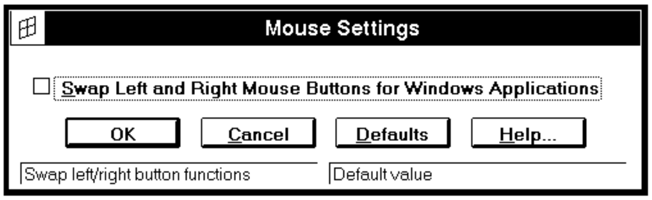


Figure 2-6 Mouse Settings Dialog Box

When you swap mouse buttons, the swap is effective in Wabi windows only. Outside of the Wabi environment, such as in other windows on your desktop, mouse button assignments do not change. Other settings for the mouse, such as tracking and clicking speeds, are controlled through your UNIX desktop, and affect the mouse's behavior in all your windows.

Status Panel Help and Status

As you can see at the bottom of Figure 2-5, Configuration Manager dialog boxes provide two informative panels:

- *Help* is the left panel and it provides short messages related to the feature or function directly under the mouse pointer. The contents of the Help panel change as you move the pointer around a dialog box.
- *Status* is the right panel and it displays a message related to the operation that Configuration Manager is currently performing, or the status of an entry. For example, this panel informs you when default values are selected and when a value has been modified.

Entry Validation

Configuration Manager checks, or "validates," many of the entries you make in dialog boxes. This is necessary to ensure that your instructions can be carried out. A typical example of entry validation relates to a device name.

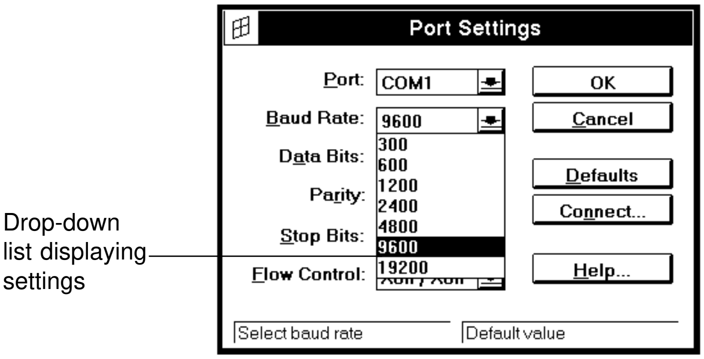
For example, to use Wabi diskette drive B, you must connect it to a diskette device in your native operating system. You do so by selecting, in the Diskette Connections dialog box, a diskette device driver path and name.

Once you've entered a path and name and chosen the OK button, Configuration Manager examines your entry to determine whether it is valid. If the entry is valid, Wabi software assigns the device driver you've specified to Wabi diskette drive B. If the entry is not valid — for example, if the device path or name does not exist — an error message informs you of the problem.

Validation of entries occurs quickly. If a validation error occurs, you can usually recover from it by following the instructions in the resulting error message box. You may occasionally need to progress through a series of error message boxes to fully resolve an error.

Each error message box provides a Help button. Choose the Help button within an error message box to learn about the possible cause of the error and how to clear the error condition.

A drop-down list contains a series of predefined entries from which you can select. In many cases, such as with device names, list items are default settings garnered from operating system files. In some fields, you must select an item from a drop-down list rather than type an entry directly in the field.



Drop-down list displaying settings

Port Settings

Port: COM1

Baud Rate: 9600

300
600
1200
2400
4800
9600
19200

Data Bits:

Parity:

Stop Bits:

Flow Control:

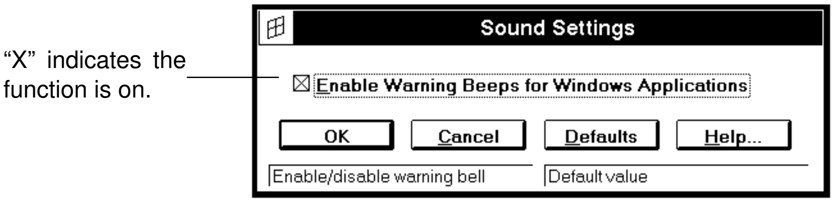
Select baud rate

Default value

Figure 2-4 Drop-Down List of Available Settings

Check Boxes

Some dialog boxes, such as the one in Figure 2-5, include a check box. You use a check box to turn a function on or off. You change a check box setting by clicking on the box or on the text adjacent to the box. An “X” appears within a check box when the function is on.



“X” indicates the function is on.

Sound Settings

☒ Enable Warning Beeps for Windows Applications

Enable/disable warning bell

Default value

Figure 2-5 Check Box Within Dialog Box

Buttons

Most Configuration Manager dialog boxes provide the following four buttons:

- *OK* – Choose this button to accept and save current dialog box settings. In some cases, the Wabi program validates (double-checks) a setting for correctness. A typical example is a device driver name. When you choose OK, a dialog box closes.
- *Cancel* – Choose this button to close a dialog box without changing settings. Use Cancel to close a dialog box when you examine settings, but don't want to change them, or when you make changes but decide not to save them.
- *Defaults* – Choose this button to restore default dialog box settings. Default settings supplied with the Wabi program will work in most situations. The Wabi program's default settings depend on the operating system you use.
- *Help* – Choose this button to start the on-line help system and to display a context-sensitive help topic screen. Links to related help topics are included where applicable.

Setting Fields

Most Configuration Manager dialog boxes include setting fields. A setting field displays the current setting, which can be text or a series of numbers. For example, a typical text setting is a device name, such as the name of a printer. A typical numeric setting is a baud rate associated with a COM port. In most setting fields, you select a setting from a list of items.

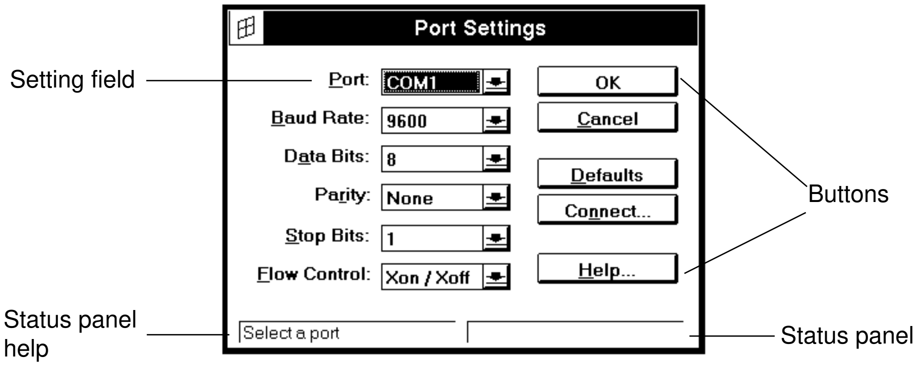
In some setting fields, you can enter text or numbers by clicking on the field to activate it. Once a field is active, a blinking cursor appears within the field. After typing a setting, choose OK or press Enter to store the setting.

Drop-Down Lists

Many Configuration Manager dialog box setting fields incorporate a drop-down list, such as the one shown in Figure 2-4. You open a drop-down list by clicking on the down-arrow to the right of the field, or by activating the list and pressing the down-arrow key.

Dialog Boxes

You work with all Configuration Manager functions through dialog boxes. Each function has a box or set of boxes. Figure 2-3 shows a typical dialog box.



Port: COM1
Baud Rate: 9600
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: Xon / Xoff
Select a port

Figure 2-3 Configuration Manager Dialog Box Elements

Dialog boxes include one or more of the following elements:

- *Buttons* – You choose to initiate an action.
- *Setting field* – Displays a parameter's current setting.
- *Drop-down lists* – Indicated by an arrow next to an entry field. You open the list, then select an item in the list.
- *Check boxes* – You select to turn a feature on or off.
- *Status panel* – Displays current status for the dialog box element directly under the mouse pointer.
- *Status panel help* – Displays a help tip for the dialog box element directly under the mouse pointer.

Using an accelerator key is easy. You type the key sequence required to choose a function. For example, when the Configuration Manager window is open, you can choose the Printers function by sequentially pressing Alt, s, r. You press Alt, s to activate the menu bar and open the Options menu. You press r to choose the Printers menu item.

You can also choose menu items by using the arrow keys. In this case, you press Alt to activate the menu bar. Next, use the right- and left-arrow keys to select a menu. When you press Enter, the menu opens. Now you use the up- and down-arrow keys to highlight the item you want, and press Enter to select it.

You can close the Options menu by pressing the Alt key alone. You can exit Configuration Manager by simultaneously pressing Alt and F4.

Accelerator Keys Within Dialog Boxes

Most elements in Configuration Manager's dialog boxes also include an underlined letter, which represents an accelerator key. Within a dialog box, you can use the Alt key and underlined characters to access particular dialog box elements. You can also use the Tab key to activate each dialog box element sequentially. When an element is activated, it appears highlighted. If you press Enter when a button is highlighted, the result is the same as clicking the button with the mouse.

Configuration Manager Menus

Configuration Manager provides two menus:

- *Options* – Contains a menu item for each Configuration Manager function represented by an icon. Double-clicking an icon or choosing a function from the menu opens a dialog box associated with the function. An additional menu choice, *Exit*, allows you to exit from Configuration Manager.
- *Help* – Provides several ways for you to access and use the Configuration Manager Help system. From the Help menu, you can view a Help table of contents, locate a specific topic, or view instructions on using Help.

Accelerator Keys

See “Using Accelerator Keys” on page 40 for a list of accelerator keys.

Configuration Manager incorporates accelerator keys to speed operations. Once you are familiar with a menu and its contents, you can access a function directly from the keyboard by sequentially pressing a combination of keys whenever the Configuration Manager window is open. Experienced users may find this technique faster than selecting items by pointing and clicking with the mouse.

Each Configuration Manager menu item includes an underlined letter. This letter represents the accelerator key for that item. Figure 2-2 shows the Options menu and its accelerator keys.

An underlined letter in a menu item identifies a keyboard accelerator.

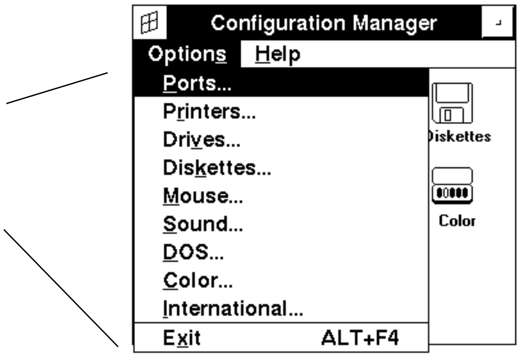


Figure 2-2 Options Menu Items and Associated Accelerator Keys

Diskettes – Allows you to assign Wabi diskette drives A and B to operating system diskette device drivers.

Mouse – Swaps the assignment of the left and right mouse buttons (in Wabi windows only).

Sound – Turns on and off your computer's warning beep for applications running in Wabi windows.

DOS – Supplies the command required to start a DOS emulator.

Color – Allows you to use different sets of colors for Wabi windows.

International – Allows you to customize your environment for items that vary from country to country, such as time, date, and number formats.

Wabi Configuration Manager and Windows Control Panel

Some of the Configuration Manager's functions seem to overlap those of the Windows Control Panel. However, many of the items that appear in the Control Panel (e.g., Date/Time, Printers, International, Desktop, etc.) are nonfunctional in the Wabi environment because they are managed by the Wabi program or by your operating system. The only Control Panel functions you can use are the Fonts and Color functions. You can use Fonts to install additional Windows fonts for your applications to use. You can use Color to change the colors used in Wabi windows, but you can also change colors in the Wabi Configuration Manager.

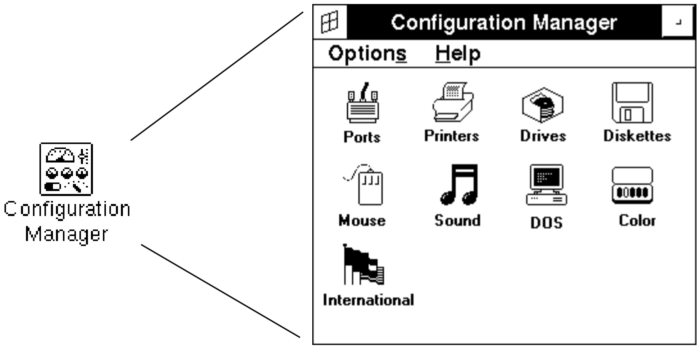


Figure 2-1 Configuration Manager Icon and Window

Configuration Manager Functions

Configuration Manager organizes Wabi settings and connections into several functions. Each function is represented by an icon and by a menu item in the Options menu. Opening an icon or choosing a function from the menu yields the same result: a dialog box associated with the function opens. Within the dialog box, you can change the settings or connections for the function.

Some functions have only a single setting that you can change. A typical example is Sound. This function provides a single check box that you use to enable or disable your computer's warning beep.

Other functions provide many settings. For example, the Ports function includes three dialog boxes within which you specify many communication settings (such as baud rate and parity), as well as connections to UNIX devices.

The Configuration Manager functions are:

Ports *Ports* – Controls information flow through COM ports and LPT ports.

Printers *Printers* – Determines the default printer, printer driver, printer port assignment, and operating system print command.

Drives *Drives* – Allows you to set up Wabi drives and assign a drive to a file system.

About Configuration Manager

Think of Configuration Manager as the instrument panel of the Wabi program. From this panel you control many aspects of Wabi program operation. The properties you specify in Configuration Manager apply to all Wabi windows and sessions. You control operation by establishing and changing:

- Settings within the Wabi program
- Connections to the native operating system

Settings control some facet of Wabi program operation. For example, common settings you might want to change include a COM port's baud rate, the default printer driver and port, the date and time format, the colors of Wabi windows, and the activation or deactivation of your computer's warning beep.

Connections are links you make from the Wabi program to devices or resources external to the Wabi program. Common connections you might make or change are those between a Wabi drive and a file system, a Wabi diskette drive and a diskette device in your operating system, and a Wabi port and a printer. Some Configuration Manager connections require you to supply UNIX operating system device names. In most cases, the Wabi program identifies your operating system and supplies the appropriate default settings. Infrequently, you may need to enter a unique or unusual setting.

Because of the way your native operating system works, you must change certain system settings through your native desktop, or from a UNIX command line. Examples of such system settings include: the system date and time, desktop (non-Wabi) screen colors and fonts, and the exporting and mounting of remote file systems. If a setting you want to change does not appear within Configuration Manager, refer to your operating system documentation for information about how to change the setting.

When you open the Configuration Manager window by double-clicking its icon, you see several icons representing Wabi program functions, as shown in Figure 2-1.

Using Configuration Manager

2

This chapter discusses using Configuration Manager, a tool that enables you to control a variety of Wabi settings and connections to the operating system.

If you are unfamiliar with Configuration Manager concepts, procedures, or dialog boxes and would like to learn more about them, read the next section, "About Configuration Manager."

If you want instructions for specific Configuration Manager tasks related to mouse, sound, or color functions, skip the next section of this chapter. Use the following table to locate the instructions you need. All other Configuration Manager functions are covered in separate chapters of this guide.

Task	**Page**
Opening Configuration Manager	38
Swapping Mouse Buttons	38
Turning the System Warning Beep On and Off	39
Changing Wabi Colors	39

Note – Applications other than those listed *may* work with the Wabi program if they conform to Microsoft Windows 3.1 application program interface conventions. Lack of inclusion in this list means that an application has not been tested for compatibility with the Wabi program.

Certified Compatible Applications

Table 1-5 lists applications that have been tested and certified compatible with the Wabi 2.0 program.

Table 1-5 Applications Certified for the Wabi Program

Certified Application Name	**Supported Versions**
Aldus® PageMaker®	4.0, 5.0
Borland Paradox® for Windows	1.0, 4.5
Borland Quattro® Pro for Windows	1.0, 5.0
CorelDRAW!®	3.0, 4.0
Harvard Graphics® for Windows	1.0, 2.0
Intuit™ Quicken®	3.0
Lotus®1-2-3® for Windows	1.1, 4.0
Lotus Ami Pro®	3.0, 3.01
Lotus Approach™	2.1
Lotus cc:Mail™ (Client only)	2.0
Lotus Freelance Graphics®	2.01
Lotus Notes® (Client only)	3.0c
Lotus Organizer™	1.1
Lotus SmartSuite®	2.0
Microsoft Access®	2.0
Microsoft Excel	4.0, 5.0
Microsoft Mail (Client only)	3.2
Microsoft Office	4.3
Microsoft PowerPoint®	3.0, 4.0
Microsoft Project	3.0, 4.0
Microsoft Word for Windows	2.0, 6.0
PROCOMM PLUS® for Windows	1.0. 1.02
WordPerfect® for Windows	5.2, 6.0a

Troubleshooting Microsoft Windows Installation Problems

Table 1-4 suggests solutions to common problems you might experience when you install Microsoft Windows 3.1 or 3.11.

Table 1-4 Microsoft Windows Installation Problems and Solutions

Symptom	**Possible Cause**	**Solution**
Can't install Microsoft Windows program from diskette.	Incorrect diskette drive specified or diskette drive not configured.	See "Troubleshooting Problems With Diskette Drives" on page 63.
Can't install Microsoft Windows program from Wabi drive.	Drive or path incorrect or inadequate permissions to directory.	Use the Browse button to find the correct path to the Microsoft Windows files. Make sure you have read permission to the directory and files.
Can't access Program Manager.	Windows software incorrectly installed.	You must use the Wabi Microsoft Windows 3.1 Install Tool to install Microsoft Windows. See page 6 for more information.
Can't change settings from Windows Control Panel.	Many Control Panel functions not valid under Wabi program.	Use either Configuration Manager or operating system utilities to change most functions of Windows Control Panel.
Icons missing from Windows Main group.	Some parts of Windows cannot be used in Wabi so they are not installed.	See page 12 for a list of the Microsoft Windows programs that are installed into the Wabi environment.

Troubleshooting Startup Problems

Table 1-3 suggests solutions to problems you might experience when starting the Wabi program.

Table 1-3 Startup Problems and Solutions

Symptom	**Possible Cause**	**Solution**
Can't install Wabi	Insufficient disk space.	Try creating a link from the Wabi system directory to another directory with more space. See page 20 for space requirements.
Can't start Wabi	Startup command not in path.	Use the full path name for the `wabi` command. This path is specific to your operating system. Or, edit your user profile for the UNIX shell you use (e.g., `.cshrc` for the C shell) to include the Wabi `bin` directory in your search path.
	Not enough swap space or memory.	Make sure you have at least the minimum requirements listed in Table 1-2 on page 20. If you need to run many programs concurrently, you may need more memory and swap space.
	Too many other UNIX programs running.	Quit some of the running programs and try starting Wabi again.
Can't access Wabi man page	Wabi man page directory not in `MANPATH`.	See "Accessing the Wabi Man Page" on page 18 for more information.
Can't display to a remote system	System not open to external displays or no display identified.	See "Displaying the Wabi Program on a Remote System" on page 15 to make sure you've followed the correct procedure.

Reference Material for Getting Started

This section provides reference material for tasks associated with starting and using the Wabi program.

Hardware Requirements

Table 1-2 lists minimum and optimum memory and disk space configurations for using the Wabi program. See your operating system documentation for specifics on your hardware requirements.

Table 1-2 Wabi Memory and Disk Space Requirements

Item	**Minimum**	**Recommended**
Random-access memory (RAM)	24 Mbytes on RISC systems 16 Mbytes on x86 systems	32 Mbytes on RISC 24 Mbytes on x86
Disk space required for Wabi system directory	20 Mbytes	Not applicable
Disk space required for `$HOME/wabi`	12 Mbytes for Wabi files and Microsoft Windows files	Not applicable
Free swap space	20 Mbytes on RISC and x86	60 Mbytes for RISC 40 Mbytes for x86 10 Mbytes more for each application run concurrently

3. **Set your** `MANPATH` **variable to include the Wabi man page directory.** If `MANPATH` does not exist in `.login` or `.cshrc` or `.profile`, use a text editor to enter the following line in the appropriate file:

   If you use the C shell add the following line to either `.login` or `.cshrc`:

   `setenv MANPATH` *parentdirectory***`/man`**

   If you use the Bourne or Korn shell, add the following line to `.profile`:

   `MANPATH=`*parentdirectory***`/man; export MANPATH`**

   parentdirectory is the directory where the Wabi system software is located, for example `/usr/wabi`.

   If `MANPATH` is set in one of these files already, use a text editor to update your `MANPATH` variable by adding the following at the end of the `setenv MANPATH` or `MANPATH=` statement:

   *parentdirectory***`/man`**

   If the Wabi system software is located in `/usr/wabi`, your `MANPATH` directory is `/usr/wabi/man`.

   Be sure to separate this entry from existing `MANPATH` entries with a colon. Save and quit the `.login` , `.cshrc`, or `.profile` file once you've added this statement.

4. **Update your operating system to recognize this** `MANPATH` **entry.** Enter one of the following commands, depending on the file in which your `MANPATH` statement is located:

   `source .login`
   or
   `source .cshrc`
   or
   `. .profile`

"Microsoft Windows Installation From a Wabi Drive" on page 9 discusses installation from a Wabi drive in more detail.

3. **Specify in the entry field the path to the Windows files.**
   Enter **`R:`** and the complete path from the root directory to the Windows files. You can use either DOS or UNIX slashes in the path. You can also use the Browse button to look through the directories available to your system to find the path to the Windows files.

4. **Choose OK.**
   The Wabi program begins merging files from the directory you specified into your personal `wabi/windows` directory. When installation is complete, windows open, displaying the contents of each Windows program group, and a dialog opens asking you to restart the Wabi program.

5. **Choose OK in the dialog to restart the Wabi program.**
   Installation of Microsoft Windows software is now complete.

▼ Viewing the Wabi Man Page

- **Display the Wabi man page by entering the following at the command line:**

```
man wabi
```

The initial screen of Wabi man page information is displayed. Press the spacebar to view additional screens.

If the `man` command indicates there is no Wabi man page, you may have to add it to your man pages path as explained in the next procedure.

▼ Accessing the Wabi Man Page

1. **Open a command window.**

2. **Locate the `MANPATH` variable.**
   Examine your `.login` and `.cshrc` (if you use the C shell) or `.profile` (if you use the Bourne or Korn shell) to locate this variable.

   If you cannot locate this variable in your user profile files, you must set it by editing one of these files.

▼ Installing Microsoft Windows From Diskette

1. **Open the Wabi Tools icon.**
   The Wabi Tools group displays several icons.

2. **Open the Windows Install icon.**
   The Wabi Microsoft Windows 3.1 Install Program dialog box opens.

See “Microsoft Windows Installation From Diskette” on page 7 for detailed information about Windows installation from diskette.

3. **Specify a diskette drive letter.**
   If you are using diskette drive A for installation, choose OK to accept the default drive designation. If you are using diskette drive B, replace A with B in the entry field and choose OK.

   The initial installation dialog box opens.

4. **Insert the Windows program disk 1 into the diskette drive and choose OK.**
   The Wabi program begins copying Windows files into your `C:\WINDOWS` directory.

Note – If the diskette drive does not provide an eject button, you can eject diskettes by clicking in the Wabi window and pressing the Meta and E keys: ◇ + E

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5. **Follow the prompts in subsequent dialog boxes to copy the files on the remaining Windows program diskettes.**
   When copying is complete, the Windows program groups open and a dialog asks you to restart the Wabi program.

6. **Remove the last disk from the diskette drive.**

7. **Choose OK in the dialog to restart the Wabi program.**
   Installation of the Windows software is now complete.

▼ Installing Microsoft Windows From a Wabi Drive

1. **Open the Wabi Tools icon.**
   The Wabi Tools group displays several icons.

2. **Open the Windows Install icon.**
   The Wabi Microsoft Windows 3.1 Install Program dialog box opens.

See the section “Display Wabi on a Remote System or X Terminal” on page 14 for reasons you might want to do this.

2. **Start the Wabi program on your system using the** `-display` **argument followed by the remote host name and the characters** `:0`
   For example, to display to a remote system named `eastoshkosh`, enter:

   ```
   wabi -display eastoshkosh:0
   ```

   Screen output is sent to the remote system with the specified host name.

Note – To send the Wabi display to a remote system every time the Wabi program is started, you can set a `DISPLAY` environment variable. For example, to consistently display to a remote system named `eastoshkosh`, enter one of the following commands.
If you use the C shell:

```
setenv DISPLAY eastoshkosh:0
```

If you use the Bourne or Korn shell:

```
DISPLAY=eastoshkosh:0;export DISPLAY
```

If you do set this variable, be aware that all other X Window applications you start subsequently from the same UNIX command window will be displayed on the remote system.

▼ Displaying the Wabi Program with Small or Large System Fonts

♦ **If you have a large screen and want to display Wabi with smaller fonts in dialog boxes and menus, start Wabi by entering the following at the command line:**

```
wabi -SF
```

or

♦ **If you have a small screen and want to display Wabi with larger fonts in dialog boxes and menus, start Wabi by entering the following at the command line:**

```
wabi -LF
```

Note – The `-LF` switch has no effect on large screens because large fonts are already being used, and the `-SF` switch has no effect on small screens because small fonts are already being used.

Instructions for Getting Started

This section provides detailed, step-by-step instructions for performing a variety of tasks related to starting the Wabi program. Margin notes refer to sections of this guide related to the task being described.

▼ Starting the Wabi Program

♦ **Choose the Wabi icon in your operating system's file manager.**
Alternately, place the Wabi executable directory in your path and enter the following at the command line:

See the section "The First Time You Run the Wabi Program" on page 4 if you are a new Wabi user.

```
wabi
```

The Windows Program Manager window opens.

▼ Exiting the Wabi Program

1. **Save any open files and exit all applications running within the Wabi program.**
   If you try to exit before saving, the applications prompt you to save each modified file.
2. **Open the File menu, and choose Exit.**
   Alternately, press Alt+F4, or double-click the window control button in the top left corner.

   The Exit Windows confirmation window is displayed.
3. **Choose OK.**
   Program Manager closes and the Wabi program terminates.

   Alternately, choose Cancel to exit the dialog box without ending the Wabi session.

▼ Displaying the Wabi Program on a Remote System

1. **Set the remote system to give access to its display.**
   Type the following command at the UNIX command line on the remote system:

   xhost +*your-host-name*

Wabi Display Options

The `wabi` command, which you use to start the Wabi program, provides several switches you can use to specify options Wabi should use when it starts. The switches enable you to specify a display to use and to tell Wabi to display with smaller or larger system fonts.

Display Wabi on a Remote System or X Terminal

You can direct the Wabi display to a remote system or X terminal. You might do this if you want to view and use the Wabi program on a system that cannot run the Wabi program locally, or if you want to run the Wabi program on a central computer and display it on X terminals.

"Displaying the Wabi Program on a Remote System" on page 15 provides the steps required for this task.

You direct the Wabi display to a remote system that is open to external displays by specifying a display name with the `-display` switch when starting the Wabi program. To direct the display to a remote system every time the Wabi program is started, you can set the `DISPLAY` environment variable. If you do set this variable, be aware that the displays of all other X Window applications you start subsequently may also be sent to this system, depending on where you set the variable. See your UNIX documentation for information about setting the `DISPLAY` variable.

Note – The Wabi program accesses the diskette drive on the system where it is running. You cannot access the diskette drive of a remote system on which the Wabi program is being displayed.

Display Wabi With Smaller or Larger System Fonts

See "Displaying the Wabi Program with Small or Large System Fonts" on page 16 for the commands used to change the display font size.

The Wabi program adjusts the size of the system fonts it uses in dialog boxes, icon labels, and menus according to the size of the display screen you use. On a large display screen (one with more than 640 horizontal pixels), the Wabi program uses a system font approximately 20 pixels high. On a small display screen (one with 640 or fewer horizontal pixels), it uses a system font approximately 16 pixels high. You can use the `-LF` and `-SF` command-line switches to override the default and have Wabi use larger or smaller system fonts.

When you use Configuration Manager, you can view Wabi error message help and status panel help. A Wabi error message is displayed when you try to perform an “illegal” procedure or when Wabi software cannot complete a task you ask it to do using Configuration Manager. For example, you’ll see an error message if you try to assign a Wabi drive to a file system that you do not have permission to access. Error dialog boxes displayed at these times include a Help button you can choose for information about the error and help in resolving the problem.

Status panel help is available within the Wabi Configuration Manager. Each Configuration Manager dialog box includes a help panel. This panel displays information about the dialog box item that is under the mouse pointer. As you move the pointer around a dialog box, the displayed help message changes. Chapter 2, “Using Configuration Manager,” provides more information about using status panel help.

The Wabi Man Page

A manual (man) page of information is available for the Wabi program. This man page describes command-line options, provides examples of various startup modes, and describes Wabi environment variables. Type the command `man wabi` to display the Wabi man page.

See “Accessing the Wabi Man Page” on page 18 for the steps required to view this man page.

To access the Wabi man page, you must have the Wabi man page directory in your man pages path. The Wabi installation procedure may or may not have taken care of this for you; it varies depending on your native operating system. Some operating systems use a `manpath` environment variable in your `.login`, `.cshrc`, or `.profile` file. If you cannot view the Wabi man page, you may have to modify your `manpath` environment variable.

- *File Viewer* – A program you can use to view and print text files having a `.WRI` or a `.TXT` file extension. Files with these extensions serve as Read Me files in many application programs. The File Viewer on-line Help explains how to use the program.
- *Wabi 2.0 Release Notes* – A `.WRI` file containing notes about installing and using particular applications, and notes relevant to your operating system platform.

Microsoft Windows Groups

When you install Microsoft Windows software, you see the Main, Accessories, and Games groups. However, you may notice some items missing from these groups. A few items in the Main group are not installed because they conflict with Wabi tools or are just not needed in the Wabi environment. Among the missing are Print Manager, Windows Setup, PIF Editor, and the Windows Read Me file. Table 1-1 lists the programs that appear in each Microsoft Windows group.

Table 1-1 Microsoft Windows Groups and Programs

Windows Group	Programs Installed in the Wabi Environment
Main	File Manager, Clipboard Viewer, Control Panel, MS-DOS Prompt (functional only if you have installed a DOS emulator on your UNIX system).
Accessories	Write, Paintbrush, Notepad, Terminal, Calculator, Recorder, Cardfile, Calendar, Clock, Object Packager, and Character Map.
Games	Solitaire, Minesweeper

Wabi On-Line Help

The Wabi program provides Windows help files for the Configuration Manager and File Viewer. These help files use the Microsoft Windows help program, `winhelp.exe`. After you install Microsoft Windows software, you can view the on-line help through the Help menu in each program, or by choosing the Help button or pressing the F1 key in Wabi dialog boxes. On-line help explains what you can accomplish with the Wabi tools.

If you do not immediately install Microsoft Windows, the Wabi program starts the Application Manager. This program enables you to open the Wabi Tools group to read the Wabi 2.0 Release Notes and to start the Windows Install program when you are ready to install Microsoft Windows. Application Manager provides many of the functions of the Windows Program Manager.

Wabi Tools Group

The Wabi Tools group contains the application items shown in Figure 1-5. Each item is a utility program that allows you to perform a Wabi task.

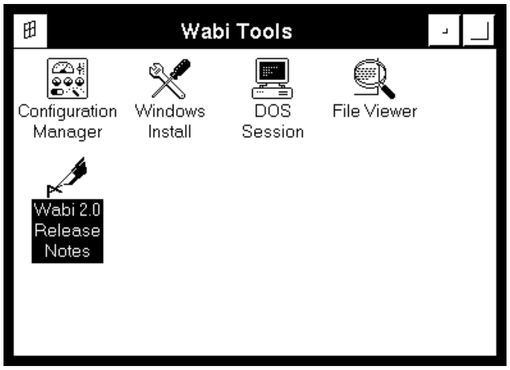


Figure 1-5 Items Within the Wabi Tools Group

Items within the Wabi Tools group include:

- *Configuration Manager* – A program through which you establish and change most Wabi program settings and connections. You use this program to set up a drive, assign a port, set up printers, and more. Chapter 2, "Using Configuration Manager," discusses this program in detail.

"Microsoft Windows Installation" on page 6 tells you how to use the Windows Install tool.

- *Windows Install* – The program you use to install the Microsoft Windows 3.1 or 3.11 software. When you install Microsoft Windows, you must use this tool rather than the `setup` program supplied with Microsoft Windows. This program runs automatically when you start the Wabi program without Windows installed.

Chapter 9, "Installing and Using DOS Applications" explains how to configure a DOS emulator.

- *DOS Session* – A program that starts a DOS session if you have installed a DOS emulator. This item starts the DOS emulator specified in the Wabi Configuration Manager.

Note – You must have read permission to access the directory containing the Windows files. If you cannot access this directory due to a permission problem, change the permissions using the `chmod` command or see your system administrator.

See "Installing Microsoft Windows From a Wabi Drive" on page 17 to learn how to perform this task.

After you've entered the drive letter and path and chosen OK, the Wabi program installs the Windows files in your `$HOME/wabi/windows` directory. A progress meter in the dialog box increments as files are installed.

As installation nears completion, the Wabi Tools group and Microsoft Windows Main, Games, and Accessories groups open. When installation is complete, the message window shown in Figure 1-4 opens.

When you choose OK, the Wabi program exits and immediately restarts, opening the Windows Program Manager. If you prefer not to restart the Wabi program immediately, you can choose Cancel, but you must restart before installing applications.

The Wabi User Interface

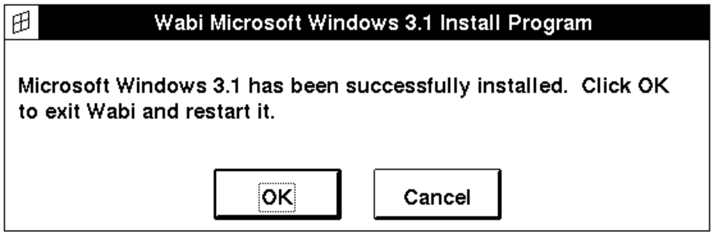
The Wabi program presents the familiar screens, dialog boxes, and menus of a graphical user interface (GUI). You make menu selections and choose icons by pointing and clicking with a mouse, or by using keyboard accelerator commands. Accelerator keys, designated by an underlined character in a menu choice, are discussed in Chapter 2, "Using Configuration Manager."

The Program Environment

After you install Microsoft Windows, the Wabi program uses the Windows Program Manager as its program environment, or shell program. Before Microsoft Windows is installed, Wabi uses the Wabi Application Manager. The shell program is specified in the `SHELL=` variable in your `$HOME/wabi/windows/system.ini` file.

The Windows Program Manager works as it does when you run it in Microsoft Windows on a PC. If you are not familiar with the Windows Program Manager, refer to the Microsoft Windows documentation and on-line help.

As installation nears completion, the Wabi Tools group and Microsoft Windows Main, Games, and Accessories groups open. When installation is complete, the message window shown in Figure 1-4 opens.



Microsoft Windows 3.1 has been successfully installed. Click OK to exit Wabi and restart it.

Figure 1-4 Microsoft Windows Install Completion Message

When you choose OK, the Wabi program exits and immediately restarts, opening the Windows Program Manager. If you prefer not to restart the Wabi program immediately, you can choose Cancel, but you must restart before installing applications.

For a description of what you see when the Wabi program starts, skip to the section "The Wabi User Interface" on page 10.

Microsoft Windows Installation From a Wabi Drive

"Microsoft Windows Installation on a Network Server" on page 6 explains how to install Microsoft Windows to a server so users can then install it on their workstations.

If the Microsoft Windows software is installed on a hard drive or network directory accessible to your operating system, you can install it into the Wabi program using the Wabi drive R, which is assigned to your / (root) directory.

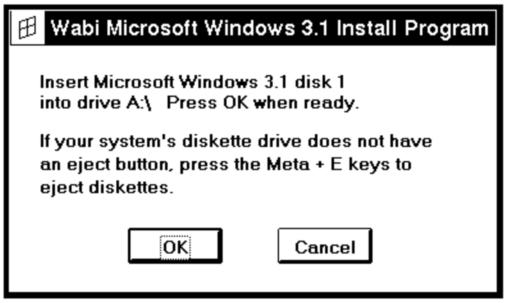
To install the Microsoft Windows 3.1 or 3.11 software from drive R, you enter R: and the path the Wabi program can use to locate the Windows files. You can also use the Browse button to navigate through the directories accessible to your system and locate the Microsoft Windows directory.

For example, if the Windows 3.1 diskettes are copied into `/usr/apps/install/win31.dsk`, you could enter the following in the entry field of the dialog box shown in Figure 1-2:

```
R:\usr\apps\install\win31.dsk
```

You can use either a DOS path or a UNIX path. The back slash (\) is used in DOS path names. The forward slash (/) is used in UNIX path names. The Wabi program accepts both types of path names.

Once you enter a drive letter and choose OK, a dialog box opens and prompts you to insert disk 1 into the diskette drive. This dialog box is shown in Figure 1-3.



Wabi Microsoft Windows 3.1 Install Program

Insert Microsoft Windows 3.1 disk 1
into drive A:\ Press OK when ready.

If your system's diskette drive does not have
an eject button, press the Meta + E keys to
eject diskettes.

Figure 1-3 Wabi Microsoft Windows 3.1 Install Program Dialog Box

After you insert the disk and choose OK, the files on disk 1 are installed in your `C:\WINDOWS` directory, which is mapped to your `wabi/windows` directory.

Note – The destination directory, `C:\WINDOWS`, cannot be changed. The Wabi Microsoft Windows Install Program does not support installation of Microsoft Windows to another location. However, you can change the location of your personal `wabi` directory by setting the `WABIDIR` variable as explained in the note on *page 5*.

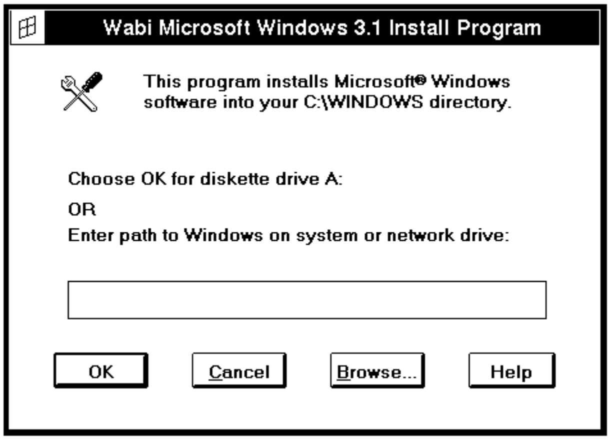
A progress meter in the dialog box increments as files are installed. When disk 1 copying is complete, you are prompted to insert disk 2 and choose OK. When you insert disk 2 and choose OK, the files on diskette number 2 are copied. Repeat this procedure for the remaining disks.

Note – If your diskette drive does not provide an eject button, you can eject diskettes by clicking in the Wabi window and pressing the Meta and E keys: ◇ + E

Note – The Wabi Windows 3.1 Install program does not allow you to set up your system to access a shared copy of Microsoft Windows. Each user must have his or her own copy of Windows in `$HOME/wabi/windows`, and must have a Microsoft Windows software license.

Microsoft Windows Installation From Diskette

The Wabi Microsoft Windows 3.1 Install Program's initial dialog box prompts you for the location of the Windows files, as shown in Figure 1-2.



Wabi Microsoft Windows 3.1 Install Program

This program installs Microsoft® Windows software into your C:\WINDOWS directory.

Choose OK for diskette drive A:
OR
Enter path to Windows on system or network drive:

Figure 1-2 Initial Wabi Windows 3.1 Install Program Dialog Box

To install Microsoft Windows 3.1 or 3.11 from a local diskette drive, enter the letter designation of the diskette drive. The Wabi program supports the connection of two diskette drives: drive A and drive B. The default connection is diskette drive A.

"Installing Microsoft Windows From Diskette" on page 17 provides the steps required to perform this task.

When the Wabi Microsoft Windows 3.1 Install Program dialog box opens, note that the entry field displays the designation for drive A. If you are using drive A to install Windows software, choose OK to accept the default designation. If you are using drive B, change the designation from A to B.

Microsoft Windows Installation

The Wabi Microsoft Windows 3.1 Install program installs Microsoft Windows software into your Wabi user environment. The program copies the appropriate Microsoft Windows 3.1 or 3.11 files into your `wabi/windows` directory. You must use this tool for a successful Windows installation. If you try to install Windows software by other means, important Wabi files will be overwritten by Windows installation routines.

The first time you start the Wabi program, the Wabi Microsoft Windows 3.1 Install program starts automatically. If you choose not to install Microsoft Windows at that time, you can use the Windows Install icon in the Wabi Tools group to start the program to install Windows at a later time. The Wabi Microsoft Windows 3.1 Install program will start each time you start the Wabi program until you install Microsoft Windows. You must install Windows before you install and use any application programs.

Note – The Wabi program does not support Windows for Workgroups.

Microsoft Windows Installation on a Network Server

The Wabi Windows 3.1 Install program can only be used to install Microsoft Windows 3.1 or 3.11 files into a Wabi user environment. If you want to install Microsoft Windows onto a network server so that users may install Windows from the server, you can use the procedure for placing Windows files on a network server that is described in your Microsoft Windows documentation. The documented procedure requires a DOS computer on your network so you can run the DOS command `setup /a`.

If you do not have a DOS computer on your network, refer to your UNIX documentation for information about accessing DOS file systems. Once you are able to access the DOS diskettes from your operating system, you can use UNIX commands to copy the diskettes to a network server and set read permission on the files.

Once you have installed Windows to a network server, Wabi users can use the Wabi Windows 3.1 Install program to install Windows files to their Wabi environments as described in “Microsoft Windows Installation From a Wabi Drive” on page 9.

Note – You can tell the Wabi program to create your personal `wabi` directory in a location other than your home directory by setting the `WABIDIR` environment variable before you start the Wabi program. You can do this by using the commands below, where *pathname* is the directory path where you want to place your personal `wabi` directory.
In the C shell:

```
setenv WABIDIR pathname
```

In the Bourne or Korn shell:

```
WABIDIR=pathname;export WABIDIR
```

Include this statement in your `.cshrc` or `.profile` file if you want to use this directory each time you start Wabi.

Appendix C, "Fonts from Windows to Wabi," discusses the font cache.

Next, the Wabi program may create a font cache for your display if the default font cache is not appropriate for your environment. This takes a few minutes.

The section "Microsoft Windows Installation" on page 6 describes how to install Microsoft Windows software.

Finally, the Wabi Windows 3.1 Install Program prompts you to install Microsoft Windows 3.1 or 3.11 software. If you do not have Microsoft Windows software currently available, you can install it at a later time. However, it is required that you do install it before using applications. If you cancel the Microsoft Windows installation, the Wabi Application Manager starts instead of the Windows Program Manager.

If You Are Upgrading from Wabi 1.0 or 1.1

The first time you start the Wabi program after Wabi 2.0 is installed, your `wabi` user directory is updated. Your Wabi environment is the same in Wabi 2.0 as it was in Wabi 1.0 and 1.1. All applications you have installed remain, and all changes you have made to Wabi's configuration, such as drive mappings, will be unchanged. See the Wabi 2.0 Release Notes on-line for more upgrade information.

If you previously installed Microsoft Windows, the Wabi program now automatically starts the Windows Program Manager. If you have not previously installed Microsoft Windows, the Wabi Windows 3.1 Install program prompts you to install Microsoft Windows 3.1 or 3.11 software. If you do not have Microsoft Windows software currently available, you can install it at a later time, but it is required that you install it before using applications. If you cancel the Microsoft Windows installation, the Wabi Application Manager starts.

program through Windows Sockets can do the same when running under the Wabi program. You access the operational functions when you install and use applications that use them in the Wabi program.

Configuration functions of the Wabi program let you influence the way the Wabi program behaves and the way it connects to the native operating system. You access these functions through the Wabi Configuration Manager, as Chapter 2, "Using Configuration Manager" explains.

New Features in Wabi 2.0

The Wabi 2.0 program supports several releases of the most popular Microsoft Windows applications. For a complete list of certified applications, see "Certified Compatible Applications" on page 23.

For information on the Internationalization option, see Chapter 5, "International Settings".

For information on the Color option, see "Configuration Manager Functions" on page 27.

The Wabi Configuration Manager offers new options:

- The International option lets you pick your preferred formats for time, date, numbers, currency, and system of measurement.
- The Color option lets you choose among several sets of colors to use in the Wabi program and applications.

You can now print with Hewlett-Packard LaserJet® III and Epson® FX model printers, in addition to the many PostScript™ printers the Wabi program supports.

For information on the diskette time-out, see Chapter 3, "Setting Up Drives".

The Wabi program's control of the diskette drive has been enhanced. Wabi gives up control of the diskette drive if it has not been used after 30 seconds or a period of time that you specify. This allows other programs to use the diskette drive while the Wabi program is running. Wabi regains control the next time you access the diskette drive through the Wabi program.

The First Time You Run the Wabi Program

If you have not run an earlier version of the Wabi program, the first time you start the Wabi 2.0 program, the Wabi startup script creates your personal `wabi` directory as a subdirectory of your home directory. Within that directory, it creates a `windows` subdirectory. These two directories are analogous to the `C:\` and `C:\WINDOWS` directories in a Microsoft Windows environment on a PC.

For example, as you print a spreadsheet of your financial forecast, the Wabi program intercepts your print request. It then translates this request and passes it along to your native operating system where print resources reside and are controlled. Your operating system then carries out the print request with its print subsystem, just as it does when you issue a print request with an `lp` or `lpr` command in the operating system.

Wabi and the X Window System

One of the operating system resources that Wabi uses extensively is the X Window System, the software that handles graphical user interfaces on UNIX systems. X Windows uses programs called the *X server* and the *window manager*, which together manage everything displayed on your screen. The X server and window manager may provide different features on different operating system platforms. For information about your X server and window manager's interaction with the Wabi program, refer to the release notes or additional documentation provided with the Wabi program for your operating system.

Wabi Capabilities and Functions

The Wabi program can run a variety of programs designed to run with Microsoft Windows, including programs included in Microsoft Windows itself. The Wabi program's capabilities and functions reflect the capabilities and functions of both the applications it supports, and the native operating system that supports the Wabi program.

In essence, the Wabi program supports two groups of functions:

- Operational functions supplied to applications
- Configuration functions intrinsic to the Wabi program

The operational functions available during a Wabi session depend on the functions supported by the application being run. The Wabi program provides certified applications with what they need to run in the native operating system the same way they run in the Microsoft Windows 3.1 environment. A certified application that uses dynamic data exchange and object linking and embedding, for instance, can use these capabilities when running under the Wabi program. A certified application client program that talks to a server

1

About the Wabi Program

Wabi software allows you to run Microsoft Windows applications on a variety of operating system platforms. This means no matter which operating system you use, you can take advantage of applications such as spreadsheets, word processors, databases, graphics packages, and more. Most of the popular applications have been tested extensively running in the Wabi environment. Applications that have been tested and certified compatible with the Wabi program are listed in “Certified Compatible Applications” on page 23.

Wabi software is “middle-ware.” It resides between an application and your native UNIX operating system. There, it redirects an application’s requests for services and resources to the appropriate operating system location.

Keep an eye out for margin notes that cross-reference instructions and other useful information.

Think of the Wabi program as a translator that speaks two languages fluently. One of those languages is the dialect used by your Windows application program. The other language is the coded incantation of your native operating system. Figure 1-1 depicts the Wabi program’s role as translator and redirector between these two software entities.

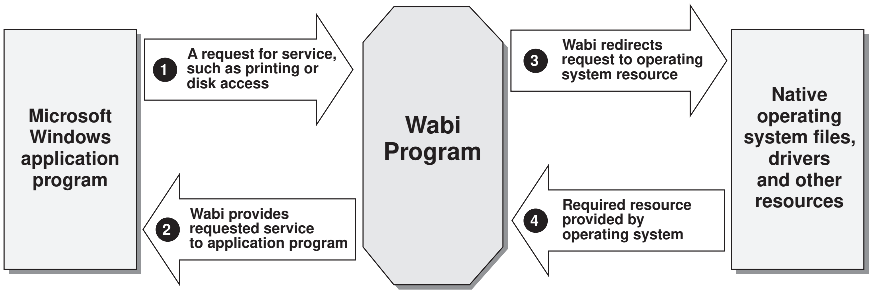


Figure 1-1 Wabi Program as Translator and Redirector

As you work with an application, the Wabi program intercepts your instructions and requests, and translates them into a language understood by your native UNIX operating system. The Wabi program then directs these requests to the appropriate operating system location.

Once the operating system makes a resource available, the Wabi program sees that the resource is delivered to the application.

Getting Started

1

Using the Wabi program, you can run some of your favorite Microsoft Windows applications, while at the same time taking full advantage of the connectivity and networking potential of your native UNIX operating system.

If you are not familiar with the Wabi program and want to learn the basic concepts of its operation, read the next section, "About the Wabi Program."

If you want instructions for specific "Getting Started" tasks, skip the next section of this chapter. Use the following table to locate the instructions you need.

Task	**Page**
Starting the Wabi Program	15
Exiting the Wabi Program	15
Displaying the Wabi Program on a Remote System	15
Displaying the Wabi Program with Small or Large System Fonts	16
Installing Microsoft Windows From Diskette	17
Installing Microsoft Windows From a Wabi Drive	17
Viewing the Wabi Man Page	18
Accessing the Wabi Man Page	18

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

Shell	**Prompt**
C shell prompt	%
C shell superuser prompt	#
Bourne shell and Korn shell prompt	$
Bourne shell and Korn shell superuser prompt	#

Typographic Conventions Used in This Manual

The following table describes the type changes and symbols used in this book.

Typeface, symbol, or term	**Meaning**	**Example**
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `system% You have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`machine_name%` **`su`** `Password:`
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type **`rm`** *filename*.
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in *User's Guide*. These are called *class* options. You *must* be root to do this.
Key Names Alt,s,d F1	Keys are written as they appear on the keyboard. Keys you press sequentially are separated by a comma. Keys you press simultaneously are joined by a plus sign (+).	Press Alt,s,p to open the Printer Settings dialog box. Press Alt + F4
Type vs. Enter	Type means press only the keys indicated. Enter means to type the indicated keys and press the Enter or Return keys.	Type a device driver name. Enter a device driver name.
Enter vs. Return	These keys are used interchangeably	

On-Line Help

The Wabi program provides a comprehensive on-line Help system that describes how to use all program features and functions.

To use Wabi on-line Help, press F1 to view the Help table of contents. Then choose a Help topic to jump to a detailed Help screen. You can also choose the Help button within any Wabi dialog box to view a context-sensitive Help screen.

Error Messages and Status Panel Help

Wabi functions return an error message when a problem occurs that interrupts the completion of a task. Error messages describe the problem and usually suggest a solution that resolves the error condition. Occasionally, you must progress through a series of error messages to fully resolve an error. Follow the instructions provided in each error message box to resolve an error.

The Wabi program also provides status panel help. Status panel help appears in a footer included in each Configuration Manager dialog box. (This panel forms the left half of a dialog box bottom border.) The contents of this panel change as you move the mouse pointer over the dialog box. For example, if you place the pointer over an entry area, status panel help displays a brief description of the type of entry required.

Customer Support

Your operating system vendor provides telephone support for the Wabi program. If you cannot resolve a problem using Wabi documentation, on-line Help, or error messages and status panel help, contact your operating system vendor for additional support.

Chapter 9, "Installing and Using DOS Applications," details how to connect a DOS emulator to the Wabi program, and install and run DOS-based applications.

Appendix A, "Wabi File Layout," outlines the structure of the directories and files that make up the Wabi software.

Appendix B, "Color From Windows to Wabi," explains Wabi color handling and describes some variables that affect Wabi color handling.

Appendix C, "Fonts from Windows to Wabi," discusses methods the Wabi program uses to provide fonts to applications, and describes how edit the font configuration file and generate a font cache.

Appendix D, "UNIX and DOS File Systems," describes utilities that help you use DOS and UNIX files in both environments.

Related Books

You may find it helpful to have your operating system user's guide (from the operating system supplier) and one of the many books available about Microsoft Windows 3.1 on hand when you use the Wabi program. These books provide background information related to Wabi topics and detail the use of the features and functions available in Microsoft Windows 3.1 software.

Getting Help

There are several sources of help you can turn to with Wabi questions and problems:

- Wabi on-line Help
- Wabi error messages and status panel help
- Wabi customer support

The Wabi program is a bridge between your UNIX operating system and a Microsoft Windows-compatible application program. As a result, you need some knowledge of your operating system to fully configure the Wabi program. For example, you'll need to know the operating system files available to you in order to access those files. Similarly, you may need to supply the Wabi program with the locations and names of operating system device drivers, such as diskette device drivers, in order to use devices.

What This Guide Contains

This guide presents material as follows:

Chapter 1, "Getting Started," presents an overview of the Wabi system and describes how to start a Wabi session. This chapter also discusses installing Microsoft Windows software, provides system hardware and memory requirements, and lists the applications certified to run in the Wabi environment.

Chapter 2, "Using Configuration Manager," introduces you to the tool you'll use to make and change all Wabi settings. Tasks you'll perform with Configuration Manager include: turning your computer's sound on and off, starting a DOS session, assigning a port, creating diskette and network drives, managing printing, and more.

Chapter 3, "Setting Up Drives," explains how the Wabi program uses diskette and network drives, and describes in detail how to create and use drives.

Chapter 4, "Printing," examines how the Wabi program interacts with printers. Here you'll learn how to configure a port for printing and assign a printer to it. You'll also learn how to establish and change the default printing setup.

Chapter 5, "International Settings,"describes methods of localizing the Wabi program, and explains how to set up the Wabi program to use your preferences for international settings that applications may use.

Chapter 6, "On the Network," explains the ways the Wabi program uses the network.

Chapter 7, "Using Wabi Ports," describes how to set up and connect COM and LPT ports to devices such as modems and printers.

Chapter 8, "Installing and Using Microsoft Windows Applications," details how to install and run Windows-based applications.

The *Instructions* section is the place to turn for mouse clicks and keystrokes. This section takes a no frills approach to instructions, communicating a maximum amount of task-oriented information in a minimum amount of space. Every Wabi task is covered in *Instructions*. Yet when you use the *Instructions* section you won't be distracted from the job at hand by conceptual digressions and long-winded explanations. Go to *Instructions* when you understand what you want to do and you need the steps required to do it.

A *Reference* section rounds out each chapter. This section contains charts and tables of information related to the topic under discussion. Use the *Reference* section when you encounter a problem completing a task. The problem-and-solution tables included there will help you troubleshoot problems you may encounter with the Wabi program or the applications you are running.

As you scan each chapter, keep an eye on the frequent *margin notes* in the left-hand margin. These notes usually point to a cross-reference in a related section within the same chapter. For example, a concept described in *About* carries a cross-reference to the page in *Instructions* where the steps required to perform the related task appear. (The reverse is also true.) Use margin notes to shorten the distance between where you are and where you want to be.

Who Should Use This Book

If you use the Wabi program to load and run applications, you'll find this manual essential. It describes operating concepts and procedures, and provides step-by-step instructions for completing all Wabi tasks. Similarly, if you are responsible for supporting users, or for installing or configuring the Wabi program, this manual is the place to turn for comprehensive information about concepts, procedures, and system requirements.

Before You Use This Book

To use the Wabi program, you must be familiar with the use of a mouse and with graphic user interface techniques, including: pointing, clicking, and choosing options from a menu. If you are not familiar with these operations, refer to your system user's guide or desktop reference manual. They supply information about performing tasks using a mouse. Experienced users will find that the steps and procedures required to perform a task in the Wabi program are similar to those required to perform a task in any graphical user environment.

Preface

The *Wabi 2.0 User's Guide* provides information about all of the product functions and procedures of Wabi™ software, and its technology for running Microsoft® Windows 3.1 applications on UNIX® operating systems. Topics covered include: installing the Wabi program, setting up drives, configuring ports, managing printing operations, and installing and running applications.

Do Not Read This Manual

Instead, scan it for exactly the information you need. This guide is organized differently than the documentation you're used to reading. The goal is simple: minimize the amount of material you must wade through in order to get your job done. To accomplish this, each chapter is divided into three sections:

- About
- Instructions
- Reference

The *About* section in each chapter explains the operating concepts of a topic and provides background material related to the tasks described in the chapter. Think of *About* as the place to go to get the "big picture" on a topic or a procedure. Read as much, or as little, of *About* as you need to get the job done. Skip *About* entirely if you grasp a concept and require only step-by-step instructions to complete a task.

Tables

Figures

Contents

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