

# *WabiServer Administrator's Guide*

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## *Preface*

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Wabi™ software enables you to run Microsoft Windows and other applications that run on Microsoft Windows on a UNIX workstation. WabiServer™ software enables you to run Wabi software on a server and access it from several client systems at the same time. The *WabiServer Administrator's Guide* tells a system administrator how to plan, install, and maintain WabiServer software on a network of server and client systems.

Information on using Wabi can be found in the *Wabi User's Guide*. For this Beta release, information on the differences between using Wabi and using WabiServer can be found in the *WabiServer 1.0 Read This First*.

### *Who Should Use this Book*

Read this book if you are going to plan, install, or maintain a WabiServer system with client systems running Wabi remotely.

### *Before You Read this Book*

This book attempts to provide all the information you will need to plan, install, and maintain a WabiServer software on server and client systems. While the book tries to be complete, in some cases, it must assume some knowledge of:

- Solaris™ system administration
- Microsoft Windows environment

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In the Solaris environment, tasks you will perform include: planning file server resources, checking system space, obtaining more system space on a file server, making paths accessible by all systems on the network, using a text editor, creating a user, and making directories.

In the Windows environment, tasks you must perform include: sizing and moving Windows, making drive connections, running commands, and installing applications.

For information on Solaris system administration, see the *Solaris System Administrator Answerbook* and *Solaris User Answerbook*.

For information on the Microsoft Windows environment, see the *Microsoft Windows User's Guide* that comes with your copy of Microsoft Windows and Microsoft Windows license agreement.

## *How This Book Is Organized*

Chapters in this book are described briefly below.

Chapter 1, "Introduction to WabiServer," briefly describes Wabi and introduces WabiServer.

Chapter 2, "Planning WabiServer Configuration," gives you procedures for planning your site's configuration. It includes system requirements for servers and clients.

Chapter 3, "Installing WabiServer on Servers," describes how to install WabiServer software on a server.

Chapter 4, "Creating Prototypes," describes how to create prototypes which are used to create users' personal Wabi directories. These directories create access to Windows and other Windows applications.

Chapter 5, "Installing WabiServer Client Software on Clients," describes how to obtain access to WabiServer client software from a client system and how to run Wabi remotely, selecting a WabiServer and a set of applications to run.

Chapter 6, "Administrator Tools," describes the tools for creating prototypes and allowing or disallowing diskette drive and printer access.

Chapter 7, "Troubleshooting," describes solutions to selected problems.

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Appendix A, “WabiServer Files and Directories,” contains a table that describes the contents of selected WabiServer files and directories.

### *Procedures Are Marked with ▼*

If you look in the Table of Contents in the front of this book you will see some sections marked with an upside-down triangle, ▼, like this:

#### ▼ To Remove an Existing Wabi Package

These sections contain procedures presented succinctly. Explanatory material relevant to the procedure is presented before the procedure. If you do not need an explanation, you can perform the procedure by following the procedure’s steps. If you need an explanation, read the material before or after the procedure.

### *Single Steps Are Marked with ♦*

If there is more than a single step in a procedure, the steps are numbered. A solitary step in a procedure is marked with a diamond, ♦, like this:

♦ Log in as root.

## *Related Books*

This book is intended to be used with:

- *WabiServer 1.0 Read This First*
- *Wabi User’s Guide*
- *Wabi 2.1 Release Notes*

You will also need the following books:

- Windows application documentation: installation, administration, and user guides

You may also want to consult the following books:

- *Solaris System Administrator Answerbook*
- *Solaris User Answerbook*
- *Microsoft Windows User’s Guide*

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## What Typographic Changes Mean

The following table describes the typographic changes and some symbols used in this book.

Table P-1 Typographic Conventions

Typeface or Symbol	Meaning	Example
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>machine_name%</code> You have mail.
<b>AaBbCc123</b>	What you type, contrasted with on-screen computer output	<code>machine_name%</code> <b>su</b> Password:
<i>AaBbCc123</i>	Command-line placeholder: replace with a real name or value	To delete a file, type <code>rm filename</code> .
<b><i>AaBbCc123</i></b>	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be root to do this.
➤	Cascading menu picks are designated by arrows.	"Select File ➤ Run" means to select the Run item from the File menu.
▼	Marks a procedure.	▼ <b>To mount the CD-ROM</b>
◆	Marks a step that is the sole step in a procedure.	◆ Log in as root.



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## Shell Prompts in Command Examples

The following table shows the symbols used in this book to indicate the user prompt and the superuser prompts. These prompts are included with command examples to remind you of whether you need to be logged in as a regular user or as the superuser when you enter the command.

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**Note** – Do not enter these symbols with the command.

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Table P-2 User Prompts

User Logged In	Prompt
C shell prompt for a regular user	%
Superuser prompt	#

## Windows Environment Typographic Conventions

The following table shows some typographic conventions used in the Windows environment.

Table P-3 Windows Environment Typographic Conventions

Convention	Example
File names are separated by backslashes.	<code>\files\protos</code>
A drive is a letter followed by a colon.	<code>C:</code>
A drive can be mapped to a directory path, similar to a link. For example, the C drive is mapped to your Wabi directory.	<code>C:</code> is equivalent to <code>~/wabi</code> . <code>C:\letters</code> is equivalent to the <code>~/wabi/letters</code> directory.

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## *Introduction to WabiServer*

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WabiServer gives multiple users simultaneous access to the complete functionality of Wabi. This allows them to use productivity applications designed to run on Microsoft Windows on a UNIX workstation.

This chapter introduces WabiServer by defining and contrasting Wabi capabilities and WabiServer capabilities. It compares the two products by highlighting important concepts of system configuration for both. It describes a simple WabiServer configuration. It introduces the use of prototypes, which contain installed applications and are used to create users' personal Wabi directories.

### *What Is Wabi?*

The Wabi program is a UNIX application that enables you to run Microsoft Windows applications on several UNIX operating environments that use the X Window System. Wabi acts as an interface between the Windows applications and the UNIX operating system, translating Microsoft Windows system calls into UNIX system calls.

The Wabi program enables you to retain the security, power, and network capabilities of your UNIX operating system, while, on the same desktop, lets you access to Microsoft Windows applications such as spreadsheets, word processors, databases, and graphics packages. The most popular Windows applications have been tested extensively in the Wabi environment. (See Table 1-1 on page 26 for the list of applications that have been certified compatible with the Wabi program.)

The original Wabi product is primarily designed for a single user. Generally, users of standalone Wabi are responsible for installing Microsoft Windows and Windows applications on their own disks. This book refers to the original Wabi product as *standalone Wabi*.

For more introductory information on Wabi, such as functional capabilities, see Chapter 1, “What is Wabi?”, in the *Wabi User’s Guide*.

This section shows the important concepts of two standalone Wabi configurations: standalone Wabi on a local system, and standalone Wabi on a remote system.

## *Standalone Wabi on a Local System*

Figure 1-1 shows a standalone Wabi configuration. You can run standalone Wabi only on higher-end workstations.

Figure 1-1 shows that

- Wabi software resides on the local disk and runs on the local system.
- The Wabi display is on the local system.

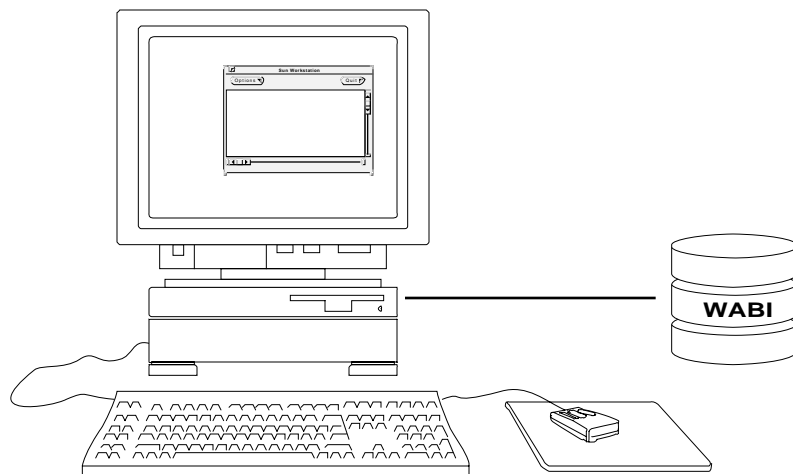


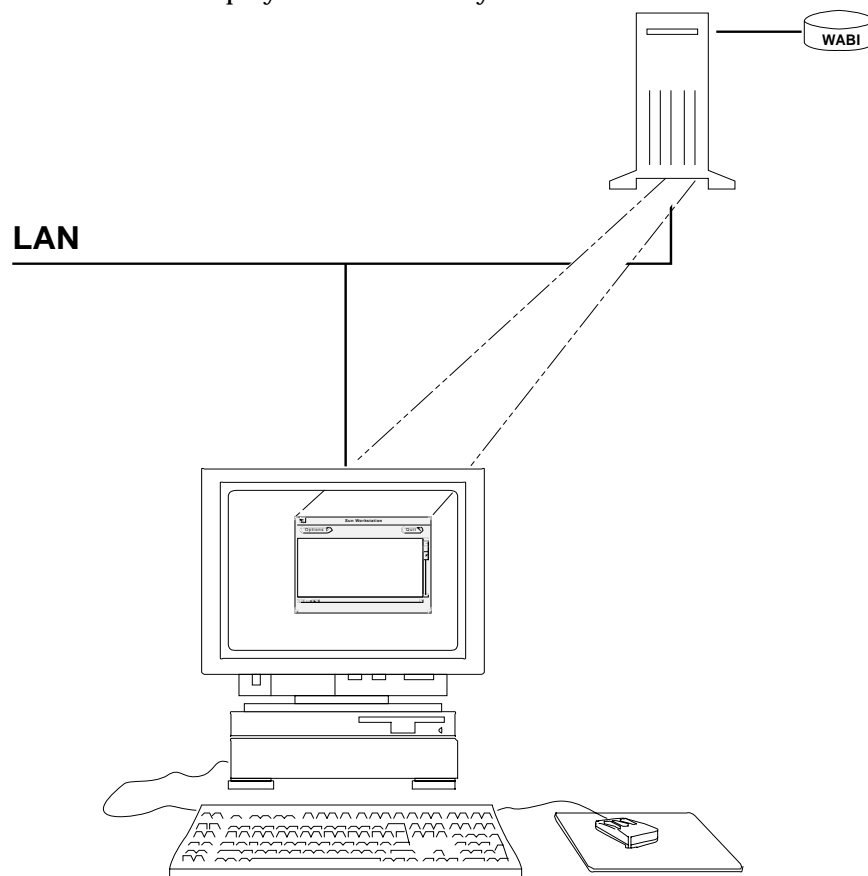
Figure 1-1 Standalone Wabi On a Local System

## *Running Wabi on a Remote System*

Like all X Windows applications, you can run Wabi from a remote system and display it on the local system. This configuration allows you to use Wabi on lower-end workstations and X terminals. In this configuration, you cannot use the diskette drives or printers on the local system.

Figure 1-2 shows standalone Wabi accessed remotely.

- Wabi software runs on a remote system. (Figure 1-2 shows the remote system as a server.)
- The Wabi display is on the local system



*Figure 1-2* Standalone Wabi Accessed Remotely

## *What is WabiServer?*

The WabiServer product enables multiple users to access a single installation of Wabi software on a server. WabiServer frees users from the administrative tasks of installing Wabi, Microsoft Windows, and Windows applications, while enabling system administrators to perform tasks once to provide Wabi to many users. The system administrator installs Wabi and WabiServer software, chooses printer and diskette drive options, and installs Microsoft Windows and Windows applications. Once the WabiServer client software is set up on a user's machine, a user simply starts the remote Wabi program and can begin using the applications made available by the administrator.

A *server* is defined for this book as a system that runs Wabi and WabiServer software. It allows users to access this software from remote systems. The remote system is a *client*.

## *Benefits of WabiServer*

WabiServer provides:

- Performance through shared resources: Allows multiple users simultaneous access to Wabi on a server, taking best advantage of available resources.
- Access from SPARCstation to Windows applications running on a native processor (Pentium) server: If you select a powerful server as the WabiServer platform, you can supply high performance for Windows applications to many Solaris 1.x (SunOS™) and low-end workstations.
- Centralized management and control of Microsoft Windows applications: By installing WabiServer at your site, you are freeing your users from having to install applications, while providing them with flexible and efficient access to shared applications.
- Wabi access by client systems running low-end client systems: The standalone Wabi program is not supported for Solaris 1.x systems and may not run on low-end systems. WabiServer does provide access to Wabi for Solaris 1.x (SunOS) and low-end systems, such as X terminals.
- Access to local printers and local diskette drives: System administrators can give users access to local diskette drives, the server's diskette drives, or no diskette drives. The administrator can give users access to printers configured on their local systems, printers configured on the server, or both sets of printers.

## Minimum WabiServer Configuration

Figure 1-3 shows a minimum WabiServer configuration. Here, you have access to your local diskette drives and local printers. Several clients can access the WabiServer simultaneously.

- Wabi and WabiServer software run on the server system.
- The Wabi display is on the local system.
- Typically users' home directories are located on a remote file server.
- The first time you run Wabi remotely on the client (using the `rwabi` command), you must install Microsoft Windows from diskettes into your Wabi directory.

This minimum configuration does not take advantage of one of WabiServer's main features—its use of prototypes to install Windows applications for users.

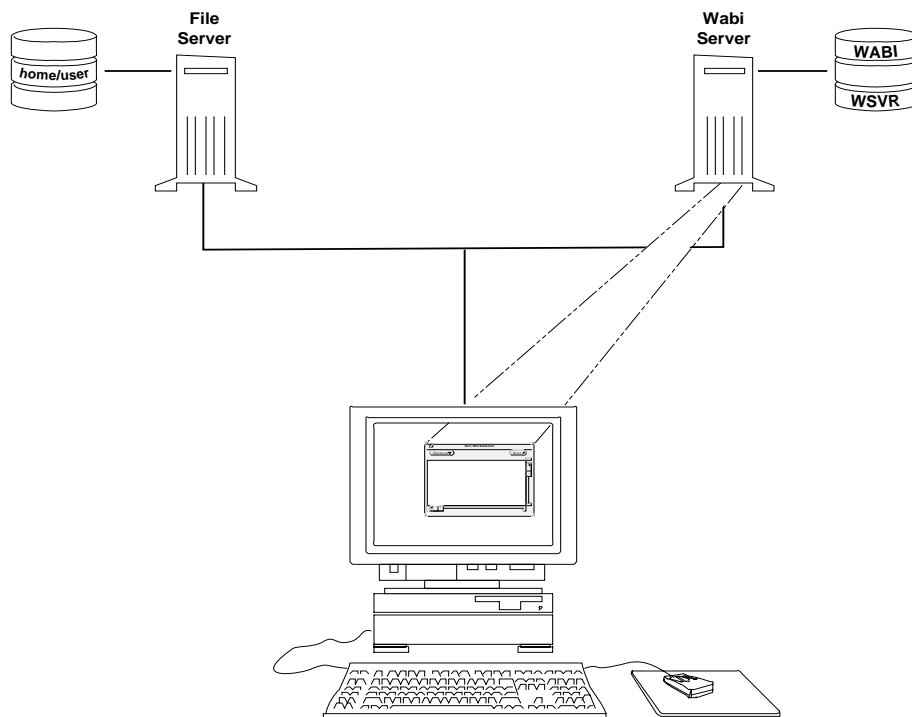


Figure 1-3 Minimum WabiServer Configuration

## *WabiServer Terminology*

In addition to speed and efficient use of resources, WabiServer also provides you with a way to easily set up users to access the applications they need. It does this using a concept called *prototypes*. This section introduces the terms *Wabi directory*, *prototypes*, and *shared applications* and describes their use in the WabiServer environment.

*Wabi Directory.* A user needs a Wabi directory in order to run Wabi. A user's Wabi directory contains Microsoft Windows software, other Windows information, Wabi information, and may contain other applications.

*Prototypes.* A prototype is a compressed image of a Wabi directory that is used to create a user's Wabi directory.

A prototype can contain Microsoft Windows and any number of other applications that run on Windows. For instance, a prototype could contain Microsoft Windows, a complete application, and the client portion of a shared application. The simplest prototype contains only Microsoft Windows.

You can create several prototypes that contain different sets of applications. You are limited only by the amount of disk space you have available.

WabiServer software contains a tool that you can use to create prototypes for your users, the `ws_bldproto` tool.

*Shared Applications.* Most suites of applications, like Microsoft Office and Lotus SmartSuite, give you the option of installing the application suite in a shared, network installation configuration. In such a configuration, the shared portion of the application resides on a server and a small portion resides on the client. Several clients can share the application over the network. This saves disk space and maximizes resources.

Chapter 4, "Creating Prototypes," includes directions for installing Lotus SmartSuite and Microsoft Office as shared applications and creating the client portions of these applications in prototypes.

Both shared applications and prototypes can reside wherever you have space on the network, either on the WabiServer or on a file server. Performance is better with shared applications if the shared software resides on the user's current WabiServer.



## WabiServer with Prototypes Configuration

Figure 1-4 shows a WabiServer with prototypes and shared applications.

- Wabi and WabiServer software are on the WabiServer disk.
- The Wabi display is on the local system.
- Typically users' home directories are located on a remote file server.
- Shared applications and prototypes are on the current WabiServer.
- The first time you run Wabi remotely on a client system, you are asked for the name of a Wabiserver, a Wabi directory location, and a prototype.

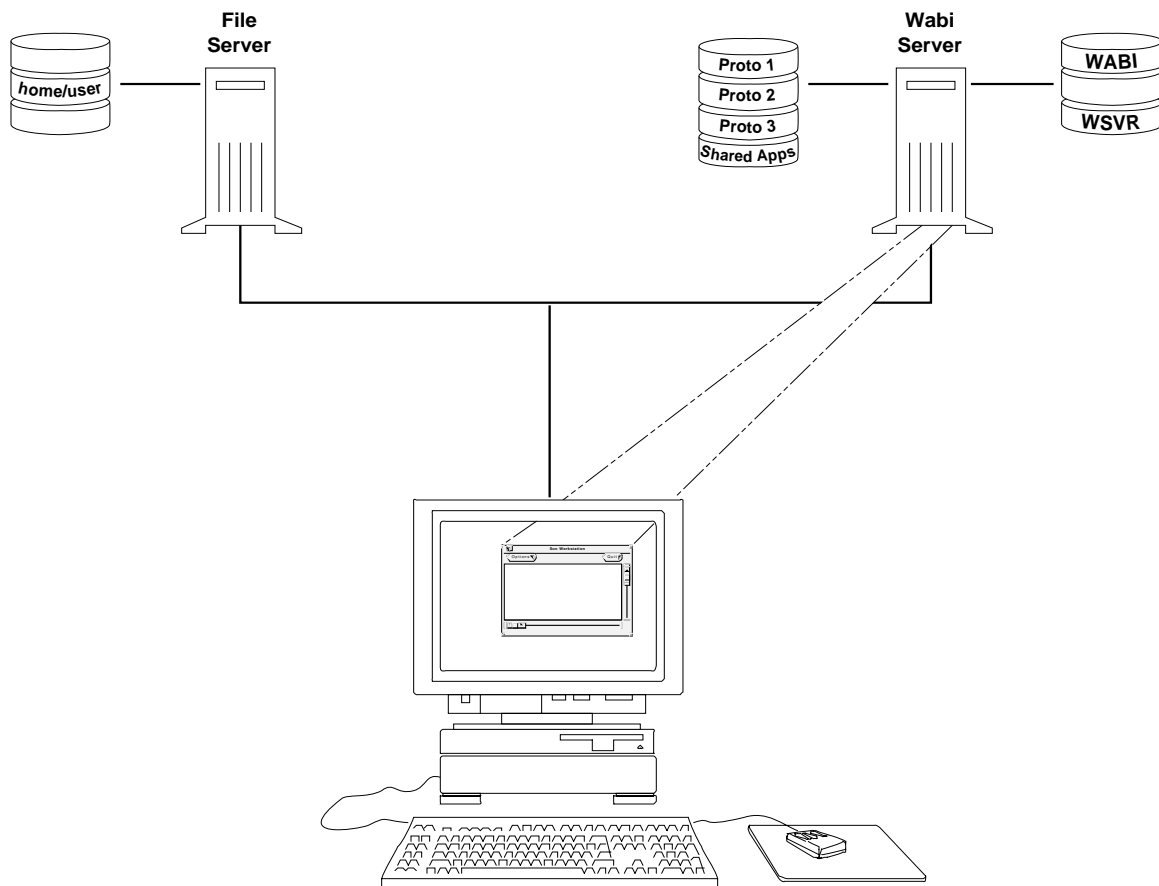


Figure 1-4 WabiServer with Multiple Prototypes

## *Certified Compatible Applications*

Table 1-1 lists applications that have been tested and certified compatible with WabiServer 1.0 and Wabi 2.1.

*Table 1-1* Applications Certified for the Wabi Program

<b>Certified Application Name</b>	<b>Supported Versions</b>
Aldus PageMaker	4.0, 5.0
CorelDRAW!	3.0, 4.0
Harvard Graphics for Windows	2.0, 3.0
Intuit Quicken	3.0, 4.0
Lotus1-2-3 for Windows	4.0, 5.0
Lotus Ami Pro	3.01, 3.1
Lotus Approach	2.1, 3.02
Lotus cc:Mail (Client only)	2.0, 2.03
Lotus Freelance Graphics	2.01, 2.1
Lotus Notes (Client only)	3.0, 3.3
Lotus Organizer	1.1, 2.01
Lotus SmartSuite	2.0, 3.1
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
Paradox for Windows	4.5, 5.0
PROCOMM PLUS for Windows	1.0, 1.02
Quattro Pro for Windows	5.0, 6.0
WordPerfect for Windows	6.0a, 6.1

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**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.

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# *Planning WabiServer Configuration*

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This chapter contains information on planning a WabiServer configuration consisting of servers, clients, users, and software.

The section “System Requirements” on page 32 lists hardware and software that is supported for server systems and client systems.

## *How to Plan Your WabiServer Configuration*

The following list of tasks gives you some guidelines to use in planning a WabiServer installation. It describes some of the factors you will be balancing, such as the number of applications on a server, the number of users accessing those servers, which applications you will supply in prototypes, and which applications users will load themselves.

**1. Poll your users to determine their Windows application needs.**

See the list of applications certified to run on WabiServer 1.0 in Table 1-1 on page 26.

**2. Identify users as either power users or casual users.**

Power users use Microsoft Windows applications fairly continuously all throughout the day. Casual users use applications sporadically during the day. You might want to mix power users and casual users on a single server.

**3. Determine how many WabiServers you will need to accommodate the number of users you have.**

Power users are much more demanding of system resources than casual users. For example, one power user may require as much processing time as three to five casual users. Therefore, depending on system configuration, you can accommodate more than 10 power users or more than 30 casual users.

**4. Choose which applications you will make available to your users and which ones you will let them install themselves.**

You want to provide prototypes for applications that are needed by several users, but have individual users install applications that are needed by only one or two users (or you can provide this service for them). Adding additional applications to a prototype increases the disk space of all users of that prototype.

For example, if only two users want to use Corel Draw, you might let these users install Corel Draw themselves, rather than putting Corel Draw into a prototype. On the other hand, if you put it into a prototype, then it will be available to any licensed user who wants to access it.

**5. Determine which of these applications you can install as shared applications.**

Microsoft Office, Lotus SmartSuite, and the component packages of these suites, can be installed as shared applications. Consult your specific application's documentation to see if it can be installed as a shared application. See "WabiServer Terminology" on page 24.

**6. Choose which applications you want to group into prototypes.**

You will group applications where users' needs overlap.

For example, eight people want Microsoft Office and six people want Lotus SmartSuite. Of these 14 people, eight of them, some from each group, want to use Quicken.

One way you could accommodate these users is to create two prototypes: one prototype that contains Microsoft Office and Quicken and another that contains Lotus SmartSuite and Quicken.

Another way you could accommodate these users is as follows: Both Microsoft Office and Lotus SmartSuite can be installed as shared applications. As shared applications, the client portions of these suites are

---

small. Quicken is also a fairly small application. You could make a single prototype to accommodate all 14 people that includes all three applications, Microsoft Office, Lotus SmartSuite, and Quicken.

**7. Choose systems to be WabiServers.**

See the section “Server System Requirements” on page 32.

**8. Identify users and client systems.**

See the section “Client System Requirements” on page 33.

**9. Choose WabiServer locations where you have enough disk space for your prototypes and shared applications.**

See your application documentation for disk space needed for each application you plan to install. Prototypes are compressed after creation, so the prototypes use less space than the uncompressed applications need.

The shared software portion of shared applications is accessed often by users. You will get the best performance if this shared portion resides on the current WabiServer and not on a remote server.

Prototypes will create Wabi directories faster if they reside on the WabiServer, but as prototypes are not accessed as often as the shared portion of shared applications, their placement on the current WabiServer is not critical.

**10. Check that each user’s home directory has enough space to hold the uncompressed prototype it needs.**

The users’ Wabi directories must have enough space to hold the applications they need to run. When you build a prototype, its uncompressed size is added to its description for you and appears in the prototype list. (See Figure 5-2 on page 90 for an example of a prototype list showing Wabi directory sizes.)

**11. Check that the users’ Wabi directories are network-aware; specifically they must be NFS-accessible by the server.**

Typically users’ Wabi directories are in their home directories. The home directories must be on file systems that are shared by the network.

**12. Order a Microsoft Windows license for each user who will be using Wabi. Order licenses for users for all other applications they will be using.**

---

**Note** – As system administrator, you are responsible for ensuring that no copyrights are violated and that all users have licenses for the applications they run, as applicable under Federal copyright law.

---

## *System Requirements*

This section describes hardware and software supported by WabiServer, presented separately for a server system and a client system.

### *Server System Requirements*

Systems that can be WabiServers must consist of the following:

#### **Computers**

- All SPARCserver™ models, SPARCcenter™ 2000, and SPARCcluster™ 1
- Pentium-based computers

#### **Operating System**

- Solaris 2.5, 2.4

#### **Display**

- 1-bit, 4-bit, 8-bit, or 24-bit pixel-depth displays.
- 24-bit displays are supported using 8-bit pseudo color, not TrueColor.

#### **Recommended Memory**

- 48 Mbyte on SPARC plus 8 Mbyte for each user
- 32 Mbyte on a Pentium plus 8 Mbyte for each user

#### **Swap Space**

Run the UNIX `swap -s` command to see your total and available swap space.

- On an Pentium: 20 Mbyte of swap space per user if you are running Wabi and a single application only; 10 Mbyte of swap space for each additional application
- On a SPARC: 30 Mbyte of swap space per user if you are running Wabi and a single application only; 10 Mbyte of swap space for each additional application



**Disk Space**

- Standalone Wabi, SUNWwabi— 7 Mbyte
- WabiServer, SUNWwsvr — 7 Mbyte
- WabiServer Client, SUNWwclt — 6 Mbyte
- Wabi User's Guide, SUNWaws — 3.5 Mbyte
- WabiServer Administrator's Guide, SUNWawr — 2.5 Mbyte

**Network Access**

- Access to users' home directories (can be local, but a shared location on a file server is typical)
- Access to prototypes
- Access to shared applications (local storage is recommended)

***Client System Requirements***

Systems that can be clients of a WabiServer must consist of the following:

**Computers**

- All SPARC-based models
- Pentium-based computers
- X Terminals

**Operating System**

- Solaris 2.5, 2.4, 2.3
- Solaris 1.x (SunOS 4.1.3, 4.1.4)

**Memory**

- The amount needed by the operating system (no additional memory required)

**Swap Space**

- The amount needed by the operating system (no additional swap required)

**Display**

- 1-bit, 4-bit, 8-bit, or 24-bit pixel-depth displays.
- 24-bit displays are supported using 8-bit pseudo color, not TrueColor.

**Network Access**

- Access to users' home directories (can be local, but shared access to a file server is typical)
- Access to the WabiServer program (either shared from the server or the WabiServer client package installed on the client)

***Installed Software***

The following list shows what software is installed on the server and the client.

On the server:

Wabi 2.1 Revision B  
WabiServer server software  
WabiServer client software (optional, on either the server or the client)  
Wabi User's Guide Answerbook  
WabiServer Administrator's Guide Answerbook  
Solaris Patches

On the client:

WabiServer client software (optional, on either the server or the client)  
Wabi User's Guide Answerbook  
Solaris Patches

***Installation Process Summary***

Chapters 3-5 describe the procedures to follow for installing WabiServer software on servers, creating prototypes, and installing WabiServer client software on clients. The following is a summary of the steps you will perform to accomplish these tasks.

**Installing the Server**

1. Remove existing Wabi patches, AnswerBook packages, Wabi packages, and WabiServer packages, as necessary.
2. Install any needed Solaris patches.
3. Install AnswerBook packages, Wabi software, WabiServer client software, and WabiServer software, as needed.

---

### **Creating Prototypes**

1. Create a Windows only prototype.
2. Create other prototypes, as desired.

### **Installing the Client**

1. Remove existing Wabi patches, Wabi packages, and WabiServer client packages, as necessary.
2. Install any needed Solaris patches.
3. Install the WabiServer client software (or you can access the WabiServer client software on the server).
4. Disable Volume Manager.

### **Running Wabi Remotely On a Client for the First Time**

1. Enter the path to the `rwabi` command in the user's `.cshrc` file.
2. Run `rwabi`.
3. Select a WabiServer on which to run Wabi remotely.
4. Select the name of a Wabi directory.  
If your Wabi directory does not exist, you are asked for the name of a prototype from which to create a Wabi directory.



## *Installing WabiServer on Servers*

---

3 

Chapters 3-5 describe the procedures to follow for installing WabiServer software on servers, creating prototypes, and installing the WabiServer client software on clients. These procedures are summarized at the end of Chapter 2, in the section “Installation Process Summary” on page 34.

The command lines in the procedures in this chapter use different system prompts to indicate whether you must be logged in as root or a regular user. The prompts chosen are used typically in UNIX to indicate a `root` login or a regular user `cs`h (C-Shell) login.

# — logged in as `root`

% — logged in as a regular user in the C-Shell, usually `wsadmin`

Do not enter these characters when you are entering the command line.

### *Preparing for Server Installation*

Perform the following steps before beginning the installation.

- 1. Read Chapters 1 and 2 and plan your initial configuration of servers, clients, and applications.**
- 2. Check that the server and clients have their operating systems completely installed.**

- 3. Check the *WabiServer 1.0 Read This First* (the release notes) for any last minute installation information. Keep the release notes available; you will need them for patch information.**
- 4. Collect the following items:**
  - WabiServer 1.0 CD-ROM
  - CD-ROM caddy (if required for your system)
  - Your CD-ROM target number (needed only if you do use Volume Manager)
- 5. To create prototypes and install clients, collect the following items:**
  - WabiServer 1.0 Client CD-ROM
  - Windows software (diskettes or CD-ROM)
  - Windows applications software (diskettes or CD-ROMs)
  - Windows applications installation documentation

## *Starting Server Installation*

This chapter describes the steps you need to perform on the server. In this chapter, you will:

1. Remove existing Wabi patches, Wabi packages, WabiServer packages, and AnswerBook packages, as necessary.
2. Install any needed Solaris patches.
3. Install Wabi software, WabiServer software, WabiServer client software, and AnswerBook packages, as needed.

Determine which bullet below applies to your site and go the section specified.

- If you *are not* currently running Wabi or WabiServer on the server you have chosen for the installation, skip to the section “Server Installation” on page 43.
- If you *are* running a version of Wabi or WabiServer, go to the next section “Remove Existing Packages.”

## Remove Existing Packages

The WabiServer CD-ROM contains the Wabi 2.1 Rev B software package. Find all the bulleted items in the list below that apply to your installation and perform the following procedures, as appropriate.

- If you are running Wabi 2.1 or an earlier version, you will remove any Wabi patches, then remove Wabi, and then install Wabi 2.1 Rev B.
- If you are running WabiServer and need to upgrade to this newer version, you will remove WabiServer and WabiServer Client and then install the new versions.
- If you have installed *Wabi 2.1 AnswerBook*, you will be upgrading to *Wabi User's Guide*, which includes WabiServer user information. You will remove the existing Wabi AnswerBook before installing a newer version.

### ▼ To Remove an Existing Wabi Package

#### 1. Check for installed Wabi patches by entering the following commands.

```
% showrev -p | grep SUNWwabi
any output such as:
Patch: 102330-02 Obsoletes: Packages: SUNWwabi 2.0,PAT
```

#### 2. Become superuser.

```
% su
```

#### 3. Choose the bullet below that applies to you and follow the instructions:

- If you have no Wabi patches installed, go to Step 4.
- If you have Wabi patches installed, enter the following command for each patch, replacing *patch-id* with the patch number.

```
# /var/sadm/patch/patch-id/backoutpatch patch-id
```

#### 4. Enter the following command to remove the Wabi package.

```
# pkgrm SUNWwabi
```

When you press Return, the `pkgrm` program displays a message similar to the following:

```
The following package is currently installed:
SUNWwabi  Wabi Application
Do you want to remove this package [y,n,?,q]
```

**5. Enter `y` to start the removal process.**

A prompt notifies you that the package scripts will be run with superuser permission, and asks you if you want to continue.

**6. Enter `y` to continue with the removal.**

File names and system messages are displayed at the command line as various components of the Wabi package are removed.

The `pkgrm` program displays the following message when the package removal is complete.

```
Removal of <SUNWwabi> was successful.
```

▼ **To Remove Existing WabiServer and Client Packages**

**1. Become superuser if you are not already.**

**2. Enter the following command to remove the WabiServer package.**

```
# pkgrm SUNWwsvr
```

When you press Return, the `pkgrm` program displays a message similar to the following:

```
The following package is currently installed:
SUNWwsvr  WabiServer Application
Do you want to remove this package [y,n,?,q]
```



**3. Enter y to start the removal process.**

A prompt notifies you that the package scripts will be run with superuser permission, and asks you if you want to continue.

**4. Enter y to continue with the removal.**

File names and system messages are displayed at the command line as various components of the Wabi package are removed.

The `pkgrm` program displays the following message when the package removal is complete.

```
Removal of <SUNWwsvr> was successful.
```

**5. Enter the following command to remove the WabiServer client package.**

```
# pkgrm SUNWwclt
```

When you press Return, the `pkgrm` program displays a message similar to the following:

```
The following package is currently installed:
SUNWwclt  WabiServer Client Application
Do you want to remove this package [y,n,?,q]
```

**6. Enter y to start the removal process.**

A prompt notifies you that the package scripts will be run with superuser permission, and asks you if you want to continue.

**7. Enter y to continue with the removal.**

File names and system messages are displayed at the command line as various components of the Wabi package are removed.

The `pkgrm` program displays the following message when the package removal is complete.

```
Removal of <SUNWwclt> was successful.
```

If you want to remove an existing Wabi AnswerBook, go to the next section. If you do not want to remove Wabi AnswerBook, go to “Server Installation” on page 43.

### ▼ To Remove an Existing Wabi AnswerBook

**1. Become superuser if you are not already.**

**2. Enter the following command to remove the Wabi AnswerBook:**

```
# pkgrm SUNWaws
```

When you press Return, the `pkgrm` program displays a message similar to the following:

```
The following package is currently installed:
SUNWaws      Wabi x.x AnswerBook
Do you want to remove this package [y,n,?,q]
```

**3. Enter `y` to start the removal process.**

A prompt notifies you that the package scripts will be run with superuser permission, and asks you if you want to continue.

**4. Enter `y` to continue with the removal.**

File names and system messages are displayed at the command line as various components of the Wabi AnswerBook package are removed.

The `pkgrm` program displays the following message when the package removal is complete.

```
Removal of <SUNWaws> was successful.
```

---

## Server Installation

This section gives procedures for installing WabiServer software on a server. Start here if this is the first time you are installing WabiServer software on this system or if you have completed the steps in the previous section “Remove Existing Packages” on page 39.

### *Install Solaris Patches from the WabiServer CD-ROM*

The *WabiServer 1.0 Read This First* contains information about Solaris patches you may need to install before using the Wabi program. The patches are included on the WabiServer CD-ROM. If you were running Wabi previously, you may already have installed versions of the patches that are sufficient to fix any potential Wabi problems.

- ◆ **Follow the instructions in the *WabiServer 1.0 Read This First* to see if you need to install any patches.**

### *Install WabiServer Packages*

To install WabiServer packages, you will mount the CD-ROM and run the pkgadd command.

#### ▼ To Mount the WabiServer CD-ROM

1. **If you do not know whether or not you are using Volume Manager, enter this command:**

```
# ps -ef | grep vold
```

If the process `/usr/sbin/vold` is reported, you are using Volume Manager. If this command gives you no output, you are not using Volume Manager.

2. **If you are using the Solaris Volume Manager, insert the WabiServer CD-ROM into the CD-ROM drive.**

The CD-ROM file system is mounted automatically. Go to the section “Run pkgadd” on page 44.

3. If you are not using the Solaris Volume Manager, create a mount point before inserting the CD-ROM into the CD-ROM drive and then mount the CD-ROM.
  - a. If you do not already have one, as superuser, create a directory for the CD-ROM by entering:
  - b. Insert the Wabi CD-ROM into the CD-ROM drive.
  - c. Mount the CD-ROM with one of the following commands, depending on which version of Solaris you have:

```
SPARC# mount -o ro -F hsfs /dev/dsk/c0t6d0s2 /cdrom
x86:# mount -o ro -F hsfs /dev/dsk/c0t6d0p0 /cdrom
```

---

**Note** – The `c0t6d0s2` and `c0t6d0p0` device numbers used in these commands assume your CD-ROM drive is set to SCSI target number 6. If you get the response “no such device,” your CD-ROM probably uses a different SCSI target number. If target number 6 did not work, on a Solaris system, you can enter the `ls -l /dev/sr0` to find your target number.

---

## *Run pkgadd*

Use the `pkgadd` command to copy the WabiServer packages to your system.

---

**Note** – Do not use either of the Software Manager programs, `swm` or `swmtool`, to install Wabi software. These tools expect a CD-ROM file system layout that is different from the one used on the WabiServer CD-ROM.

---

This `pkgadd` procedure also installs the *Wabi User's Guide AnswerBook* and the *WabiServer Administrator's Guide AnswerBook*, Wabi and WabiServer on-line documentation. To read these, you must have AnswerBook software installed on your system. If AnswerBook software is not installed, see Solaris documentation for installation instructions.

## ▼ To Run pkgadd

### 1. Enter the command below according to whether you are using Volume Manager or not:

If you are using Volume Manager, enter:

```
SPARC# pkgadd -d /cdrom/wabiserver_1_0/sparc
x86:# pkgadd -d /cdrom/wabiserver_1_0/i86
```

If you are *not* using Volume Manager, enter:

```
SPARC# pkgadd -d /cdrom/sparc
x86:# pkgadd -d /cdrom/i86
```

When you press Return, the pkgadd program displays a screen similar to the following (with some additional detail):

```
The following packages are available:
 1 SUNWawr      WabiServer Administrator's Guide
                  (all)
 2 SUNWaws      Wabi User's Guide
                  (all)
 3 SUNWwabi     Wabi Application
                  (machine) 2.1 B
 4 SUNWwclt     WabiServer Client-side Application
                  (i86,sun4-Solaris,sun4-SunOS) 1.0
 5 SUNWwsvr     WabiServer 1.0 Application
                  (i86,sun4-Solaris) 1.0

Select package(s) you wish to process (or "all" to process
all packages). (default all) [?,??,q]:
```

### 2. Select the packages you need to install. To run WabiServer, your server must have both the Wabi and the WabiServer applications installed.

Either

- Press Return to select all five packages.
- Enter selected numbers separated by spaces or commas.

The pkadd program begins the installation process.

If you selected one or both AnswerBooks, the `pkgadd` program displays the following prompt. If you are installing both AnswerBooks, the *WabiServer Administrator's Guide* is installed first. Both AnswerBooks are displayed with identical dialog boxes.

```
The installation options are as follows:
Option: Description:
-----
1. nil: less than 1 Megabyte disk space required [slowest performance].
2. heavy: x.x Megabytes disk space required [best performance].
Note:   If the install option which you choose below fails
        due to lack of space, try another location, or
        choose a lower install option number.
Enter the number of an installation option from the list above (1 or 2).
Select an installation option:
```

**3. Enter an installation option for the AnswerBook.**

If you enter 1, the `nil` option, most of the AnswerBook files will remain on the CD-ROM. With this option, you must place the CD-ROM in the drive to use the AnswerBook. This option saves disk space, but increases access time to the AnswerBook files.

If you enter 2, the `heavy` option, all the AnswerBook files will be installed on your disk. This option requires more disk space, but does not require the CD-ROM to view the AnswerBook. It is also provides faster performance.

After you enter an installation option, the `pkgadd` program prompts you for the parent directory for the AnswerBook.

**4. Enter the name of the directory where you want to install the AnswerBook package.**

If you chose the `nil` option, specify a parent directory on a file system with at least 1 Mbyte of free space. If you chose the `heavy` option, specify a parent directory on a file system with the amount of free space required.

The pkgadd program then prompts:

```
This package contains scripts which will be executed with
super-user permission during the process of installing this
package.
```

```
Do you want to continue with the installation of this package
[y,n,?]
```

**5. Enter y to proceed with the installation.**

File names and system messages are displayed as the package is transferred to your system from the CD-ROM.

When installation is complete, pkgadd displays the following:

```
Installation of <SUNWawr> was successful.
```

**6. If you selected both AnswerBooks, the *Wabi User's Guide* is installed with identical dialog boxes to those in Steps 2-5.**

When the AnswerBooks that you selected have been installed, pkgadd install the other packages.

**7. If you are installing the Wabi package and running Solaris 2.4 with Volume Manager's control of the diskette drive enabled, pkgadd displays the following prompt:**

```
To use your diskette drive under Wabi, we recommend that you
disable Volume Manager's control of the diskette drive.
```

```
Would you like this done now?
Yes or No [y,n,?,q]
```

This question relates only to your use of the diskette drive on the *server*. You do not have to disable Volume Manager's control of the diskette drive for your clients to use their local diskette drives.

If you will be using the Wabi program on the server and want to be able to use the diskette drive, enter *y*. If you want to use diskettes with Volume Manager in the Solaris environment, enter *n*.

If you enter *y*, the `pkgadd` program disables Volume Manager's control of the diskette drive. See the *Wabi 2.1 Release Notes* for information about the command to use to enable and disable Volume Manager's control of the diskette drive at any time.

**8. The `pkgadd` program prompts:**

```
This package contains scripts which will be executed with
super-user permission during the process of installing
this package.
```

```
Do you want to continue with the installation of this
package [y,n,?]
```

Enter *y* to proceed with the installation.

File names and system messages are displayed at the command line as software is transferred to your system.

**9. If are loading more than a single package, this dialog will be repeated for each package you are installing.**



**10. When all the packages that you chose have been installed, the following message is displayed. Enter `q` to quit.**

You can choose another package at this time if you wish.

The following packages are available:

- |   |          |   |
|---|----------|---|
| 1 | SUNWawr  | WabiServer Administrator's Guide<br>(all)                               |
| 2 | SUNWaws  | Wabi User's Guide<br>(all)  |
| 3 | SUNWwabi | Wabi Application<br>(machine) 2.1 B                                     |
| 4 | SUNWwclt | WabiServer Client-side Application<br>(i86,sun4-Solaris,sun4-SunOS) 1.0 |
| 5 | SUNWwsvr | WabiServer 1.0 Application<br>(i86,sun4-Solaris) 1.0                    |

Select package(s) you wish to process (or "all" to process all packages). (default all) [?,??,q]:

### *Enabling Serial Devices on the Server in Solaris 2.4*

When you install the Wabi package, the installation script checks the permissions of the serial devices. If they are not accessible by all users, the script suggests that you run the following command as superuser:

```
chmod 666 /dev/cua/*
```

If you do not do this, you will not be able to use Wabi COM ports for serial devices such as modems and local serial printers on the server.

---

**Note** - With WabiServer software, you cannot use the COM ports on client systems for serial devices.

---

### *Restricting Access to Printers and Diskette Drives*

By default, users can use the diskette drives on their own client systems. By default, users can access printers configured on both the client systems and the WabiServer. To limit access to printers and diskette drives, run the `ws_setup` program. See “Setting Access to Printers and Diskette Drives with `ws_setup`” on page 93.

## *Creating Prototypes*

---



This chapter describes how to create prototypes.

A prototype is a compressed image of a Wabi directory. A prototype contains Microsoft Windows and may contain other Windows applications. A prototype is used to create a user's Wabi directory the first time the user runs Wabi remotely.

There are four ways you can create a prototype:

- You can create a brand new prototype by installing Microsoft Windows and then installing additional applications, if desired.
- You can create a prototype by copying an existing prototype and adding one or more applications to it.
- You can create a prototype from an existing Wabi directory.
- You can establish a prototype on this server by linking it from another server. After you create a link to the prototype, it is available to your users as is, or you can create a new prototype by copying and adding to the linked one.

See Chapter 1, section "WabiServer Terminology" on page 24 for more information about prototypes.

Be sure you create prototypes in a location that has enough space for all the applications you plan to install.

## *Tutorial Style of this Chapter*

This chapter describes procedures for creating four prototypes, one that contains only Windows, one that contains a complete application, Intuit Quicken, one that contains Microsoft Office in a network-shared setup, and one that contains Lotus SmartSuite in a network-shared setup.

This chapter is written using a tutorial style showing a running example. It tells you to create a `wsadmin` user who acts as the WabiServer administrator. It gives you a specific directory structure to use and names for your prototypes. It uses specific names for the servers.

You can choose other names or other directory structures if you want, but, if you do, you must substitute the names you are using into the correct positions in the following procedures. In any case, you will have to substitute the names of the servers you are using for the ones used in our example.

## *Create a wsadmin User and a Prototype Directory*

We suggest that you create a user named `wsadmin`. There are a few reasons for creating a `wsadmin` user:

- You can tell by the `wsadmin` ownership which directories are part of your WabiServer installation.
- Some Windows applications, especially shared ones, need to be installed by a regular user rather than `root`. User `wsadmin` serves this function.
- Creating an administrative account makes it less likely that files and prototypes are accidentally changed.

To create a `wsadmin` user, you can use the `admintool` or the `useradd` command to create the user, depending on the custom at your site. If you are using `yp`, use the `admintool` to add this user to your `yp` database.

Here is an example of a `useradd` command. If you want to use this command, execute it as `superuser` on the file server where your home directories reside.

```
# useradd -c "WabiServer Admin" -m -d /files1/wsadmin \  
-s /bin/csh wsadmin
```

The `-m` option creates the home directory as `/files1/wsadmin`.

In the example in this chapter, `/files1` is an exported (or *shared*) file system on the file server `universe`. In the `/etc/dfs/dfstab` file on `universe`, there is the following entry: `share -F rw=domain /files1`.

When activated, the Automounter reads the `dfstab` file on `universe` and makes the shared files accessible to other systems on the network using the pathname prefix of `/net/servername`. In our example, `/files1` on `universe` is accessible to the network as `/net/universe/files1`. On the WabiServer, `universe:/files1/wsadmin` is mounted to `/home/wsadmin`. For more information on the Automounter, see the *Solaris System Administrator AnswerBook*.

#### ▼ To Create a wsadmin User

Follow the steps below to create a `wsadmin` user.

- 1. Log in as root from the login prompt.**
- 2. Start OpenWindows, if it is not started automatically.**
- 3. From within a window, create a `wsadmin` user using the `admintool` or the `useradd` command (an example of the `useradd` command is shown above).**  
Give the new user a `.login` and a `.cshrc` file typical of your site.

- 4. Give `wsadmin` ownership of the `wsadmin` home directory.**

```
# chown -R wsadmin /home/wsadmin
```

- 5. Give `wsadmin` access to the X Windows display.**

```
# /usr/openwin/bin/xhost +
```

#### ▼ To Create a Directory to Hold Prototypes

Create a directory for prototypes on your WabiServer system using the following procedure.

- 1. Check the documentation that comes with your applications to determine the amount of disk space you need.**
- 2. Select a location on the server that has enough disk space to hold the applications you plan to install.**

3. Check that the prototype directory is on a file system that is exported (with an entry in `dfstab` file as described above).
4. Create the directory and give `wsadmin` ownership of this directory.

```
# mkdir /files1/protos
# chown wsadmin /files1/protos
```

## Create a Windows Only Prototype

Follow the steps below to create your first prototype. The only package that the first prototype will contain is Microsoft Windows. You will be able to build other prototypes starting with the Windows prototype as a base.

### ▼ To Create a Windows Only Prototype

1. Change to user `wsadmin` using the `su -` command.

Using a hyphen causes the system to read the `.login` and `.cshrc` files for the new user.

```
# su - wsadmin
%
```

2. Start the `ws_bldproto` tool.  
(See Figure 4-1 on page 55.)

```
% ws_bldproto
```

3. Choose the New Proto option.
4. Enter a description of the new prototype. Enter “Windows 3.11.”  
We recommend that you create a prototype which contains only Microsoft Windows. This prototype can then be the basis for any other prototypes you want to build.
5. Enter a network-aware pathname of the location of the prototype. Enter `/net/venus/files1/protos/win_only`, substituting your server’s name for `venus`.

A *network-aware* path is the location of a file or directory as seen by other systems. If you are using the Automounter, a network-aware path begins with `/net/server-name`.

In our example, the pathname is an Automounter network pathname. Our WabiServer system is named `venus`.

The screenshot shows a window titled "wabiServer: ws\_bldproto". At the top, there are four menu items: "New Proto", "Inherit Proto", "Copy WabiDir", and "Link Proto". The main area contains several fields:

- "Base Prototype": A large empty text area.
- "Source WabiDir": A text input field.
- "Existing Prototype": A text input field.
- "Description": A text input field containing "Windows 3.11".
- "Network-aware Path": A text input field containing "/net/venus/files1/protos/win\_only", which is highlighted with a thick black border.

At the bottom of the window, there are two buttons: "Apply" and "Quit".

Figure 4-1 ws\_bldproto Tool

**6. Choose Apply.**

A message tells you that Wabi is being started in the new prototype directory. It tells you to install applications and then exit Wabi.

The Wabi Output Log box opens (Figure 4-2). This shows message output from Wabi. You can scroll the output if necessary.

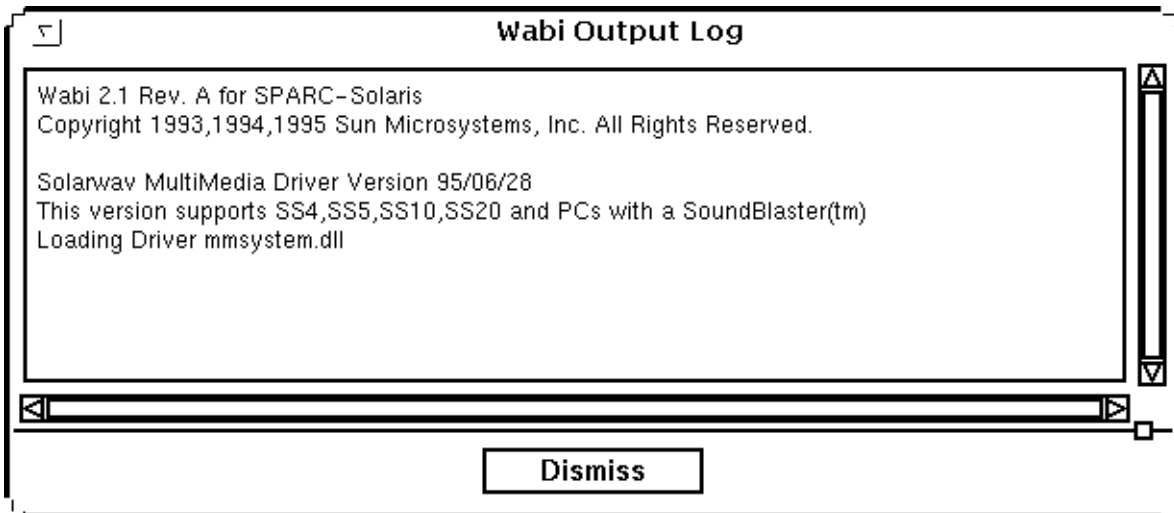


Figure 4-2 Wabi Output Log



Wabi starts (Figure 4-3).

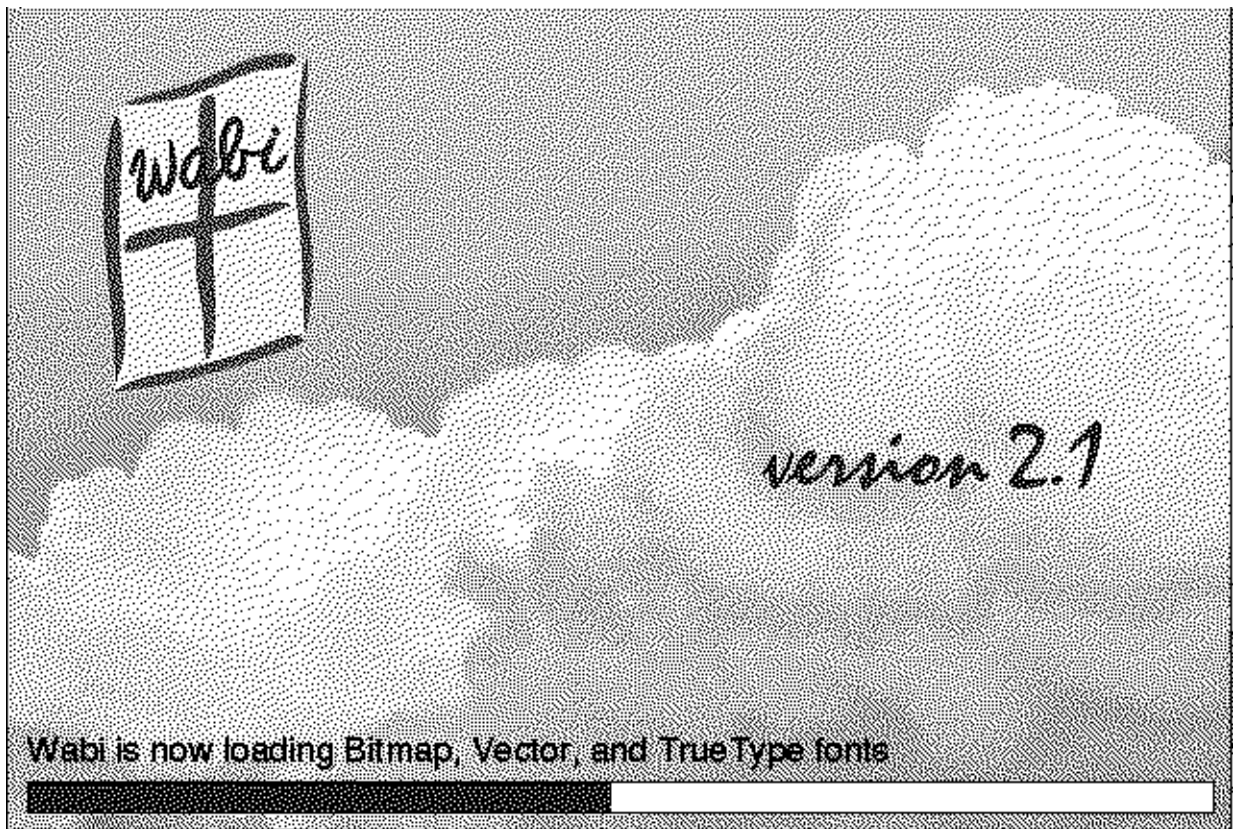


Figure 4-3 Wabi Logo

The Wabi 2.1 Registration Card Information box opens (Figure 4-4) followed by the Wabi 2.1 Registration Card (Figure 4-5).

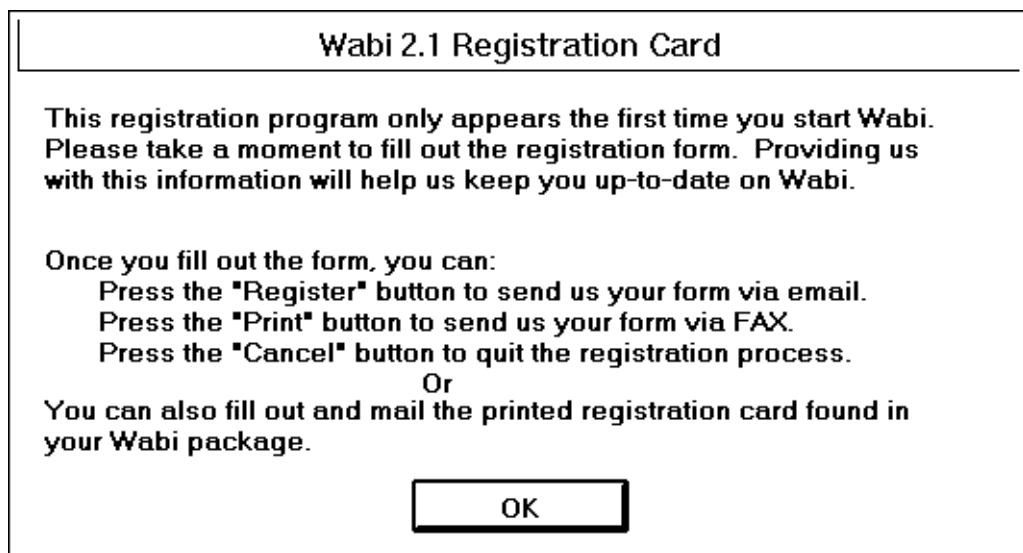
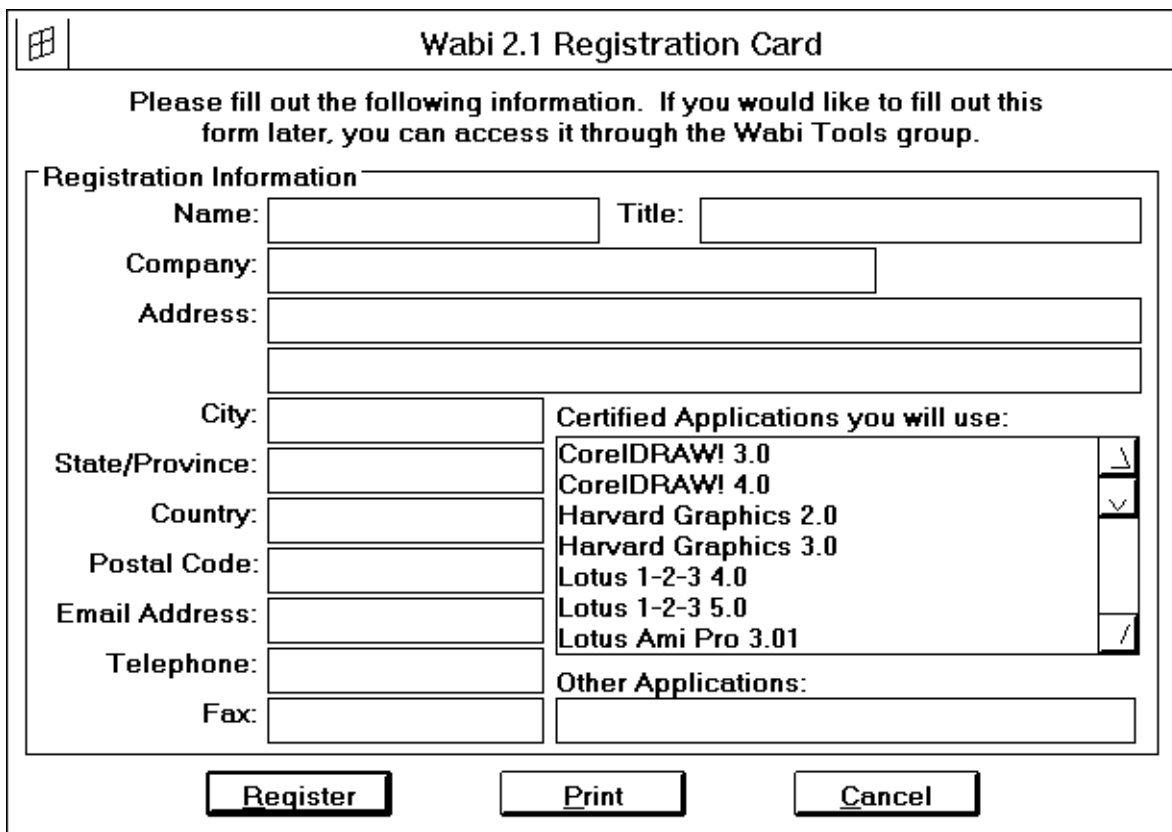


Figure 4-4 Wabi Registration Card Information



The image shows a dialog box titled "Wabi 2.1 Registration Card". It contains a message: "Please fill out the following information. If you would like to fill out this form later, you can access it through the Wabi Tools group." Below the message is a section titled "Registration Information" with several input fields: Name, Title, Company, Address (two lines), City, State/Province, Country, Postal Code, Email Address, Telephone, and Fax. To the right of these fields is a list of "Certified Applications you will use" with a scrollable list box containing: CorelDRAW! 3.0, CorelDRAW! 4.0, Harvard Graphics 2.0, Harvard Graphics 3.0, Lotus 1-2-3 4.0, Lotus 1-2-3 5.0, and Lotus Ami Pro 3.01. Below the list is an "Other Applications:" field. At the bottom of the dialog are three buttons: Register, Print, and Cancel.

Registration Information	
Name:	<input type="text"/>
Title:	<input type="text"/>
Company:	<input type="text"/>
Address:	<input type="text"/>
	<input type="text"/>
City:	<input type="text"/>
State/Province:	<input type="text"/>
Country:	<input type="text"/>
Postal Code:	<input type="text"/>
Email Address:	<input type="text"/>
Telephone:	<input type="text"/>
Fax:	<input type="text"/>
Certified Applications you will use:	
	CorelDRAW! 3.0
	CorelDRAW! 4.0
	Harvard Graphics 2.0
	Harvard Graphics 3.0
	Lotus 1-2-3 4.0
	Lotus 1-2-3 5.0
	Lotus Ami Pro 3.01
Other Applications:	
	<input type="text"/>

Figure 4-5 Wabi 2.1 Registration Card

**7. If you have not yet registered for Wabi 2.1, you can register now.**

The program lets you send the registration form automatically by email, or print out the form so you can mail or fax it to SunSoft. If you would rather register later, exit the registration program by clicking Cancel. Use the Wabi Registration tool in the Wabi Tools group to run the registration program at a more convenient time. If you prefer, you can complete a printed registration card that is included in the Wabi package.

The Windows Install dialog opens (Figure 4-6).

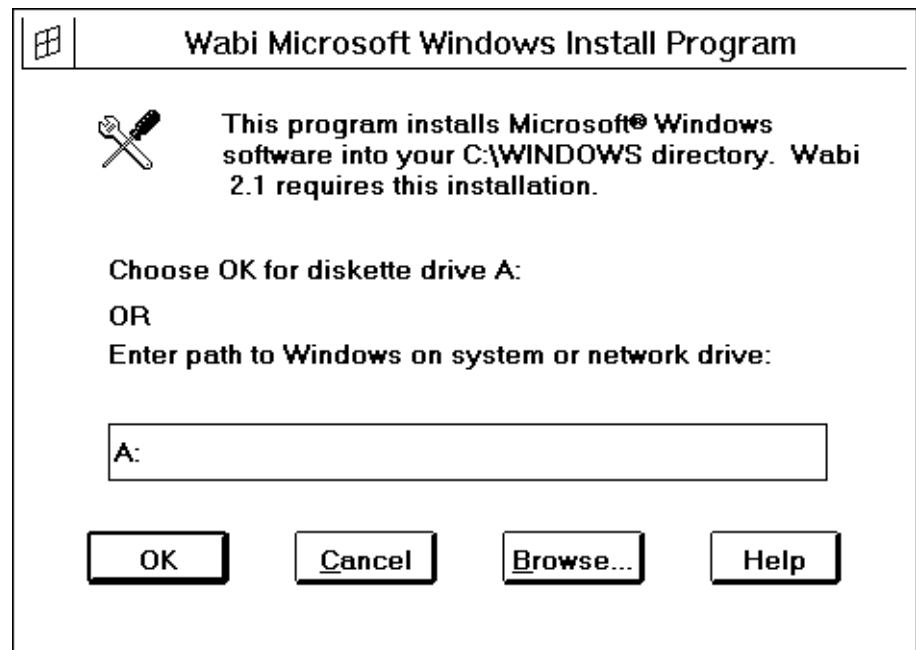


Figure 4-6 Windows Install Dialog

**8. Put the first diskette in the drive now. Choose OK.**

Follow the on-line instructions for inserting the rest of the diskettes.

**9. Optional step: When Windows is installed, size and locate the program groups.**

If you size and locate your program group icons now, you will not have to do it each time you create a new prototype. You are also saving your users from having to size the program groups.

Be sure that in the Program Manager, in the Options menu, that Save Settings on Exit is checked.

**10. Exit Windows.**

**11. In the `ws_bldproto` window, choose **Yes to create the prototype**.**

`ws_bldproto` reports that it is compressing the new prototype. This takes a few minutes.

`ws_bldproto` reports that your directory was successfully created.

**12. Log out as the `wsadmin` user.**

```
% logout
#
```

Your new Windows 3.11 prototype is ready for clients to use.

The next section shows you how to create a prototype that contains a complete application starting with this prototype as a base.

## *Create a Prototype from an Existing Prototype*

This section creates a prototype that contains Windows 3.11 and the Intuit Quicken application. It is created using the Inherit Proto option in the `ws_bldproto` tool and is based on the existing Windows prototype.

### ▼ To Create a Quicken Prototype

**1. If you are logged in as another user, change to user `wsadmin` using the `su -` command.**

(Using a hyphen causes the system to read the `.login` and `.cshrc` files for the user.)

```
# su - wsadmin
%
```

**2. Start the `ws_bldproto` tool. (See Figure 4-1 on page 55.)**

```
% ws_bldproto
```

**3. Choose the Inherit Proto option.**

**4. Select the Windows 3.11 prototype from the prototype list.**

**5. Enter a description of your prototype. Enter “Quicken.”**

**6. Enter a network-aware pathname of the location of the prototype. Enter `/net/venus/files1/protos/quicken`, substituting your server’s name for `venus`.**

A *network-aware* path is the location of a file or directory as seen by other systems. If you are using the Automounter, a network-aware path begins with `/net/server-name`.

In our example, the pathname is an Automounter network pathname. Our WabiServer system is named `venus`.

**7. Choose Apply.**

A message tells you that Wabi is being started in the new prototype directory. It tells you to install applications and then exit Wabi.

The Wabi Output Log window opens.

Wabi starts.

**8. Insert the first Quicken disk in the diskette drive.**

**9. In Wabi, in the Program Manager, select File ► Run.**

**10. Enter `a:\install`.**

**11. On the installation screen, choose Express install to install the entire application or Custom install to select portions to install.**

Quicken is installed in a few minutes.

**12. In the Quicken Install Dialog Box, choose OK.**

**13. Exit Wabi.**

**14. Choose Yes to the question, “Are you ready to generate the prototype?”**

If you want to add another application to this prototype, choose No, Restart Wabi and then install another application.

**15. Choose OK to the “Prototype creation complete” message.**

The Quicken prototype is complete. It is immediately added to the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create a new prototype.

## *Shared Applications*

This book uses the term *shared applications* to refer to applications that are installed in a server/client configuration; that is, the bulk of the application resides on a server and is shared by several clients. The server uses a large

amount of disk space to store the bulk of the application. A client system uses very little disk space to store a small client portion of application software. This configuration is supported by both Microsoft Office and Lotus SmartSuite.

The next two sections describe how to install Microsoft Office and Lotus SmartSuite as shared applications. If you do not want to install either of these applications, go to the section “Creating Multiple Prototypes” on page 74.

If you are going to install Microsoft Office, Lotus SmartSuite, or any other application that supports a server/client configuration, enter the following commands to create a directory in which to put the shared portion of the application.

### ▼ To Create a Directory to Hold Shared Applications

1. Log in as `root`. Create a directory in which to put shared applications. Give `wsadmin` ownership of the directory.

```
# mkdir /files1/shared_apps
# chown wsadmin /files1/shared_apps
```

2. Create a link to another location.

```
# ln -s /files1/shared_apps /opt/SUNWwsvr/wsshared
```

## Drive Mappings

Your drives are mapped as shown in the following table. The C drive is set to your Wabi directory. From within `ws_bldproto`, the Wabi directory is set to a temporary directory in the location you chose for your new prototype.

In our example installation running `ws_bldproto`, as user `wsadmin`, your Wabi directory is `/files1/protos/win_only/wabi`.

Drive	Mapping	Definition
C:	Your Wabi directory	Your Wabi directory.
E:	\$PWD	The directory from which you started Wabi.
H:	\$HOME	Your home directory.
R:	/	Your root directory.

## Create a Microsoft Office Prototype

Perform the following steps to install Microsoft Office 4.3 as a shared application and to create a prototype that contains Windows 3.11 and the client portion of Microsoft Office 4.3.

### ▼ To Start ws\_bldproto

1. **Start the ws\_bldproto tool.**

```
% ws_bldproto
```

2. **Choose the Inherit Proto option.**
3. **In the prototype list box, select Windows 3.11 as the prototype to use as a base for the new prototype.**
4. **Enter a description of the new prototype. Enter “Microsoft Office.”**
5. **Enter the network-aware pathname of the location where you want your Microsoft Office prototype. Enter**  
`/net/venus/files1/protos/msoffice`, **substituting the name of your server for venus.**
6. **Choose Apply.**  
A message tells you that you will be installing applications under Wabi.  
Wabi starts.

### ▼ To Map the S Drive

In this step, you use the Wabi Config Drives tool to set drive S to `/opt/SUNWwsvr/wsshared`. Mapping a drive to the shared application directory facilitates installation. We chose the S drive so that S will remind us of “shared.” (For more information on the Wabi Config Drives tool, see the *Wabi User's Guide*.)

1. **Open the following icons in the Program Manager: Main ► Control Panel ► Wabi Config ► Drives.**
2. **Select drive S in the Drives list box.**



3. **Enter** `/opt/SUNWwsvr/wsshared` **in the directory path edit box.**  
Use the name of the link to the shared application location. Do not use the Automounter network-aware path here. (`/opt/SUNWwsvr/wsshared` is a link to `/files1/shared_apps`, which you created in “To Create a Directory to Hold Shared Applications” on page 63.)
4. **Choose Connect.**
5. **Choose OK.**
6. **Using the menu from the Window Control box (upper left corner of the window), close the following program groups: Drives, Wabi Config, and Control Panel.**

## *Install Microsoft Office*

This section describes how to install Microsoft Office as a shared application. You install Microsoft Office as a shared application in two broad steps:

1. First you install the server portion of the application into the `shared_apps` directory.
2. Then you install the client portion of the application. In this case, you are installing the client portion into the `prototype`, which will become a user's `wabi` directory.

### ▼ **To Install the Server Portion in the `shared_apps` Directory**

To install the portion of Microsoft Office software that will be shared, follow the steps below. These steps follow the directions in the provided Microsoft documentation, *Getting Started*, in the section “Installing Microsoft Office on a Network.” The following steps add information specific to this environment.

1. **Move the mouse to the Program Manager window and click to activate the window.**
2. **Choose File ► Run from the Program Manager.**
3. **Check that your S drive is mapped to `/opt/SUNWwsvr/wsshared`.**
  - a. **Choose Browse in the Run dialog box.**

**b. Check that the S drive is mapped in the Drives list.**

If the S drive is not mapped, follow the directions in “To Map the S Drive” on page 64.

**4. Put disk 1 into the diskette drive.**

**5. Enter `a:setup /a`**

**6. Answer the prompts as follows, where appropriate to your installation.**

This is a summary of our answers. If this is your first time through, read all of the boxes and answer as applicable for your site.

**a. Choose OK to the Welcome box**

**b. Choose OK to the Shared Network Installation box.**

**c. In the Organization Information screen, type the name of your organization.**

Possible Error: (If this box also asks you for a Name, you neglected to run `setup` with the `/a` option. If this is the case, select Exit Setup and start over, using the `/a` option.

**d. Choose OK to the Confirm Organization Information box.**

**e. Write down your product ID for future reference.**

**f. Choose OK to the Product ID box.**

**g. In the destination directory box, Choose Change directory.**

**i. In the drives box, select S.**

**ii. In the Path box, enter `S:\msoffice`.**

**iii. Choose OK.**

**iv. Choose Yes to “Do you want the directory to be created?”**

**h. Choose OK to the shared applications directory as `s:\msapps`. Yes to “Do you want the directory to be created?”**

In this question, by “shared applications,” they are referring to small applications that are accessible by a few of Microsoft Office’s major applications.

**i. In the Network Server Confirmation box, delete the entry in the network server name box; this box should be empty. In the network pathname box, enter `\msoffice`.**

**j. Choose Complete install.**

It takes up to 25 minutes to install Microsoft Office.

**k. Choose Continue to Restart Windows.****l. Set permissions on an `msoffice` directory.**

```
# chmod 0777 shared_apps/msoffice/workdir/*
```

You have finished the installation of the shared portion of Microsoft Office. You cannot test the installation until you have installed the client portion using the instructions in the next section. Installing the client portion takes only a few minutes.

**▼ To Install the Client Portion in the Prototype**

Follow the steps below to install the client portion for the Microsoft Office prototype.

- 1. Choose File ► Run from the Program Manager.**
- 2. In the Run dialog box, select the Browse button.**
- 3. In the Browse dialog box, in the Drives list, select the S drive.**
- 4. Select the `setup.exe` file. Choose OK**
- 5. Choose OK to run the command.**
- 6. Answer the prompts as follows, where appropriate to your installation.**

This is a summary of our answers. If this is your first time through, read all of the boxes and answer as applicable for your site.

  - a. Choose OK to the Welcome box.**
  - b. In the Name Information box, type `wsadmin` as your name. Choose OK.**
  - c. Choose OK to the Confirm Name Information box.**
  - d. Choose OK to the Product ID box.**
  - e. Choose OK to the box “Setup will install Microsoft Office Manager in the following destination directory: `C:\msoffice`.”**
- 7. Choose OK for the next four prompts to install specific applications in `c:\msoffice`.**

- a. **Choose Workstation install in the Type of Installation box.** Possible error: If this box does not give Workstation install as an option, something is wrong. You may have started the wrong setup program, or you did not install Microsoft Office as a shared application. Exit and check your work from the beginning.
  - b. **Our choices for the next three boxes are No, Yes, No.**  
Read these boxes and answer as appropriate for your site for whether you want help for transitioning from Lotus 1-2-3, Graph Auto Conversion, or help for WordPerfect Users.
  - c. **Choose Microsoft Office as the Program Group in which to install the icons.**  
It takes up to 15 minutes to install the client portion of Microsoft Office.  
  
Possible Error: If you installed from diskettes, you might get an error message saying the you are missing the vshare.386 file. If you get this error, you must obtain a vshare.386 file. See your Sun Customer Service Representative.
  - d. **Choose Continue to Restart Windows.**  
Wabi and Windows restart.
- 8. Before the prototype is stored, you have a chance to customize the installation for your users. We recommend the following.**
- To help ensure that users don't save personal material in their C drive (their Wabi directories, which may be replaced by different Wabi directories later), you should set as many default file-saving locations as possible to be H:\ (the user's home directory) when building the prototypes.
- a. **Size and locate the Microsoft Office program groups nicely for your users.**  
This step gives a new client user windows that are usefully sized.
  - b. **In Microsoft Word:**  
Select Tools ► Options ► Documents.  
Set Documents to H:\.  
Set User Options to H:\.
  - c. **In Microsoft Excel:**  
Select Tools ► Options ► General.  
Set Default File Locations to H:\.
  - d. **Be sure that in the Program Manager, in the Options menu, that Save Settings on Exit is checked.**

**9. Exit Wabi.**

- 10. Choose Yes to the question, “Are you ready to generate the prototype?”**  
If you want to add another application to this prototype, choose No, Restart Wabi and then install another application.

**11. Choose OK to the “Prototype creation complete” message.**

The Microsoft Office prototype is complete. It is immediately added to the list in the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create a new prototype.

You can follow the directions below to install Lotus SmartSuite in another prototype. If you do not want to install Lotus SmartSuite, you now have the tools to create other prototypes with other applications if you wish. If you do not want to install Lotus SmartSuite, go to “Creating Multiple Prototypes” on page 74.

## *Create a Lotus SmartSuite Prototype*

Follow the procedures in this section to install Lotus SmartSuite as a shared application and to create a prototype that contains Windows 3.11 and the client portion of Lotus SmartSuite.

### ▼ To Start ws\_bldproto

**1. Start the ws\_bldproto tool.**

```
% ws_bldproto
```

**2. Choose the Inherit Proto option.**

**3. In the prototype list box, select Windows 3.11 as the prototype from which to start building.**

**4. Enter a description of the prototype. Enter “Lotus SmartSuite.”**

**5. Enter the full pathname of the location of the Lotus SmartSuite prototype. Enter /net/venus/files1/protos/lotusst, substituting the name of your server for venus.**

**6. Choose Apply.**

A message tells you that you will be installing applications under Wabi  
Wabi starts.

**▼ To Map the S Drive**

In this step, you use the Wabi Config Drives tool to set drive S to `/opt/SUNWwsvr/wsshared`. Having a drive mapped to the shared application directory facilitates installation. We chose the S drive so that S will remind us of “shared.”

- 1. Open the following icons in the Program Manager: Main ► Control Panel ► Wabi Config ► Drives.**
- 2. Select drive S in the Drives list box.**
- 3. Enter `/opt/SUNWwsvr/wsshared` in the directory path edit box.**  
Use the name of the link to the shared application location. Do not use the Automounter network-aware path here. (`/opt/SUNWwsvr/wsshared` is a link to `/files1/shared_apps`, which you created in “To Create a Directory to Hold Shared Applications” on page 63.)
- 4. Choose Connect.**
- 5. Choose OK.**
- 6. Using the menu from the Window Control box (upper left corner of the window), close the following program groups: Drives, Wabi Config, and Control Panel.**

### *Install Lotus SmartSuite*

This section describes how to install Lotus SmartSuite as a shared application. You install Lotus SmartSuite as a shared application in two broad steps.

1. First you install the server portion of the application into the `shared_apps` directory.
2. Then you install the client portion of the application. In this case, you are installing the client portion into the prototype, which will be used to create a user’s Wabi directory.

▼ **To Install the Server Portion in the shared\_apps Directory**

To install the portion of Lotus SmartSuite software that will be shared, follow the steps below.

- 1. Move the mouse to the Program Manager window and click to activate the window.**
- 2. From the Program Manager, select File ► Run.**
- 3. Check that your S drive is mapped to /opt/SUNWsvr/wsshared.**
  - a. Choose Browse in the Run dialog box.**
  - b. Check that the S drive is mapped in the Drives list.**

If the S drive is not mapped, follow the directions in “To Map the S Drive” on page 70.
- 4. Insert Disk 1 in the diskette drive.**
- 5. In the Run dialog box, enter a:install.**
- 6. Answer the prompts as follows.**

This is a quick summary of our answers. If this is your first time through, read all of the boxes to ensure that these answers correctly apply to you. Selecting Next in this set of steps means that you accept the box as is. The system then displays the next box.

  - a. In the Welcome to the Lotus SmartSuite Install Program box:**
    - i. Enter your name as wsadmin.**
    - ii. Enter a name for your organization.**
    - iii. Select Install on a File Server.**
    - iv. Choose Next to go to the next box.**
  - b. Choose Yes in the Confirm Names box.**
  - c. Choose Next to the Server Install or Network Distribution box**

Leave the Server Install selected.
  - d. Choose Next to the Network Administrator’s Guide box.**

Leave the guide unopened.
  - e. In the Specify Lotus SmartSuite Directory box:**
    - i. Select the drive as S.**

**ii. Select the directory as \lotus.**

**iii. Choose Next to go to the next box.**

We selected 5 Nexts to the next 5 questions as follows:

**f. Choose Next to the Specify Lotus Shared Tools Directory box.**

Leave drive S, and \lotus\lotusapp\ selected.

**g. Choose Next to the Select Lotus SmartSuite Applications box.**

Leave as is to select to install the complete list of applications.

**h. Choose Next to the Install Options box.**

Leave Automatic Install selected.

**i. Choose Next to the SQI server Name box.**

Leave entry box blank.

**j. Choose Next to the Paradox Network Information box.**

This skips the Paradox drivers install.

**k. In the Lotus Licenser box, uncheck the Lotus Licenser option to disable the licenser. Choose Next.**

If you leave this box checked, you will have trouble running SmartSuite as a shared application.

**l. Choose next to the Select Program Group box.**

This leaves Lotus Applications as the name of the Program Group.

**m. Choose Yes in the Begin Copying Files box.**

This starts the files copying process. It takes a while to load SmartSuite.

**n. Choose Done in the Install Complete box.**

▼ **To Install the Client Portion in the Prototype**

This begins the client portion of the install in the prototype.

**1. Double click on the Run Node Install icon to begin the client installation.**

**2. Answer the prompts as follows.**

This is a quick summary of our answers. If this is your first time through, read all of the boxes to ensure that these answers correctly apply to you. Selecting Next in this set of steps means that you accept the box as is. The system then displays the next box.

**a. In the Welcome to the Lotus SmartSuite Install Program box:**





**b. In Lotus 1-2-3:**

Select Tools ► User Setup.  
Set the Worksheet Directory to H:\.

**c. In Lotus AmiPro:**

Select Tools ► User Setup ► Paths.  
Set Document to H:\.

**d. In Freelance Graphics:**

Select Tools ► User Setup.  
Set Directories to H:\.

**e. Be sure that in the Program Manager, in the Options menu, that Save Settings on Exit is checked.****4. Exit Wabi.****5. Choose Yes to the question, “Are you ready to generate the prototype?”**

If you want to add another application to this prototype, choose No, Restart Wabi and then install another application.

**6. Choose OK to the “Prototype creation complete” message.**

The Lotus SmartSuite prototype is complete. It is immediately added to the list in the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create a new prototype.

You can follow the directions below to install Lotus SmartSuite in another prototype. If you do not want to install Lotus SmartSuite, you now have the tools to create other prototypes with other applications if you wish.

## *Creating Multiple Prototypes*

You can create prototypes that contain any number of applications. Here are some examples of how you can use the `ws_bldproto` tool:

- You can create a prototype starting with the Windows 3.11 prototype and add one or more complete application, such as Quicken or Microsoft Project.
- You can create a prototype starting with any previous prototype using the Inherit Proto option.
- You can create a prototype from an existing Wabi directory using the Copy Wabidir option.

- 
- You can create a link to a prototype on another server to make it available to users on the current server using the Link Proto option.
  - You can create a link to a prototype on another server using the Link Proto option and start a prototype from that prototype using the Inherit Proto option.

See “Building Prototypes with `ws_bldproto`” on page 95 for details on using `ws_bldproto`.

---

**Note** – Using the Copy Wabidir option to create a prototype has a drawback. Users running a Wabi directory from a prototype made in this manner will be unable to open Wabi application files from within the OpenWindows File Manager or Mail Tool. Specifically binding information (classing engine information) will not be included in the prototype.

To prevent this, do not create prototypes from existing Wabi directories. Instead, start with no prototype or an existing prototype and re-install the relevant software.

If you run `ws_bldproto` on a system that is not running OpenWindows, binding information also might not be included in the prototypes.

---

If you create a link to a prototype on another WabiServer, users will be able to access that prototype when they are connected to the current WabiServer.

Users’ performance will be better with shared applications if shared software resides on the current WabiServer and not on a remote file server or another WabiServer. If you create a link to a prototype on another WabiServer that points to shared software, move a copy of the shared software to the current WabiServer.

See “Using a Linked Prototype with Shared Applications” on page 102 for details on this procedure.



## *Installing WabiServer Client Software on Clients*

---

5 

WabiServer client software provides programs, libraries, and configuration information needed to start Wabi on the server and display back to the user's screen. Before users can run WabiServer, they must have access to the WabiServer client software.

You can make the WabiServer client software accessible to the client system in one of two ways:

- Install the client software locally on client systems.
- Install the client software on the server and mount it from client systems.

You may also need to install Solaris patches on the client system to prevent possible display problems.

### *Preparing for Client Installation*

To install a workstation as a WabiServer client, you will perform these steps. The instructions for each step are described in the following chapters.

1. Install Solaris patches, if needed.
2. Provide access to the WabiServer package.
  - You can mount client software from the server.
  - Or you can install the WabiServer client package from CD-ROM onto the client system.
3. Disable Volume Manager to enable the local diskette drive.

The first time you run Wabi remotely on a client, you will:

1. Add a directory name to your path.
2. Start the `rwabi` program.
3. Select a WabiServer.
4. Name the Wabi directory.
5. If the named Wabi directory does not exist, you are asked for the name of a prototype from which to create a Wabi directory.

## *Starting Client Installation*

Find the bullet below that applies to your installation and go to the named section.

- If you are a new installation; that is, if you are currently not running standalone Wabi or WabiServer client software, skip to the section for the client's operating system, either "Client Installation on a Solaris System" on page 80 or "Client Installation on a SunOS System" on page 86.
- If you have been running standalone Wabi, you may want to remove it. If you are becoming a WabiServer client, you do not need standalone Wabi. You are not, however, required to remove an existing standalone Wabi package. If you want to remove Wabi, go to the next section, "Remove Existing Packages."
- If you are running a previous version of WabiServer client software, you need to remove the previous version before loading this version. Go to the next section, "Remove Existing Packages."

## *Remove Existing Packages*

Follow the procedures below to remove an existing Wabi package or an existing WabiServer package from a Solaris system, if appropriate.

## ▼ To Remove an Existing Wabi Package

### 1. Check for installed Wabi patches by entering the following commands.

```
% showrev -p | grep SUNWwabi
any output such as:
Patch: 102330-02 Obsoletes: Packages: SUNWwabi 2.0,PAT
```

### 2. Identify which line applies to you and follow the instructions:

- If you have no Wabi patches installed, go to Step 3.
- If you have Wabi patches, enter the following command for each patch, replacing *patch-id* with the patch number.

```
% su
# /var/sadm/patch/patch-id/backoutpatch patch-id
```

### 3. Become superuser if you are not already.

### 4. Enter the following command to remove the Wabi package.

```
# pkgrm SUNWwabi
```

When you press Return, the `pkgrm` program displays a message similar to the following:

```
The following package is currently installed:
SUNWwabi  Wabi Application
Do you want to remove this package [y,n,?,q]
```

### 5. Enter **y** to start the removal process.

A prompt notifies you that the package scripts will be run with superuser permission, and asks you if you want to continue.

### 6. Enter **y** to continue with the removal.

File names and system messages are displayed at the command line as various components of the Wabi package are removed.

The `pkgrm` program displays the following message when the package removal is complete.

```
Removal of <SUNWwabi> was successful.
```

If you are not running a WabiServer client package that you need to remove, go to the section called “Client Installation on a Solaris System” on page 80.

### ▼ To Remove an Existing WabiServer Client Package

**1. Become superuser if you are not already.**

**2. Enter the following command to remove the WabiServer client package.**

```
# pkgrm SUNWwclt
```

When you press Return, the `pkgrm` program displays a message similar to the following:

```
The following package is currently installed:
SUNWwclt  WabiServer Client Application
Do you want to remove this package [y,n,?,q]
```

**3. Enter `y` to start the removal process.**

A prompt notifies you that the package scripts will be run with superuser permission, and asks you if you want to continue.

**4. Enter `y` to continue with the removal.**

File names and system messages are displayed at the command line as various components of the Wabi package are removed.

The `pkgrm` program displays the following message when the package removal is complete.

```
Removal of <SUNWwclt> was successful.
```

## *Client Installation on a Solaris System*

This section gives procedures for installing WabiServer client software on a Solaris client system. Start here if this is the first time you are installing WabiServer client software on this system or if you have completed the steps in the previous section “Remove Existing Packages” on page 78.



## *Install Solaris Patches from the WabiServer Client CD-ROM*

The *WabiServer 1.0 Read This First* contain information about Solaris patches you may need to install before using the WabiServer client program. The patches are included on the WabiServer Client CD-ROM. (If you are running a standalone Wabi package simultaneously, you may already have installed versions of the patches that are sufficient to fix any potential Wabi problems.)

- ◆ **Follow the instructions in the *WabiServer 1.0 Read This First* to see if you need to install any patches from the client CD-ROM onto the client system.**

## *Provide Access to the WabiServer Package*

You can provide access to the WabiServer client package on the client by either mounting and linking to the software on the server or by installing a `SUNWwclt` package from the client CD-ROM. From the following bulleted items, select the one that describes your situation and go to the indicated procedure.

- If you want to mount the client software from the server, go to the procedure “To Mount Client Software from the Server” on page 81.
- If you want to install the client software from the CD-ROM, go to the procedure “To Install Client Software from CD-ROM” on page 82.

### ▼ **To Mount Client Software from the Server**

This section assumes that you installed the WabiServer client package when you ran `pkgadd` when you installed the server. If you did not yet install the WabiServer client software on the server and wish to install it on the server now, follow the instructions in “Server Installation” on page 43 and select the WabiServer client package.

If you are running the Automounter, you must be sure that the `/opt/SUNWwsvr` file system is exported. (See the *Solaris System Administrator Answerbook* for instructions on exporting file systems.) If the WabiServer client software is installed on the server and the server’s `/opt/SUNWwsvr` file system is exported, you can skip this procedure and go straight to the section called “Add the `SUNWwclt` Directory to Your Path” on page 87.

If you are not running the Automounter, perform the following steps to mount the client software from the server.

**1. Enter the following command as root:**

```
# mkdir /opt/SUNWwclt
```

**2. Add the following line to the `/etc/vfstab` file, substituting your server's name for `venus`:**

```
venus:/opt/SUNWwclt - /opt/SUNWwclt ufs - yes
```

**3. Enter the following command to mount the `/opt/SUNWwclt` file system.**

```
# mount -a
```

▼ **To Install Client Software from CD-ROM**

**1. If you do not know whether or not you are using Volume Manager, enter the following command:**

```
# ps -ef | grep vold
```

If the process `/usr/sbin/vold` is reported, you are using Volume Manager. If the command gives you no output, you are not using Volume Manager.

**2. If you are using the Solaris Volume Manager, insert the WabiServer client CD-ROM into the CD-ROM drive.**

The CD-ROM file system is mounted automatically. Go to “Run pkgadd” on page 83.

**3. If you are not using the Solaris Volume Manager, create a mount point before inserting the CD-ROM into the CD-ROM drive and then mount the CD-ROM.**

**a. If you do not already have a `/cdrom` directory, create one as superuser by entering:**

```
# mkdir /cdrom
```

**b. Insert the WabiServer client CD-ROM into the CD-ROM drive.**

- c. **Mount the CD-ROM with one of the following commands, depending on which version of Solaris you have:**

```
SPARC# mount -o ro -F hsfs /dev/dsk/c0t6d0s2 /cdrom
x86# mount -o ro -F hsfs /dev/dsk/c0t6d0p0 /cdrom
```

---

**Note** - The `c0t6d0s2` and `c0t6d0p0` device numbers used in these commands assume your CD-ROM drive is set to SCSI target number 6. If you get the response “no such device,” your CD-ROM probably uses a different SCSI target number. If target number 6 did not work, enter `ls -l /dev/sr0` to find your target number.

---

## *Run pkgadd*

On a Solaris client, use the `pkgadd` command to copy the WabiServer client package to your system.

### ▼ To Run pkgadd

- 1. Enter the following command according to whether you are using Volume Manager or not.**

If you are using Volume Manager, enter:

```
SPARC# pkgadd -d /cdrom/wabiserver_1_0/sparc
x86# pkgadd -d /cdrom/wabiserver_1_0/i86
```

If you are *not* using Volume Manager, enter:

```
SPARC# pkgadd -d /cdrom/sparc
x86# pkgadd -d /cdrom/i86
```

When you press Return, the `pkgadd` program displays a screen similar to the following (with some additional detail):

```
The following packages are available:
  1 SUNWaws      Wabi User's Guide
                   (all)
  2 SUNWwclt     WabiServer Client-side Application
                   (i86,sun4-Solaris,sun4-SunOS) 1.0

Select package(s) you wish to process (or "all" to process
all packages). (default all) [?,??,q]:
```

**2. Select one or both packages to install. Either**

- Press Return to select both packages.
- Enter a number to select one package.

The `pkadd` program begins the installation process.

**3. If you have Volume Manager's control of the diskette drive enabled, `pkgadd` displays the following prompt:**

```
To use your diskette drive under Wabi, we recommend that you
disable Volume Manager's control of the diskette drive.

Would you like this done now?
Yes or No [y,n,?,q]
```

If you want to use the local diskette drive with remote Wabi, enter `y`.

If you want to use the local diskette drive with Volume Manager in the Solaris environment, enter `n`.

If you enter `y`, the `pkgadd` program disables Volume Manager's control of the diskette drive. See the *Wabi Release Notes* for information about the command to use to enable and disable Volume Manager's control of the diskette drive at any time.

#### 4. The pkgadd program prompts:

```
This package contains scripts which will be executed with
super-user permission during the process of installing this
package.
```

```
Do you want to continue with the installation of this
package [y,n,?]
```

Enter **y** to proceed with the installation.

As the installation nears completion, you may see the following message:

```
If you would like to use the UNIX serial ports in Wabi, please
run the following command as root:
```

```
    chmod 666 /dev/cua/*
```

```
This gives ordinary users read/write permissions to the
serial devices, allowing them to use these ports from Wabi.
```

This message is not applicable to a client installation on WabiServer. You cannot use serial ports through Wabi on a WabiServer client system.

When all WabiServer client files have been installed, the following message is displayed

```
Installation of <SUNWwclt> was successful.
```

```
The following packages are available:
```

```
 1 SUNWaws      Wabi User's Guide
                  (all)
 2 SUNWwclt     WabiServer Client-side Application
                  (i86,sun4-Solaris,sun4-SunOS) 1.0
```

```
Select package(s) you wish to process (or "all" to process
all packages). (default all) [?,??,q]:
```

#### 5. Enter **q** to quit.

When the installation is complete, go to the section “Setting Up Users” on page 87.

## *Client Installation on a SunOS System*

To install client software on a SunOS client system, follow the instructions in this section.

### *Provide Access to the WabiServer Package*

You can provide access to the WabiServer client package on the client by either mounting client software from the server or by installing client software from the client CD-ROM. Select the bulleted item from the list below that describes your situation and go to the indicated procedure.

- If you want to mount the client software from the server, go to the procedure “To Mount Client Software from the Server” on page 81.
- If you want to install the client software from the CD-ROM, go to the procedure “To Install Client Software from CD-ROM” on page 82.

#### ▼ **To Mount Client Software From the Server**

This section assumes that you selected to install the WabiServer client package when you ran the `pkgadd` command during the server installation. If you did not yet install the WabiServer client software on the server and wish to install it on the server now, follow the instructions in “Server Installation” on page 43 and select the WabiServer client package.

If you are running the Automounter, you must be sure that the `/opt/SUNWwsvr` file system is exported. (See the SunOS system administration documentation for instructions on how to mount file systems.) If the WabiServer client software is installed on the server and the server’s `/opt/SUNWwsvr` file system is exported, you can skip this procedure and go straight to the section called “Add the SUNWwclt Directory to Your Path” on page 87.

If you are not running the Automounter, perform the following steps to mount the client software from the server.

#### **1. Enter the following command as root:**

```
# mkdir /opt/SUNWwclt
```

2. Add the following line to the `/etc/fstab` file, substituting your server's name for `venus`:

```
venus:/opt/SUNWwclt /opt/SUNWwclt nfs rw,hard,fg 0 0
```

3. Enter the following command to mount the `/opt/SUNWwclt` file system.

```
# mount -a
```

#### ▼ To Install Client Software From CD-ROM

Create a mount point before inserting the CD-ROM into the CD-ROM drive and then mount the CD-ROM.

1. If you do not already have a `/cdrom` directory, create one as superuser by entering:

```
# mkdir /cdrom
```

2. Insert the CD-ROM into the CD-ROM drive.

3. Enter the following command to mount the CD-ROM.

```
# mount -r -t hsfs /dev/sr0 /cdrom
```

4. Change the directory to the location of the `SUNWwclt` package for a SPARC system and run the `install_unbundled` command.

```
# cd /cdrom/wabiserver_1_0/sparc/SUNWwclt/install
# ./install_unbundled
```

When the installation is complete, go to the next section “Setting Up Users.”

---

**Note** – The *Wabi User's Guide AnswerBook* is not available for SunOS clients.

---

## Setting Up Users

To set yourself (or another user) up as a WabiServer user, follow the steps below.

### *Add the SUNWwclt Directory to Your Path*

Log in as the user you are installing. Use a text editor to edit the `.login` file, adding the path name of the `SUNWwclt` software.

- If the client software is installed on the client or if you are mounting the client software from the server, but are not using the Automounter, the path is `/opt/SUNWwclt/bin`.
- If you are using the Automounter and mounting the server's client package, the path is `/net/server-name/opt/SUNWwclt/bin`.

This example uses the `vi` editor. (If you need more information on using `vi`, see the *Solaris User Answerbook*.)

```
% cd ~
% vi .login
Add directory to the path variable.
:wq
%
```

### Running `rwabi` for the First Time on the Client

The first time you run `rwabi`, you are asked for the name of a WabiServer on which to run and a name for your Wabi directory.

**Note** – To access help for any of the WabiServer tools, put your cursor on the item for which you want help and press the Help key.

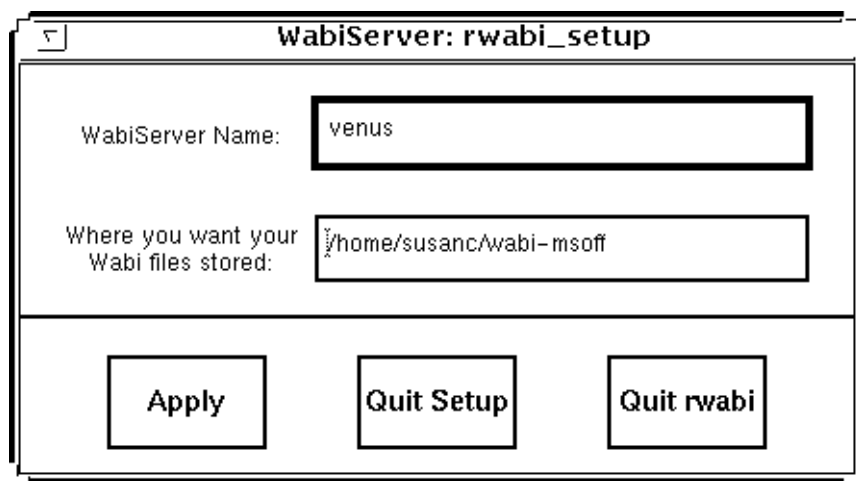


Figure 5-1 `rwabi_setup` Tool



---

Enter the name of the appropriate WabiServer.

Enter the name of a directory that will be your Wabi directory. You might want to use a name, as in Figure 5-1, that describes the applications that this Wabi directory will contain. Figure 5-1 uses the name `wabi-msoff` because it will contain Microsoft Office. (You have the option to create more than one Wabi directory that contain different applications. Descriptive names will help you identify them.)

If you enter the name of an existing Wabi directory, `rwabi` is immediately started on the server you named using the existing Wabi directory.

If the Wabi directory that you name does not exist, you are asked for the name of a prototype directory (see Figure 5-2 on page 90). The prototype directory is used to create a new Wabi directory for you in the location you named.

The prototype directories listed are those that are established on the selected WabiServer (they either exist on the server or are linked from another server).

Each prototype lists the amount of disk space you need in your Wabi directory for the applications in the prototype. Check that you have sufficient disk space for the prototype that contains the applications you need. Select the desired prototype.

---

**Note** – You must have a license to run any application that you use. To run an application without a license is a violation of Federal copyright law.

---

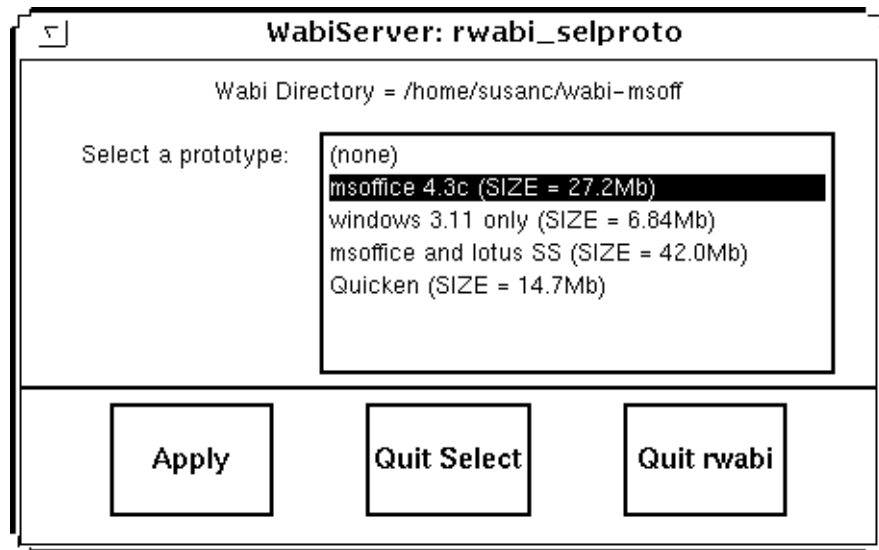


Figure 5-2 rwabi\_selproto Tool

▼ **To Run rwabi for the First Time**

You will perform the following sequence of steps when you run Wabi remotely for the first time.

- 1. Enter the rwabi command.**  
The `rwabi_setup` tool is started (see Figure 5-1).
- 2. Enter the name of the WabiServer on which you want to run.**
- 3. Enter the full path name of your desired Wabi directory.**  
The `rwabi_selproto` tool is started (see Figure 5-2).
- 4. Select the prototype from the list that contains the applications that you need.**
- 5. Choose Apply.**

Your Wabi directory is created in a few minutes and Wabi is started.

---

## *Wabi Directory*

Usually, the initial run of `rwabi` creates your Wabi directory in the location you specify in the `rwabi_setup` utility.

There are two exceptions to this:

- If the Wabi directory you specify already exists, a new one is not created.
- If the `WABIDIR` environment variable is set, then this setting is used instead of the one you specified in the `rwabi_setup` utility.

The Wabi directory contains your own copy of Windows software (modified for Wabi) and may also contain application software depending on the prototype you used in its creation.

---

**Note** – You may not want to save files in your C drive; that is, you may not want to save files in your Wabi directory.

By default, your Wabi directory is mapped to your C drive. Most Windows applications are started in the C drive and files are saved in the C drive. Check the application documentation to set the file-saving location to another location. (See “To Install the Client Portion in the Prototype” on page 67 for directions on how to set the file-saving locations for Word and Excel.)

If you change to a different prototype directory, using the same Wabi directory name, your Wabi directory is overwritten and you lose any personal files you saved there.

---



### *How To View AnswerBook*

To view the Wabi and WabiServer on-line documentation, start AnswerBook and double-click on the title you want to view. See your Solaris documentation for information about using AnswerBook. The *Wabi User's Guide* explains how to use the Wabi Configuration tools to map drives and set up printers.

Also, be sure to read the *Wabi Release Notes*, available in the Wabi Tools program group, to find release information about the standalone Wabi package, which is run as part of WabiServer.

### *Setting Access to Printers and Diskette Drives with ws\_setup*

By default, users can use the diskette drives on their own systems and can access printers configured on both the client system and the WabiServer. To limit users' access to printers and diskette drives, run the `ws_setup` program (see Figure 6-1). You must be logged in as root to run the `ws_setup` tool. In the dialog box that opens, you can choose from the following options.

For printers (see Figure 6-2), you can:

- Allow users access to only the printers configured on the client systems
- Allow users access to only the printers configured on the server systems
- Allow users access to the printers configured on both the client system and the WabiServer.

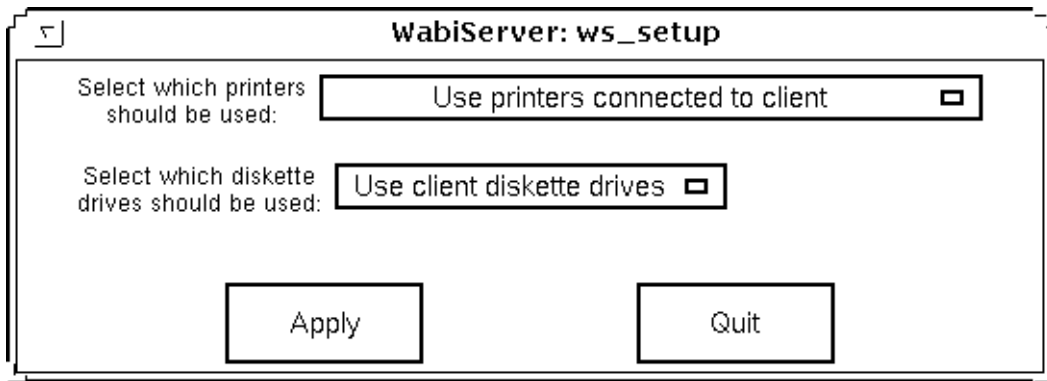


Figure 6-1 ws\_setup Tool

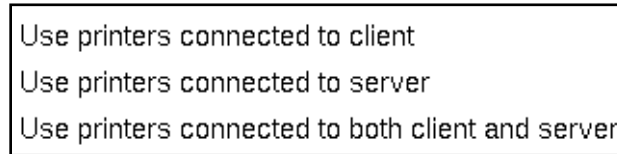


Figure 6-2 Printer Access Options in the ws\_setup Tool

For diskette drives (see Figure 6-3), you can:

- Allow users to use the diskette drives on the client system.
- Allow users to use the diskette drives on the WabiServer.
- Allow users to use no diskette drives.

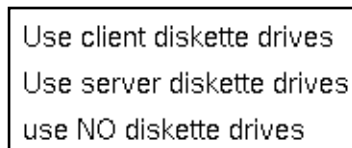


Figure 6-3 Disk Access Options in the ws\_setup Tool

---

## *Building Prototypes with ws\_bldproto*

You can build prototypes using the `ws_bldproto` tool. Prototypes contain Microsoft Windows software and may contain other applications. Prototypes create Wabi directories that contain the same applications that the prototype contains.

When a user runs Wabi remotely for the first time, the user selects a prototype to use to create the Wabi directory. The Wabi directory is created and contains the same applications that the prototype contains, ready for the user to run. Users, therefore, do not have to install applications themselves. The `ws_bldproto` tool is a WabiServer tool that enables you to create prototypes.

This section describes how to use the `ws_bldproto` tool. For examples of using the `ws_bldproto` tool to create prototypes, see Chapter 4.

The `ws_bldproto` tool gives you four ways to create a prototype on the current Wabiserver. The four ways are described in the following sections. The four ways are accessed by the four buttons at the top of the `ws_bldproto` tool (see Figure 6-4). They are:

- New Proto
- Inherit Proto
- Copy WabiDir
- Link Proto

---

**Note** – Do not run more than one session of `ws_bldproto` at a time. Running more than one session of `ws_bldproto` at a time could create corrupt prototypes.

---

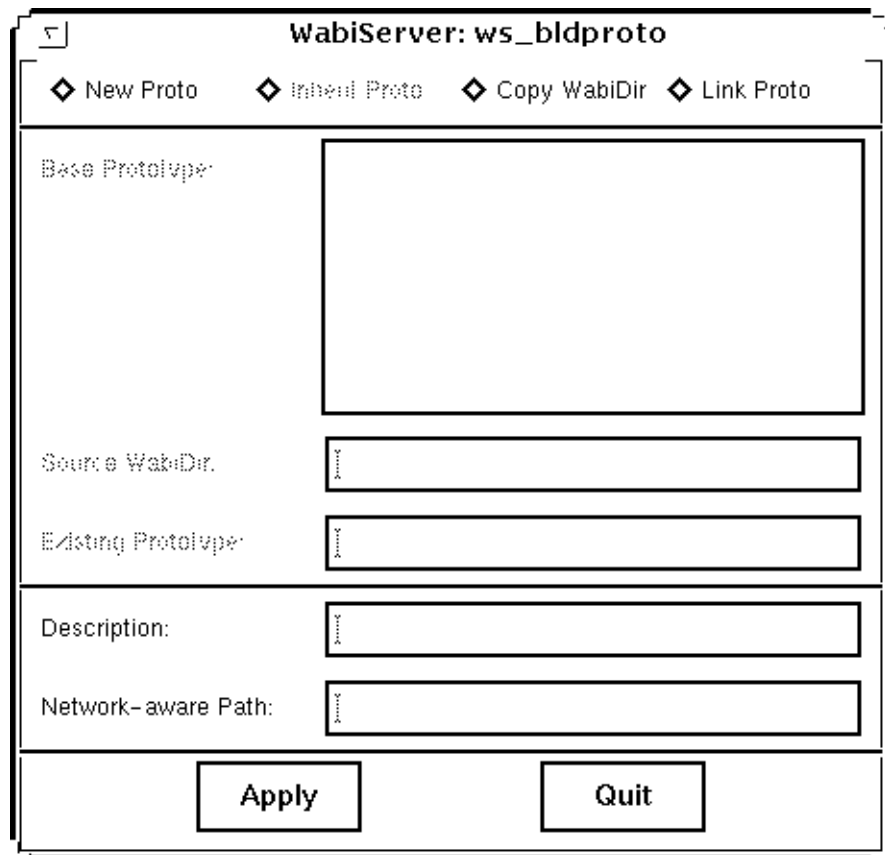


Figure 6-4 ws\_bldproto Tool

### *Moving the Cursor*

Choose a creation option from the top row of buttons by pointing the cursor and clicking. You can move the focus from option to option using the arrow keys. You can move from field to field using the Tab key. Only the fields that are used with the chosen option will be active once an option is chosen.



## *Help in ws\_bldproto*

To see an on-line help message for any screen or text item, move the focus to the item with the cursor or the Tab key and press the help key.

## *New Proto*

Choose the New Proto option to create a prototype from scratch. You will always begin a prototype created with the New Proto option by installing Microsoft Windows. All prototypes contain Microsoft Windows. The smallest prototype you can create contains only Microsoft Windows. We recommend that you create a prototype that contains only Microsoft Windows and use it as a base for creating other prototypes.

When you select the New Proto option, the Description and the Network-aware Path boxes become active; they are no longer grayed out. You need to supply a Description and a location for your new prototype.

The description can be any length. Users can size the `rwabi_selproto` tool screen to see a wide description, up to the size of their terminal screen. You can use the left and right arrow keys to move your cursor in the description and path boxes. This description will be what you and users see in the prototype list. We recommend that you use a description that identifies the prototype's contents. For instance, your first prototype might be called "Windows 3.11."

We suggest you keep all your prototypes together in a single directory, such as `/files/protos` and give each prototype a descriptive name. Your path must be accessible to users, usually in an exported file system.

### ▼ To Create a New Prototype

Follow this procedure to create a new prototype:

- 1. Choose the New Proto option.**
- 2. Enter a description.**  
Enter a description that identifies the planned contents of the new prototype.
- 3. Enter the full path name of a location where the prototype will be created and stored.**

**4. Choose Apply.**

You see the Wabi registration card, which you can fill out now or at a later date. You are asked to install Windows.

**5. Install Windows.**

At this point, you can size and locate program groups for convenience, if you wish.

**6. Exit Wabi.****7. Respond appropriately to the question, “Are you ready to generate the prototype?”**

If you want to install another application, select No, Restart Wabi. When Wabi restarts, install another application, using that application’s installation instructions.

If you do not want to install another application, select Yes.

**8. Choose OK to the “Prototype creation complete” message.**

When the new prototype creation is complete, it is immediately added to the entries in the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create another prototype.

The new prototype is also displayed in the list of available prototypes when users access this WabiServer using the `rwabi -select` command.

For an example of using the New Proto option, see Chapter 4, the section called “Create a Windows Only Prototype” on page 54.

## *Inherit Proto*

Choose the Inherit Proto option to create a prototype from an existing prototype. You will probably use this option often starting with your prototype that contains only Microsoft Windows.

When you select the Inherit Proto option, the Base Prototype prompt becomes active and available prototypes are displayed in the list box.

**▼ To Create a Prototype from an Inherited Prototype**

Follow this procedure to inherit a prototype:

1. **Choose the Inherit proto option.**
2. **Choose one of the available prototypes.**
3. **Enter a description of the prototype you intend to create**  
Enter a description that identifies the planned contents of the new prototype.
4. **Enter the full path name of the location where you want the new prototype.**
5. **Choose Apply.**  
The tool copies the named prototype to the new location. Wabi is started.
6. **In Wabi, in the Program Manager, select File ► Run.**
7. **Enter the path to the software you are installing according to your application's instructions.**
8. **Complete the application installation according to the application's instructions.**  
When the installation is complete, you can size and locate windows in a useful manner.
9. **Exit Wabi.**
10. **Respond appropriately to the question, "Are you ready to generate the prototype?"**  
If you want to install another application, select No, Restart Wabi. When Wabi restarts, install another application, using that application's installation instructions.  
  
If you do not want to install another application, select Yes.
11. **Choose OK to the "Prototype creation complete" message.**

The new prototype is immediately added to the entries in the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create a new prototype.

The new prototype is also displayed in the list of available prototypes when users access this WabiServer using the `rwabi -select` command.

### *Copy WabiDir*

Choose the Copy WabiDir option if you have an existing Wabi directory in which you have installed applications and you want to make a prototype that contains these applications without having to reinstall them.

---

**Note** – There is a drawback to using this method. Users running a Wabi directory from a prototype made in this manner will be unable to open Wabi application files from within the OpenWindows File Manager or Mail Tool. Specifically binding information (classing engine information) will not be included in the prototype.

To prevent this, do not create prototypes from existing Wabi directories. Instead, start with no prototype or an existing prototype and re-install the relevant software.

---

#### ▼ **To Create a Prototype from a Wabi Directory**

Follow this procedure to create a prototype from an existing Wabi directory:

- 1. Choose the Copy WabiDir option.**
- 2. Enter the full path name of the Wabi directory from which you want to create a prototype.**
- 3. Enter a description.**  
Enter a description that identifies the planned contents of the new prototype.
- 4. Enter the full path name of the location where you want the new prototype.**
- 5. Choose Apply.**  
Wabi is started.
- 6. Exit Wabi.**

**7. Choose appropriately to the question, “Are you ready to generate the prototype?”**

If you want to install another application, select No, Restart Wabi. When Wabi restarts, install another application, using that application’s installation instructions.

If you do not want to install another application, select Yes.

**8. Choose OK to the “Prototype creation complete” message.**

The new prototype is immediately added to the entries in the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create a new prototype.

The new prototype is also displayed in the list of available prototypes when users access this WabiServer using the `rwabi -select` command.

## *Link Proto*

Choose the Link Proto option when you want to make a prototype on another system available to this server. In this way, you can make the prototype available to users running Wabi remotely on this system or you can create a prototype on the current server using the linked prototype as a base.

▼ **To Add a Prototype Linked from Another Server**

Follow this procedure to link a prototype:

**1. Choose the Link Proto option.**

The Existing Prototype prompt is highlighted.

**2. Enter the full path name of the prototype to which you want to create a link.**

The path you enter must be accessible from your current system.

**3. Choose Apply.**

**4. Choose OK to the “Prototype creation complete” message.**

The new prototype is immediately added to the entries in the Base Prototype list box. You can select Inherit Proto and choose this new prototype as the base from which to create a new prototype.

The new prototype will be displayed in the list of available prototypes when users access this WabiServer using the `rwabi -select` command.

If you are creating a link to a prototype that is installed in a shared application configuration, you must also copy the shared application software to the current server, as described in the next section.

### *Using a Linked Prototype with Shared Applications*

For system speed with a shared application, you want the shared application to be on the current WabiServer, rather than on a remote file server or on another WabiServer. Therefore, when you link a prototype that includes the client portion of a shared application, you also want to copy the shared portion of the application to the current WabiServer. In addition, the shared application should be installed in a specific configuration to make Wabi directory created form the linked prototype work correctly on the new server. This configuration was used in Chapter 4, in the sections that created prototypes with Microsoft Office (page 64) and Lotus SmartSuite (page 69). It is explained in more detail here.

This is the correct configuration and procedure.

Server A has a prototype called “Microsoft Office” that contains the client portion of Microsoft Office. It has the following characteristics:

- The shared portion of Microsoft Office is stored in `/files1/shared_apps`.
- This directory has a link to it from `/opt/SUNWwsvr/wsshared`.
- The S drive is mapped to `/opt/SUNWwsvr/wsshared`.

(This is the same setup that was used in the procedure in Chapter 4, page 64.)

You are on Server B and want a prototype with Microsoft Office to be available to users on Server B. Use the following procedure.

1. **Start** `ws_bldproto`.  
`% ws_bldproto`
2. **Choose the Link Proto option.**  
The Existing Prototype prompt is highlighted.
3. **Enter the full path name of the existing prototype. Enter**  
`/net/ServerA/files1/shared_apps`.

**4. Choose Apply.****5. Choose OK to the “Prototype creation complete” message.**

The Microsoft Office prototype is listed in the prototype list box on Server B. If a user creates a Wabi directory with this prototype now, the Microsoft Office software will not work. The client portion of Microsoft Office software is pointing to the `/opt/SUNWwsvr/wsshared` directory which does not exist on Server B. To put the shared portion of Office software on Server B, continue with Step 6.

**6. On Server B, set up a directory that is *identical in name* to the shared application directory on Server A. In our example it is the `/files1/wsshared` directory.**

```
# mkdir /net/serverB/files1/shared_apps
```

**7. Enter the commands below to transfer the shared portion of Microsoft Office software to server B.**

Use the `tar` command as shown here, rather than the `cp` command, to correctly retain links and permissions.

```
# cd /net/serverA/files1/sharedapps
# tar cf - . | (cd /files1/shared_apps; tar xfbp -)
```

**8. Create a link from this directory to the directory to which the S drive is mapped.**

```
# ln -s /files1/shared_apps /opt/SUNWwsvr/wsshared
```

---

**Note** – The shared application directory, the link, and the S drive mapping must be *identical* on both systems.

---

On both Server A and Server B:

```
/files1/shared_apps ---> /opt/SUNWwsvr/wsshared
```

S drive is mapped to `/opt/SUNWwsvr/wsshared`.

Now your new Microsoft Office prototype is ready for users to use on Server B.

## Deleting Prototypes

To delete a prototype, use the `rm -r` command. Be sure that you enter the path correctly. This recursively removes everything in the specified directory. You can also delete the link from the `/opt/SUNWwsvr/protos` directory if you want to; this is optional.

### ▼ To Delete a Prototype

1. Enter the following command to delete a prototype.

```
% rm -r path-of-prototype
```

2. (Optional) Enter the following command to delete the link to the prototype, replacing `xxxxx` with the appropriate characters.

```
% rm /opt/SUNWwsvr/protos/Protoaxxxxx
```

## Customizing Your Users' Environment

You can customize the environment for all users of a particular WabiServer by including a file, `/opt/SUNWwsvr/config/local_wabiserver` in the WabiServer software directory. This file is run each time a user runs Wabi remotely on this server. You can enter any Bourne shell commands into this file.

A common use of this file is for Wabi environment variables for international localization. These are entered in the following format.

```
VARIABLE=variable_definition  
export VARIABLE
```

See the *Wabi User's Guide* (in Answerbook) for information on Wabi environment variables. Chapter 7, "Wabi International," contains information on language, keyboard, and code page variables.

## How to Identify a User's Server and Prototype

There are two files in a user's home directory that identify the current WabiServer, Wabi directory, and the prototype that was used to create the Wabi directory.



---

The file `~/wabiserver` contains the current settings for the variables `WABIDIR` and `WABISERVER`.

In any Wabi directory, the file `protoptr.txt` contains the name of the path to the prototype that created the Wabi directory.



## Troubleshooting



This chapter contains solutions to problems you might encounter.

### **Error message: Insufficient disk space. Message appears during installation.**

The `SUNWwabi`, `SUNWsvr`, and, optionally, `SUNWwclt` for the client, packages are installed in the `/opt` directory by default. If you see a message that the file system has insufficient disk space, create a symbolic link from `/opt` to another file system with adequate disk space and then enter the `pkgadd` command again. For example, to create a link to the `/usr` directory, enter the following commands as root:

```
# mkdir /usr/SUNWwabi
# cd /opt
# ln -s /usr/SUNWwabi SUNWwabi
```

### **Error message: rwabi: Error: WabiServer “server-name” not accessible - permission problem**

A user's `.rhosts` file is preventing the user from accessing the server. Add the server name to the `.rhosts` file.

### **./rwabi does not work on a SunOS System**

On a SunOS client system, you cannot change your directory to `/opt/SUNWwclt/bin` and execute `./rwabi`. This does not work. To execute `rwabi`, you can enter the entire path name, as follows:

```
% /opt/SUNWwclt/bin/rwabi
```

Or you can include `/opt/SUNWwclt/bin` in your path, as described in Chapter 5, in the section, “Add the SUNWwclt Directory to Your Path” on page 87 and then enter simply `rwabi`.

**Serial ports (serial printer or a modem) do not work on the server.**

Run the following command as superuser:

```
# chmod 666 /dev/cua/*
```

When you install the Wabi package, the installation script checks the permissions of the serial devices. If they are not accessible by all users, the script suggests that you run the preceding command as superuser: If you do not do this, you will not be able to use Wabi COM ports for serial devices such as modems and local serial printers.

---

**Note** – With WabiServer software, you cannot use the COM ports on client systems for serial devices.

---

**Two rwabi sessions**

A user cannot run two separate `rwabi` sessions on two different servers using the same Wabi directory.

A user can, however, run two `rwabi` sessions on the same server or on different servers using a different Wabi directory for each session.

**Users can't open Wabi application files from OpenWindows File Manager or Mail Tool**

If you create a prototype using the Copy Wabidir option in `ws_bldproto`, binding information (classing engine information) is not included in the prototype. Users running a Wabi directory from a prototype made in this manner will be unable to open Wabi application files from within the OpenWindows File Manager or Mail Tool.

To prevent this, do not create prototypes from existing Wabi directories. Instead, start with no prototype or an existing prototype and re-install the relevant software.

If you run `ws_bldproto` on a system that is not running OpenWindows, binding information also might not be included in the Wabi applications.

## WabiServer Files and Directories



Table 7-1 lists the functions of selected WabiServer files and directories.

*Table 7-1* WabiServer Files and Directories

File or Directory	Function
SUNWwabi	Standalone Wabi software
SUNWwabi/bin/wabi	Script used to start Wabi
SUNWwabi/bin/wabiclientinstall	Commands used to install Wabi on another machine (without doing a pkgadd)
SUNWwabi/drvr/clearlocks	Command to use in case of emergency to clear outstanding file locks
SUNWwabi/lib/locale	Localized messages for Wabi
SUNWwabi/lib/vold.switch	Used to enable or disable volume manager's use of diskette drives. (CD access still controlled by vold.)
SUNWwabi/man	Wabi man pages
SUNWwabi/printers	Printer drives for HP Laser Jet and Epson printers
SUNWwabi/wbin	Windows information
SUNWwabi/wbin/sun_ads	On-line ads for Sun products
SUNWwabi/wbin/system.ini	Windows configuration

*Table 7-1 WabiServer Files and Directories*

File or Directory	Function
SUNWwsvr	WabiServer software
SUNWwsvr/.bin	WabiServer commands (not to be used by end-users)
SUNWwsvr/bin	User commands
SUNWwsvr/bin/ws_setup	Utility for administering WabiServer
SUNWwsvr/bin/ws_bldproto	Tool for building prototypes
SUNWwsvr/bin/rda_server	Remote diskette handler
SUNWwsvr/bin/rwabi	Script to start WabiServer
SUNWwsvr/bin/rwabi_selproto	User tool to select a prototype
SUNWwsvr/bin/rwabi_setup	User tool to select a WabiServer and name a Wabi directory
SUNWwsvr/bin/wabi	Script to start Wabi
SUNWwsvr/lib	Motif libraries
SUNWwsvr/protos	Holds symbolic links to the prototypes
SUNWwsvr/protos/Protoa0xxxx	Prototype links
SUNWwsvr/config	Server configuration directory
SUNWwclt	WabiServer client software
SUNWwclt/bin	User commands
SUNWwclt/lib	Motif libraries

# *Index*

---

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