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Looking Glass®
Installation Guide

069–100466–00

A V i i O N®
P R O D U C T   L I N E

Looking Glass® Installation Guide

069-100466-00

> *For the latest enhancements, cautions, documentation changes, and other information about this product, please see the Release Notice (085-series) supplied with the software.*

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Looking Glass® Installation Guide

069-100466-00

Effective with: Looking Glass Revision 2.2
                  DG/UX, Revision 5.4.1

Contents

Part I: Before you begin

NOTE: Throughout this document *<InstallDir>* is used to refer to the directory where your Looking Glass files have been installed. Please see your Looking Glass Release Notes, if you are unclear as to what *<InstallDir>* should be.

Part II: Installation procedure

Build the Looking Glass database

In order to provide rapid access to directories of any size, Looking Glass makes use of a distributed directory database consisting of a small file named `.lgdb` in each directory.

Although these files are created automatically as Looking Glass displays directories, building the files in advance avoids the slight delay encountered as Looking Glass enters a directory for the first time and looks at each file to determine its type.

Building the Looking Glass database can take anywhere from a minute or two to an hour or more, depending on the number of directories processed. If you interrupt this process for any reason, you can simply enter the command again.

If there are directories in which you do not want `.lgdb` files created, refer to "Creating a directory exclusion list" under Part III, "General topics."

To build the directory database at this time:

1. Change to the File System Server data directory by entering:

    `cd <InstallDir>/visix/fss/default`

2. Execute the script to build the directory database by entering:

    `./db_build`

The `db_build` script prints the name of each directory as it is typed. If you interrupt this process for any reason, you can simply enter the command again.

Activate the license keys

Looking Glass license agreements authorize a specific number of Looking Glass users and CPUs to run Looking Glass. For each license agreement or upgrade, two or more license numbers, or "keys," are provided: CPU keys authorize Looking Glass to run on the class of CPU for which it was purchased; user keys authorize a specific number of users to run Looking Glass at one time.

The Visix License Server (vls) program monitors the number of users and CPUs running Looking Glass at any time. Two utilities (vls_add and vls_del) are provided for maintaining the file in which license keys are stored.

Before you can start Looking Glass, you must add the license keys provided with each copy of Looking Glass. (For more information on the Visix License Server and the maintenance utilities, refer to "Using the License Server" in Part III, "General topics.")

To add the license keys:

1. Log in to the system on which the Visix License Server will run. This will normally be the system on which you just loaded the Looking Glass files.

2. At the system prompt, enter:

   vls_add

   The program prompts for a key.

3. At the prompt, enter one of the license keys that has been provided, typing it exactly as shown, and then press Return.

   The program prompts for another key.

4. Repeat step 3 until you have entered all of the license keys. The program will stop prompting when you press Return after entering the last key.

5. Once the program has exited, verify that the keys were entered correctly by entering:

   vls -l

   Check the list of license keys. Make sure that the anticipated number of users and CPUs are able to run Looking Glass.

   If the numbers were entered correctly, go on to the next step in the procedure.

   If any of the keys were entered incorrectly, delete the incorrect key(s). Instructions for deleting keys are given in "Using the License Server" under Part III, "General topics." Once you have deleted the incorrect key, return to step 2 of this procedure.

   If there is a discrepancy between the expected number of authorized users and CPUs and the number reported by the License Server, report the discrepancy to your support contact.

6. Start the Visix License Server by entering:

   vls

7. To verify that the server started properly, enter:

```
cat   /tmp/vlslog
```

The last line displayed will indicate whether the server began operation without error.

The Visix License Server must be restarted each time you reboot your system.

Authorize License Server host machines

This step is only necessary if you intend to run Looking Glass and the License Server on different machines.

The License Server can be run from any authorized machine on your network. The file `vls.hosts` in the Looking Glass data directory is used to store the names of the authorized License Server host machines. When Looking Glass starts, it checks the machines listed in `vls.hosts` for an active License Server, searching in the order in which the machines are listed in the file. Therefore, the first machine listed in the file is the primary License Server host.

As noted above, the `vls.hosts` file is not necessary if you are running Looking Glass and the License Server on the same machine. However, if you do have a `vls.hosts` file, *the name of the host machine must be in the file.*

To authorize License Server hosts:

1. Log in to the system on which you installed Looking Glass.

2. Change to the License Server data directory by entering:.

   ```
   cd <InstallDir>/visix/vls/default
   ```

3. Edit the file `vls.hosts` using a text editor. (If the file does not already exist, create it.)

4. Add (as the first line of the file) the hostname of the system that is running the Visix License Server.

5. Add (on additional lines) any other machines where the Visix License Server might run, in case the primary host is unavailable.

6. Save the file `vls.hosts` with the above changes.

Start Looking Glass

This section contains instructions for starting the Looking Glass program, `lg`. For a full description of the command-line arguments you can specify for Looking Glass, refer to Chapter 1 of the *Looking Glass User's Guide.*

To start Looking Glass:

1. If the the X Window System was not running when you installed Looking Glass, start X now.

2. If you are running Looking Glass in conjunction with a window manager that provides a frame for windows (such as mwm), start Looking Glass by entering:

   `lg &`

   If you are running Looking Glass in conjunction with a window manager that does not provide a frame for windows (such as uwm), start Looking Glass by entering:

   `lg -frame &`

Part III: General topics

Uninstalling Looking Glass

The Looking Glass uninstall script, lg_remove, removes all files created during the actual installation. In other words, it returns you to the point where you were just after loading the Looking Glass files from the cartridge tape (refer to "Load the Looking Glass files," above). Before exiting, the program also displays explicit instructions for removing the actual release files.

To uninstall Looking Glass:

1. Change to the Looking Glass installation directory by entering:

   `cd <InstallDir>/visix/install`

2. Use the lg_remove script to remove all Looking Glass files:

   `./lg_remove`

3. The script asks if you want to uninstall Looking Glass. Enter:

   `y`

   The script reports on the progress of the procedure. Once the procedure is complete, the script will display instructions for removing the actual release files.

Creating a directory exclusion list

This section contains instructions for specifying directories in which the directory database file .lgdb is not to be written. The exclusion list is simply a list of directory names, one per line, in the file exclude.lgdb in the Looking Glass data directory.

The installation procedure includes an optional step for building `.lgdb` files for the entire file system using the `db_build` script. Although the exclusion list is normally created before building the directory database files, it can be created and maintained at any time. Looking Glass reads the exclusion list at startup time and will not put a `.lgdb` file in any directory referenced.

Exclusion list entries are simply full directory pathnames, one per line. Blank lines are permitted. Comment lines can be included by placing the pound (#) character in column one.

You can specify that the exclusion applies to all the descendants of a directory by preceding its name with a plus sign (+). For example, the following entry would prevent `.lgdb` files from being placed in the directory `/user/hal` or any of its descendants:

```
+/user/hal
```

There are two ways to reference directories that reside on remotely mounted file systems: you can use the name under which the directory was mounted, or you can precede the directory name with a node name specifying the physical machine on which it resides. The node name must be followed by a colon (:). The following example illustrates the use of a node name to specify the directory `/etc` on the machine `prelude`:

```
prelude:/etc
```

If you precede a directory name with a node name, you must include the directory name as it is seen on the specified machine, not the name under which it is mounted. When directories are specified in this manner, the exclusion applies to the directory regardless of the name (or names) under which it is mounted. Thus, in the example above, if `prelude:/etc` were mounted under the name `/usr/etc` on a different machine, the exclusion would apply when users on that machine visited `/usr/etc`.

If symbolic links exist to a directory that you want to exclude, you must be sure to put all pathnames leading to that directory in the exclusion list.

To create or modify a directory exclusion list:

1. Change to the Looking Glass data directory by entering:

    cd *<InstallDir>***/visix/lg/default**

2. Edit the file `exclude.lgdb`. Create the file if it doesn't already exist.

3. Add, change, or remove entries, following the guidelines given above, and save the file.

4. Restart Looking Glass.

Using the License Server

The Visix License Server controls the number of users and CPUs that can run Looking Glass at one time. For each license agreement or upgrade, two or more license numbers, or "keys," are provided: CPU keys authorize Looking Glass to run on the class of CPU for which it was purchased; user keys authorize a specific number of users to run Looking Glass at one time.

License keys are stored in the file vls.data in the Looking Glass data directory.

This section provides instructions for:

- Starting the License Server

- Adding license keys

- Deleting license keys

- Displaying the currently active license keys

The Visix License Server (vls) program monitors the number of users and CPUs running Looking Glass at any time. Two utilities (vls_add and vls_del) are provided for maintaining the file in which license keys are stored.

When Looking Glass is installed, or when a license agreement is upgraded to allow more users, a new license key is provided.

To increase the number of authorized users, you must add the license key to the License Server data file with the vls_add utility. New license keys do not override old ones; they simply add authorization for an additional number of users.

On standalone workstations, the License Server runs on the same machine as Looking Glass. In networked environments, the License Server can run on any machine in the network.

When Looking Glass starts up, it sends a broadcast message over the network to locate the License Server and asks for permission to run. If the number of users running Looking Glass is within the limit set by the license agreement, the License Server grants permission and Looking Glass operates normally. If there are no user slots available, or if the License Server is not running, Looking Glass displays an appropriate message and exits.

Each Looking Glass process sends a message to the server periodically to report that it is still active. If the License Server does not receive a message from a Looking Glass process for a certain amount of time, the user slot is made available for another user. If a Looking Glass process does not receive acknowledgment from the License Server for five minutes, a message is displayed telling the user that he or she has a specified amount of time to restart the License Server. If the License Server is not restarted in the time

allowed, Looking Glass shuts down. For information about restarting the License Server, refer to "Starting and restarting the License Server," below.

All `vls` messages are written to the License Server log file, `/tmp/vlslog`. This is a text file that can be viewed with a text editor or listed to a display with an operating system utility, such as `cat`. Messages written to the file should be self-explanatory. If you have a problem understanding a message, report it to your support contact. Only messages that report conditions requiring immediate attention are written to a display.

Starting and restarting the License Server

Although the instructions for starting the License Server assume that you are working from a system prompt, we recommend that you include the License Server startup as part of your normal system startup procedure.

To start the License Server:

1. Log in to the system you have chosen as the primary License Server host.

   NOTE: Only machines that have been explicitly authorized as License Server hosts can be used to run the License Server. Refer to "Authorize License Server host machines" in Part II, "Installation procedure," for more information.

2. At the system prompt, enter:

   vls

   or

   vls -q

   If you enter **vls**, messages from Looking Glass are displayed on your screen and written to the License Server log file, `/tmp/vlslog`.

   If you enter **vls -q**, messages from Looking Glass are only written to the License Server log file—they are not displayed on your screen.

3. Press Return.

   The License Server starts immediately.

To restart the License Server:

After an abnormal shutdown, follow the instructions above for starting the License Server. You can also add a restart flag (-r) that gives users who were using Looking Glass at the time of the shutdown two minutes to restart it before new users are allowed on the system. The restart flag is not recommended for the normal startup procedure because, on a normal startup, it would prevent *anyone* from using Looking Glass for two minutes.

Adding license keys

To add license keys:

1. Log in to the system on which the Visix License Server normally runs. This will usually be the system on which you installed Looking Glass.

2. At the prompt, enter:

   ```
   vls_add
   ```

   The program will prompt for a license key.

3. At the prompt, enter one of the license keys you want to add, then press Return.

   The program will prompt for another license key.

4. Repeat step 3 until you have entered all of the license keys you want to add.

5. Verify that the license keys were entered correctly by entering:

   ```
   vls  -l
   ```

   Check the list of license keys. Make sure that the anticipated number of users and CPUs are able to run Looking Glass.

   If any of the keys were entered incorrectly, delete the incorrect key(s) (refer to "Deleting license keys," below). Once you have deleted the incorrect key, return to step 2 of this procedure.

   If there is a discrepancy between the expected number of authorized users and CPUs and the number reported by the license server, report the discrepancy to your support contact.

6. Restart the License Server to enable the new license keys.

Deleting license keys

To delete a license key:

1. At the system prompt, enter:

   ```
   vls_del
   ```

   The program will prompt for a key to delete.

2. Enter a license key and then press Return. Press Return again to exit the program.

Displaying the currently active license keys

To display the currently active license keys:

1. Log in to the system on which the Visix License Server normally runs.

2. At the prompt, enter:

```
vls  -l
```

A list of license keys and the number of users or CPUs they authorize is displayed.

Using alternate fonts

The standard Looking Glass fonts are:

```
-*adobe*helvetica*-medium-r-*-*-12-*iso8859*
```

```
-*adobe*helvetica*-bold-r-*-*-12-*iso8859*
```

If these fonts are not available on your system, or if you prefer to use other fonts, you can specify other fonts.

To use other fonts with Looking Glass:

1. Determine which fonts are available and what their names are.

   In addition to consulting your system documentation, you can determine which fonts are currently available to you while you are running the X Window System by entering:

   ```
   xlsfonts
   ```

   (You may want to save the output from this command in a file by redirecting it to a file.)

2. Select the fonts you want to use with Looking Glass: one font for displaying normal text and one font for displaying bold text. If you want, you may use the same font in both cases. For best results, the fonts should not exceed 12 pixels in height.

   Although they are not ideal for use with Looking Glass, the fonts 8x13 and 8x13bold are almost universally available and are reasonable choices when the Looking Glass default fonts are not available.

3. Start Looking Glass by entering:

   ```
   lg  -fn  <font>  -fb  <boldfont>  &
   ```

   or

   ```
   lg  -frame  -fn  <font>  -fb  <boldfont>  &
   ```

   where *<font>* and *<boldfont>* are the names of the fonts you chose.

4. To use these fonts automatically each time you start Looking Glass, add the following lines to your window system resources file (in most cases, this will be the file .Xdefaults in your login directory):

   ```
   lg*font:      <font>
   lg*boldfont:  <boldfont>
   ```

where *\<font\>* and *\<boldfont\>* are the names of the fonts you chose.

Window manager compatibility

OPEN LOOK GUI Window Manager compatibility

No special resource settings are needed to use Looking Glass with the OPEN LOOK GUI window manager (olwm). When olwm is running, Looking Glass automatically starts up with the OPEN LOOK GUI look-and-feel.

Motif window manager compatibility

If Looking Glass is to be run with the Motif Window Manager (mwm) from the Open Software Foundation, you must clear the clientAutoPlace, positionIsFrame, and interactivePlacement resources.

Looking Glass cannot restore its Directory windows to their saved positions unless mwm is told not to automatically place all windows by itself. To do this, the clientAutoPlace, positionIsFrame, and interactivePlacement resources must be explicitly cleared in your window system resources file.

To clear the clientAutoPlace, positionIsFrame, ***and*** interactivePlacement ***resources:***

1. Append the following lines to your window system resources file:

    ```
    Mwm*clientAutoPlace:        false
    Mwm*positionIsFrame:        false
    Mwm*interactivePlacement:   false
    ```

    (Create the file if it does not exist.)

2. Restart mwm.

HP Window Manager compatibility

If Looking Glass is to be run with the HP Window Manager (hpwm) from Hewlett-Packard, you must clear the clientAutoPlace, positionIsFrame, and interactivePlacement resources.

Looking Glass cannot restore its Directory windows to their saved positions unless hpwm is told not to automatically place all windows by

itself. To do this, `clientAutoPlace, positionIsFrame,`and `interactivePlacement` resources must be explicitly cleared in your window system resources file.

To clear the `clientAutoPlace, positionIsFrame,` *and* `interactivePlacement` *resources:*

1. Append the following lines to your window system resources file (e.g., the file .Xdefaults in your login directory):

    ```
    Hpwm*clientAutoPlace:       false
    Hpwm*positionIsFrame:       false
    Hpwm*interactivePlacement:  false
    ```

    (Create the file if it does not exist.)

2. Restart `hpwm`.

Intrinsic file typing feature symbols

Some Looking Glass file typing rules are enabled only if specific feature symbols are set for the system on which Looking Glass is running. For a full description of Looking Glass feature symbols, refer to Chapter 13 of the *Looking Glass User's Guide.*

This version of Looking Glass has the following feature symbol intrinsically set: X.

Using remote displays

The X Window System allows an application such as Looking Glass to run on one system and display its windows on a display attached to another system on the same network.

To use Looking Glass from a remote display on another system:

1. Log in to the system on which the display is located.

2. Ensure that Looking Glass (and other X applications) running on the host system can write to your display, by entering the command:

    ```
    xhost +<lghost>
    ```

    where `<lghost>` is the name of the system running Looking Glass. This will allow all users, including yourself, to open windows on your display.

3. Remotely log in to the system running Looking Glass.

4. Set the environment variable DISPLAY to point to the system on which the display is located:

If you are using the C shell, enter:

setenv DISPLAY *<machinename>*:**0**

If you are using the Bourne shell, enter:

DISPLAY=<machinename>:**0; export DISPLAY**

where *<machinename>* is the name of the workstation or X terminal from which you want to use Looking Glass.

5. Start Looking Glass by entering:

lg -fn *<font>* **-fb** *<boldfont>* **&**

or

lg -frame -fn *<font>* **-fb** *<boldfont>* **&**

where *<font>* is the name of a font to be used when displaying normal text and *<boldfont>* is the name of a font to be used when displaying bold text.

The fonts you use with Looking Glass must be present on the system running the window system server (*<machinename>*). You cannot invoke Looking Glass as you would normally, because its default fonts were installed on *lghost* (as part of the Looking Glass installation process) but not on *<machinename>*.

To avoid the need to specify the font names on the Looking Glass command line, you can:

• Install the Looking Glass fonts on the system on which your display is located.

or

• Specify alternate Looking Glass fonts in your window system resources file.

For more information about using alternate fonts with Looking Glass, refer to "Choosing alternate fonts" in Part III, "General topics."

Using X terminals

This section contains information for using Looking Glass with "generic" X terminals, as well as those provided by specific X terminal vendors.

Generic X terminals

Looking Glass may be used with X terminals supplied by various vendors as long as they have sufficient memory to run large X applications like Looking Glass that make extensive use of bitmapped graphics; generally 2

MB or more of server memory are required. The X terminal should be installed and configured as described in the vendor's documentation.

If you can successfully connect to the system on which Looking Glass is installed and run generic X applications, then to run Looking Glass you need only install either the Looking Glass default fonts for use by the X terminal, or use alternate fonts when running Looking Glass.

If you cannot or have not configured your X terminal to download its fonts from a system serving as a font server, then you must specify alternate fonts when invoking Looking Glass:

1. Start Looking Glass by entering:

    lg -fn *<font>* **-fb** *<boldfont>* **&**

    or

    lg -frame -fn *<font>* **-fb** *<boldfont>* **&**

    where *<font>* is the name of a font to be used when displaying normal text and *<boldfont>* is the name of a font to be used when displaying bold text.

The fonts you use with Looking Glass must be present on the X terminal.

For more information about using alternate fonts with Looking Glass, refer to "Choosing alternate fonts" in Part III, "General topics."

NCD X terminals

This section provides specific information for using Looking Glass with NCD X terminals supplied by Network Computing Devices, Inc. The NCD X terminals should be installed and configured as described in the manual that was shipped with the terminals.

If you have not configured the NCD X terminal to download its fonts from a system serving as a font server, then you must specify alternate fonts when invoking Looking Glass:

1. Start Looking Glass by entering:

    lg -fn *<font>* **-fb** *<boldfont>* **&**

    or

    lg -frame -fn *<font>* **-fb** *<boldfont>* **&**

    where *<font>* is the name of a font to be used when displaying normal text and *<boldfont>* is the name of a font to be used when displaying bold text.

The fonts you use with Looking Glass must be present on the NCD X terminals.

For more information about using alternate fonts with Looking Glass please refer to "Choosing alternate fonts" in Part III, "General topics."

Visual Technology X terminals

This section provides specific information for using Looking Glass with the Visual X Display Station and other models of X terminals supplied by Visual Technology, Inc. The Visual X Display Station should be installed and configured as described in the Visual Technology documentation.

If you can successfully connect to the system on which Looking Glass is installed and run generic X applications, then to run Looking Glass you need only install either the Looking Glass default fonts for use by the Visual X Display Station, or use alternate fonts when running Looking Glass.

If you have not configured the Visual X Display Station to download its fonts from a system serving as a font server, then you must specify alternate fonts when invoking Looking Glass:

1. Start Looking Glass by entering:

    `lg -fn <font> -fb <boldfont> &`

    or

    `lg -frame -fn <font> -fb <boldfont> &`

    where `<font>` is the name of a font to be used when displaying normal text and `<boldfont>` is the name of a font to be used when displaying bold text.

The fonts you use with Looking Glass must be present on the Visual X Display Station.

For more information about using alternate fonts with Looking Glass refer to "Choosing alternate fonts" in Part III, "General topics."

Part IV: Error diagnostics

This section contains diagnostic information on the most common installation-related Looking Glass errors, as well as instructions for reporting software problems.

Error diagnostics

This section lists some common installation-related error messages and provides explanations of how to resolve them.

Improper installation

`lg: Permission denied.`

> A user who receives this message doesn't have permission to execute the `lg` program. This problem usually occurs when the person performing the installation doesn't set the `umask` to zero before unloading the Looking Glass release files (refer to step 2 of "Load the Looking Glass files" in Part II, "Installation procedure" for instructions). There are two solutions for this problem: remove and reinstall the Looking Glass files, or change the permissions on all Looking Glass files. We recommend that you simply remove and reinstall Looking Glass unless you are confident of your ability to change the permissions on all Looking Glass files. Refer to "Uninstalling Looking Glass" in Part III, "General topics" for instructions on removing Looking Glass files. Then, follow the installation instructions again, this time making sure to set the `umask` to zero before loading the Looking Glass files.

`lg: Command not found.`

> This message is returned when Looking Glass isn't found in the user's search path. If the software was just installed and the problem occurred under the C shell (`csh`), you must do a `rehash` to have the shell update its file lists.

> If you performed a custom installation, make sure that the Looking Glass executable directory is in the command search path (`$path` or `$PATH` environment variable).

`Cannot initialize File System Server (vsxloc = 455, errno = 13)`

> This message is returned when Looking Glass is unable to find the `visix.apps` file, which informs it where the executable and data directories are located. If you performed a standard installation, then the `visix.apps` file should be in `/etc` and the `VISIX_APPS` environment variable should not be set.

> If you performed a custom installation, make sure the `VISIX_APPS` variable is set to the full, absolute pathname of the `visix.apps` file.

> If the `visix.apps` file exists and the `VISIX_APPS` variable is set correctly, check to see that everyone has read access to the file.

`Can't run `.../fss', errno = 2"`

`Cannot initialize File System Server (vsxloc = 2053, errno = 10)`

> These messages are returned when the File System Server (`fss`) executable is not present. The File System Server executable directory (`<InstallDir>/visix/fss`) may have been removed or renamed, or the executable may have been removed or renamed. If this is the case, you may need to reinstall Looking Glass.

If you performed a custom installation, make sure that the `VISIX_APPS` environment variable is set to the full, absolute pathname of the `visix.apps` file.

```
Cannot initialize File System Server (vsxloc = 2053, errno = 0)
```

This message is returned when the File System Server (`fss`) program cannot read one of its data files (e.g., the Looking Glass file typing rulebase, `LG_rulebase`. Check the permissions on all the files in the Looking Glass data directory; they should have, at minimum, read access for everyone.

The file `/tmp/fsslog` will also contain some diagnostic information from `fss`.

Window system problems

```
Cannot initialize Dialog Manager (vsxloc = 8053, errno = 2)
```

The currently running window system is incompatible with this version of Looking Glass.

```
Error opening display.
```

```
Cannot initialize Dialog Manager (vsxerr = 2002, vsxloc = 8053,
errno = 2)
```

If you are using the X Window System, you must set your `DISPLAY` environment variable to the name of your display. X Window System applications use the `DISPLAY` environment variable to determine the name of the physical display on which windows are to be displayed. If you don't know the name of the workstation or X terminal on which you will be using Looking Glass, see your system administrator.

If you are using the C Shell, enter:

setenv DISPLAY *<machinename>*:**0**

If you are using the Bourne Shell, enter:

DISPLAY= *<machinename>*:**0**

export DISPLAY

where *<machinename>* is the name of the workstation or X terminal from which you want to use Looking Glass.

You may also need to enable access to your display by entering:

xhost +

This will allow all users, including yourself, to open windows on your display.

License Server initialization problems

`vls data directory not found`

> This message usually means that the `VISIX_APPS` environment variable is not set to the full, absolute pathname of the proper `visix.apps` file.

`Cannot read vls data file '.../vls.data'`

> This message is returned when the user trying to start the License Server doesn't have read permission for `vls.data`, the License Server data file. Give yourself ownership of `vls.data` or change its protection mode so that any Looking Glass user has read permission.

`Network broadcast not received...exiting`

> The machine running the License Server does not have network broadcasting enabled. In general, broadcasting is enabled in the file `/etc/rc.local` or the TCP/IP parameters file, using the `ifconfig` utility (refer to your network installation manual or see your system administrator for assistance).

`License Server not responding`

> Looking Glass cannot connect to the License Server to register itself. Make sure that the License Server is running and that there is a `vls.hosts` file with the host name of the machine running the License Server in the Looking Glass data directory.

> If you run both Looking Glass and the License Server on the same host, you do not need the `vls.hosts` file. However, if you do have a `vls.hosts` file, *the name of the host machine must be in the file.*

Part V: Looking Glass files and directories

Installation directories

> The following directories are referenced during the Looking Glass installation process:

`<InstallDir>/visix/install`

> The Looking Glass installation directory (by convention).

`/etc`   The default directory for the Visix applications file (`visix.apps`).

`/usr/bin`   The default Looking Glass executable directory.

Executable files

The following files are installed into the executable directory (`/usr/bin`) during the Looking Glass installation process:

assigndef
Executable file used during the installation process to create the applications file (`/etc/visix.apps`). Invoke `assigndef` without arguments to list the current application directories used by Looking Glass.

lg
The Looking Glass master executable file.

lg_pause
This program displays the message "[Press Return to continue]" and waits for the Return key to be pressed. It is used to allow the output from terminal-oriented commands to be viewed before the terminal window is closed.

vice
The Visix Icon Editor executable file.

vls
The Visix License Server.

vls_add
Visix License Server license key addition utility.

vls_del
Visix License Server license key deletion utility.

vls_where
A utility to locate the Visix License Server on the network.

build_db
Executable file invoked by the **db_build** script to build the `.lgdb` files in each directory.

db_build
The Looking Glass directory database build script.

db_remove
The Looking Glass directory database remove script.

Data files

The following files are installed into the data directory (`<InstallDir>/visix/lg/default`) during the Looking Glass installation process:

LG_rulebase

Looking Glass file typing rulebase. This file is loaded by the File System Server. It contains a compiled set of rules used to accurately determine the type of files.

colors
This file contains color definitions used by the Looking Glass Color Preference dialog.

fss
The Looking Glass File System Server.

`icons.sym`	Icon symbol table. This file contains a hashed index to the icons stored in the `lg_icons.vr` file.
`lang_specs`	This file contains localized international settings used by Looking Glass.
`lang_time`	This file contains localization information for displaying date and time data.
`lg_icons.vr`	A Looking Glass resource file. This file contains binary descriptions of the icons displayed by Looking Glass.
`system.vr`	A Looking Glass resource file. This file contains binary descriptions of dialogs displayed by Looking Glass.
`vice.vr`	A Looking Glass resource file. This file contains binary descriptions of dialogs displayed by the Visix Icon Editor.
`vuistrs.vr`	A Looking Glass resource file. This file contains descriptions of general purpose messages displayed by Looking Glass.
`lg.hlp`	The compiled Looking Glass help file.
`vice.hlp`	The compiled Icon Editor help file.

File typing files

The following files are installed into the FTC directory (`<InstallDir>/visix/default/lg/lg_ftc`) during the Looking Glass installation process:

`Makefile`	Commands to rebuild the file typing rulebase from source code.
`class.ftc`	File typing source code describing the characteristics of general classes of UNIX files (such as the class of all text files). This file should not be modified; any local changes should be made to `class.loc.ftc` instead.
`class.loc.ftc`	Local file typing source code describing the characteristics of general classes of UNIX files.
`data.ftc`	File typing source code describing the characteristics and icon IDs of UNIX data files. This file should not be modified; any local changes should be made to `data.loc.ftc` instead.
`data.loc.ftc`	Local file typing source code describing the characteristics and icon IDs of UNIX data files.
`dev.ftc`	File typing source code describing the characteristics and icon IDs of UNIX device files. This file should not be modified; any local changes should be made to `dev.loc.ftc` instead.

dev.loc.ftc	Local file typing source code describing the characteristics and icon IDs of UNIX device files.
ftc	The File Typing Compiler executable file.
ftdefs.h	Visix-supplied "include" file for the rulebase source code files. This file should not be modified; any local changes should be made to **ftdefs.loc.h** instead.
ftdefs.loc.h	Local include file for the rulebase source code files.
gen.ftc	File typing source code providing broad file type definitions. This file should not be modified; any local changes should be made to **gen.loc.ftc** instead.
gen.loc.ftc	Local file typing source code providing broad file type definitions.
prog.ftc	File typing source code describing the characteristics and icon IDs of UNIX applications and system utilities. This file should not be modified; any local changes should be made to **prog.loc.ftc** instead.
prog.loc.ftc	Local file typing source code describing the characteristics and icon IDs of UNIX applications and system utilities.
records.sym	This file relates the file type names defined in the rulebase source code to the file type IDs stored in the Looking Glass distributed directory database. It should not be edited or deleted.

Visix applications file

/etc/visix.apps	The default applications file. This file contains references to the executable and data directories used to install Looking Glass and other Visix applications. It is a binary file and should not be edited; use **assigndef** (with no arguments) to list its contents.

License Server data files

The following files are accessed by the Visix License Server.

vls.data	This file contains the license numbers for Looking Glass and other Visix applications; it is created by **vls_add** in the data directory (*<InstallDir>***/visix/vls/default**). Use **vls -1** to list its contents.
vls.hosts	This file contains the hostnames of all the machines on your network that should be checked when searching for the Visix License Server.
/tmp/vlslog	This is a logfile created by the Visix License Server. Messages appear in this file if the Visix License Server is forced to terminate abnormally.

File System Server data files

The following files and directories are created by the File System Server, either during the installation process (when invoked by the **db_build** script) or while Looking Glass is running:

/tmp/fsslog   This is a logfile created by the File System Server. Messages appear in this file if the File System Server is forced to terminate abnormally.

lg_rd_only   This directory hierarchy stores file typing information for files stored in read-only file systems; it is created in the data directory (<*InstallDir*>/**visix/lg/default**).

.lgdb   This file stores file typing information for the items in a directory; it is created in each directory at Looking Glass installation time using the **db_build** script; it will be updated by the File System Server as needed.

User configuration files

The following files and directories are created in a user's login directory by Looking Glass the first time it is invoked by that user:

$HOME/lg   This directory holds per-user Looking Glass settings and preferences.

$HOME/lg/lg2_hosts

This directory holds the user's directory configuration information for each visited directory on the network.

$HOME/lg/lg2_trees

This directory holds the user's Tree View configuration (which directories are open and in what mode to display them).

$HOME/lg/lg2_cmd_hist

This file stores the user's command history list (commands run from the Command Line dialog).

$HOME/lg/lg2_colors   This file stores the user's color preferences.

$HOME/lg/lg2_config

This file stores the user's Looking Glass workspace configuration (the size and position of all windows, as well as the contents of the Desktop Panel) at the time you quit Looking Glass.

$HOME/lg/lg2_dir_hist

This file stores the user's directory history list (recently visited directories).

`$HOME/lg/lg2_help_hist`

> This file stores the user's help system history list (recently visited help topics).

`$HOME/lg/lg2_layouts`

> This directory stores the user's saved workspace layouts.

`$HOME/lg/lg2_pat_hist`

> This file stores the user's pattern selection history list.

`$HOME/lg/lg2_pref`

> This file stores the user's Looking Glass preferences (other than color preferences).

`$HOME/lg/lg2_profile`

> This file stores any environment variables saved from within Looking Glass.

TIPS ORDERING PROCEDURES

TO ORDER

1. An order can be placed with the TIPS group in two ways:
   a) MAIL ORDER – Use the order form on the opposite page and fill in all requested information. Be sure to include shipping charges and local sales tax. If applicable, write in your tax exempt number in the space provided on the order form.

   Send your order form with payment to: Data General Corporation
   ATTN: Educational Services/TIPS G155
   4400 Computer Drive
   Westboro, MA 01581–9973

   b) TELEPHONE – Call TIPS at (508) 870–1600 for all orders that will be charged by credit card or paid for by purchase orders over $50.00. Operators are available from 8:30 AM to 5:00 PM EST.

METHOD OF PAYMENT

2. As a customer, you have several payment options:
   a) Purchase Order – Minimum of $50. If ordering by mail, a hard copy of the purchase order must accompany order.
   b) Check or Money Order – Make payable to Data General Corporation.
   c) Credit Card – A minimum order of $20 is required for Mastercard or Visa orders.

SHIPPING

3. To determine the charge for UPS shipping and handling, check the total quantity of units in your order and refer to the following chart:

Total Quantity	Shipping & Handling Charge
1–4 Units	$5.00
5–10 Units	$8.00
11–40 Units	$10.00
41–200 Units	$30.00
Over 200 Units	$100.00

If overnight or second day shipment is desired, this information should be indicated on the order form. A separate charge will be determined at time of shipment and added to your bill.

VOLUME DISCOUNTS

4. The TIPS discount schedule is based upon the total value of the order.

Order Amount	Discount
$1–$149.99	0%
$150–$499.99	10%
Over $500	20%

TERMS AND CONDITIONS

5. Read the TIPS terms and conditions on the reverse side of the order form carefully. These must be adhered to at all times.

DELIVERY

6. Allow at least two weeks for delivery.

RETURNS

7. Items ordered through the TIPS catalog may not be returned for credit.
8. Order discrepancies must be reported within 15 days of shipment date. Contact your TIPS Administrator at (508) 870–1600 to notify the TIPS department of any problems.

INTERNATIONAL ORDERS

9. Customers outside of the United States must obtain documentation from their local Data General Subsidiary or Representative. Any TIPS orders received by Data General U.S. Headquarters will be forwarded to the appropriate DG Subsidiary or Representative for processing.

TIPS ORDER FORM

Mail To: Data General Corporation
               Attn: Educational Services/TIPS G155
               4400 Computer Drive
               Westboro, MA 01581 - 9973

BILL TO:	SHIP TO: (No P.O. Boxes - Complete Only If Different Address)
COMPANY NAME_____	COMPANY NAME_____
ATTN:_____	ATTN:_____
ADDRESS_____	ADDRESS (NO PO BOXES)_____
CITY_____	CITY_____
STATE _____ ZIP _____	STATE _____ ZIP _____

Priority Code _____ (See label on back of catalog)

_____   _____   _____   _____
Authorized Signature of Buyer   Title   Date   Phone (Area Code)   Ext.
(Agrees to terms & conditions on reverse side)

ORDER #	QTY	DESCRIPTION	UNIT PRICE	TOTAL PRICE

A

☐ UPS   ADD
   1-4 Items $ 5.00
   5-10 Items $ 8.00
   11-40 Items $ 10.00
   41-200 Items $ 30.00
   200+ Items $100.00

Check for faster delivery
Additional charge to be determined at time of shipment and added to your bill.
☐ UPS Blue Label (2 day shipping)
☐ Red Label (overnight shipping)

B VOLUME DISCOUNTS

Order Amount	Save
$0 – $149.99	0%
$150 – $499.99	10%
Over $500.00	20%

Tax Exempt #
or Sales Tax
(if applicable)

_____

ORDER TOTAL	
Less Discount See B	–
SUB TOTAL	
Your local* sales tax	+
Shipping and handling – See A	+
TOTAL – See C	

C PAYMENT METHOD

☐ Purchase Order Attached ($50 minimum)
   P.O. number is_____. (Include hardcopy P.O.)
☐ Check or Money Order Enclosed
☐ Visa   ☐ MasterCard   ($20 minimum on credit cards)

Account Number   Expiration Date

_____
Authorized Signature
(Credit card orders without signature and expiration date cannot be processed.)

THANK YOU FOR YOUR ORDER

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
PLEASE ALLOW 2 WEEKS FOR DELIVERY.
NO REFUNDS NO RETURNS.

* Data General is required by law to collect applicable sales or use tax on all purchases shipped to states where DG maintains a place of business, which covers all 50 states. Please include your local taxes when determining the total value of your order. If you are uncertain about the correct tax amount, please call 508–870–1600.

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Looking Glass
Installation Guide

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