MarkVision™

for UNIX Networks 3.1

and Intranet Servers 1.1

For use with:

AIX / 6000 Systems
HP-UX Systems
NCR UNIX Systems
SCO UNIX Systems
Silicon Graphics IRIX Systems
SunOS Systems
Sun Solaris Systems
Sun Solaris x86 Systems
UnixWare Systems

Third Edition (May 1997)

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Contents

Preface

This book tells you how to install, set up, and troubleshoot *MarkVision for UNIX Networks* and *MarkVision for UNIX Intranet Servers*. It contains:

- Introductory information including versions of UNIX operating systems and types of network adapters supported by MarkVision
- Information about software contained in the MarkVision packages, including the MarkVision Server, MarkVision Client, MarkVision Intranet Client, and BOOTP Server
- Step-by-step instructions for installing MarkVision
- An overview of some of the features in MarkVision
- Step-by-step configuration instructions
- Troubleshooting sections that include solutions to common networking problems and explanations of error messages

This book is written for UNIX system administrators. To complete these tasks successfully, you should have a working knowledge of your network's hardware and software, as well as your UNIX system.

Terms used in this book

In this book, the term:

- *internal network adapter (INA)* refers to the card installed inside the printer that attaches the printer to the network.
- *external network adapter (ENA)* refers to a hardware device external to the printer that attaches the printer to the network.
- *MarkVision UNIX Client* refers to a set of utilities that runs on a UNIX workstation, and works with the MarkVision Server to let you monitor and control printers on the network.
- *MarkVision Intranet Client* refers to a set of utilities that works with the MarkVision Server and a web server to run a MarkVision client as a Java applet through a web browser.
- *MarkVision Client* refers to either the MarkVision UNIX Client or the MarkVision Intranet Client.
- *MarkVision Server* refers to a server that collects data from network-attached printers and provides information to MarkVision clients.
- *Web server* refers to an HTTP 1.0 compliant server, such as Netscape Enterprise Server 2.0, necessary to use *MarkVision for UNIX Intranet Servers*.

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Contacting Lexmark

Lexmark printer drivers, technical data and updates are available 24 hours a day, 7 days a week at the following addresses:

- Internet server: *ftp.lexmark.com*
  (driver files are located at `/pub/driver`)
- World Wide Web (WWW): *http://www.lexmark.com*
- CompuServe: *go lexmark*

Technical support is available at the website *www.lexmark.com*. It is also available by phone or fax. Consult the support.html file located in /usr/markvision/docs for phone and fax information.

Getting started with MarkVision

Chapter 1

What's new to this release

- MarkVision™ for UNIX Intranet Servers
- Optra™ S, Optra SC and MarkNet™ S support
- Common Desktop Environment (CDE) Integration
- Network Printer Discovery
- Improved status reporting
- Printer inventory

What's on the CD-ROM

The packages you received with this book include:

- MarkVision Server
- MarkVision UNIX Client
- MarkVision Intranet Client
- MarkVision fonts
- BOOTP Server (Sun only)

Overview

MarkVision is designed to make network printing and printer management tasks easy. You can use MarkVision to perform a variety of tasks including:

- monitoring many printers at once
- alerting you to printer error conditions or only to certain error conditions
- viewing and changing printer operator panels over the network
- viewing an intelligent printer graphic that reflects the current status of your printer and its installed options
- managing fonts and files stored on printer disk and memory
- copying printer settings from one printer to another
- creating and managing UNIX print queues
- configuring network adapters
- collecting printer job statistics
- collecting inventory information for printers on the network
- finding printers on your network

MarkVision for UNIX Networks

MarkVision for UNIX Networks lets users monitor and control network printers from local UNIX workstations. The MarkVision Server collects data from the various network printers and distributes it to the MarkVision UNIX Client. This lets users monitor the network printers. Similarly, the MarkVision Server relays commands from the clients to the printers, letting the users control the network printers remotely.

Since adapter connections are limited, install only one MarkVision Server in each network domain or subnet. Install one MarkVision Server for every 50-100 printers to be monitored.

The MarkVision UNIX Client must be installed on each UNIX workstation from which a user wants to monitor or control network printers.

UNIX versions supported

MarkVision supports the UNIX operating systems and versions listed in the table below. Make sure you're running on one of these systems before you install MarkVision.

Operating System	Hardware	UNIX Version	Go to Page
AIX 3.2.5	IBM RISC System / 6000	AIX	20
AIX 4.1.x, 4.2.x			
HP-UX 9.01, 9.05	Hewlett-Packard 9000 / 700 and 9000 / 800	System V	22
HP-UX 10.01, 10.20			26
NCR SVR4 (MP RAS)	Intel	System V	30
SCO 3.2v4.2 and SCO V	Intel	System V	32
Silicon Graphics IRIX 5.3, 6.2	Silicon Graphics (MIPS)	System V	35
Sun Solaris x86 2.4, 2.5	Intel	System V	38
Sun Solaris SPARC 2.4, 2.5	Sun SPARC and UltraSPARC	System V	41
SunOS 4.1.3, 4.1.4		BSD	44
UnixWare 2.1.x	Intel	System V	47

Note: For operating systems without a CD-ROM drive, see "Workstations without a CD-ROM" on page 51.

MarkVision for UNIX Intranet Servers

MarkVision for UNIX Intranet Servers lets users monitor and control network printers from any workstation on an intranet. There are some special conveniences associated with *MarkVision for UNIX Intranet Servers*:

- A supported web browser is all that is needed to run *MarkVision for UNIX Intranet Servers*. No special software installations are required for user workstations.
- The MarkVision Intranet Client is platform independent. Users can run the MarkVision Intranet Client from any operating system, as long as they are using a supported web browser. See "Supported web browsers" on page 6 for a list of supported browsers.

The MarkVision Server collects data from the various network printers and distributes it to the web server. The web server makes the data available to the web browsers on your intranet. This lets users monitor network printers. Similarly, commands from the user are relayed through the web server and the MarkVision Server to the network printers, letting the user control network printers.

Since adapter connections are limited, install only one MarkVision Server in each network domain or subnet. Install one MarkVision Server for every 50-100 printers to be monitored.

The MarkVision Intranet Client package must be installed on a UNIX workstation with a web server. Both packages can be installed on the same workstation, although this is not necessary. The user workstation must be running a web browser. The web server must be configured to let users run MarkVision over your intranet.

See "MarkVision packages" on page 8 for details on installing MarkVision Server and MarkVision Intranet Client.

See the following tables for supported web servers and web browsers.

Supported web servers

UNIX web host system	Supported web server
AIX 4.1.x, 4.2.x	Netscape Enterprise 2.0 Netscape FastTrack 2.0 Netscape Communication Server Other HTTP 1.0 compliant servers (such as Apache) that support symbolic links
HP-UX 10.01, 10.20	
Silicon Graphics IRIX 6.2	
SCO V	
Sun Solaris 2.5	

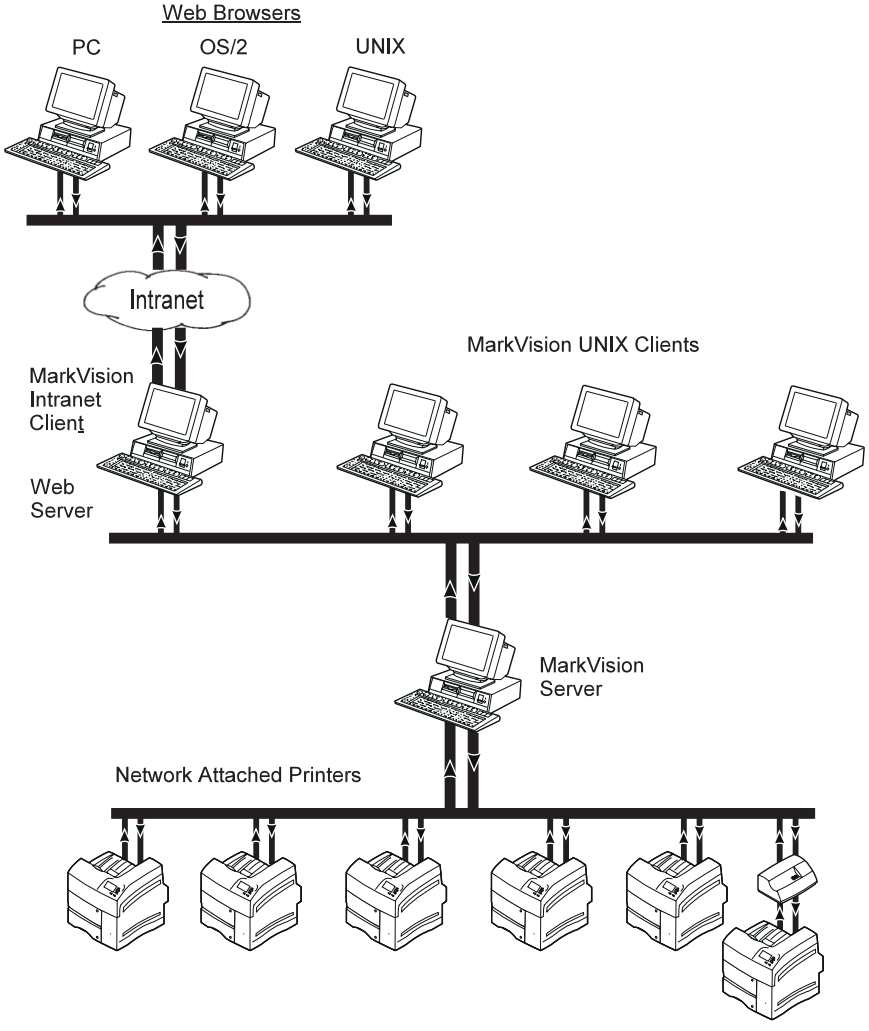
Supported web browsers

Operating system	Supported web browser
UNIX	Netscape Navigator 3.01 Sun HotJava 1.0
Windows 95/NT	Netscape Navigator 3.01 Internet Explorer 3.01 Sun HotJava 1.0
OS/2	Netscape Navigator 2.02

How MarkVision works

The following diagram shows how the MarkVision Server works with MarkVision UNIX clients and MarkVision Intranet clients to let communication between clients and networked printers.

The lines represent the flow of MarkVision data.



MarkVision packages

There are five installable packages associated with *MarkVision for UNIX Networks* and *MarkVision for UNIX Intranet Servers*. The following sections describe each package as well as how and when to install them.

MarkVision Server

The MarkVision Server collects data from network-attached printers and provides information to MarkVision clients. Your must install *at least one* MarkVision Server to use MarkVision.

Where to install it

Network printer adapters have a limited number of connections. Each MarkVision Server reserves one of these connections on each adapter it monitors.

Since adapter connections are limited, install only one MarkVision Server in each network domain or subnet. Install one MarkVision Server for every 50-100 printers to be monitored. Make a note of the workstation IP address or hostname that you install the MarkVision Server on. You'll need it to install the MarkVision Client.

If you want, you may install any of the other packages on the same workstation that is running the MarkVision Server software.

You can mix UNIX clients with any MarkVision UNIX server operating system type.

MarkVision Intranet Client

MarkVision for UNIX Intranet Servers works with the MarkVision Server and a web server to run MarkVision as a Java applet through a web browser.

Once the MarkVision Intranet Client is installed on the workstation with an HTTP 1.0 compliant web server, such as Netscape Enterprise Server 2.0, users can run MarkVision as a Java applet without installing any additional software. See “Supported web servers”and “Supported web browsers” on page 6 for more information.

Where to install it

The MarkVision Intranet Client must be installed on a workstation with web server. You do not need to install any software on client workstations. The web server must be configured to let users run MarkVision over your intranet.

If you choose, you can install the MarkVision Intranet Client on the same workstation with the MarkVision Server and other MarkVision packages, although this is not necessary.

During installation, you’ll be prompted for the IP address or hostname of the MarkVision Server. Make sure you enter the address or hostname of the workstation on which you installed the MarkVision Server software.

See “Restricting web access to MarkVision” on page 72 for more information.

MarkVision UNIX Client

The MarkVision UNIX Client works with the MarkVision Server to let you access MarkVision features on a UNIX workstation.

You can view the MarkVision UNIX Client using the X Window System interface, or using the character based interface. The X client contains more features than the character based client.

The MarkVision UNIX Client is actually a collection of utilities you can use independently on the command line.

For a list of commands included in the MarkVision UNIX Client package, see Appendix D: Using MarkVision on the command line on page 113. If you use the MarkVision main menu or lexprt command to access MarkVision, you probably won't need this information.

For more information about the individual commands, refer to the man pages. For example, type the following on the command line, then press Enter:

```
man updlexprt
```

Where to install it

You may install the MarkVision UNIX Client:

- locally on each client workstation
- centrally so that client workstations can NFS mount the MarkVision UNIX Client for their platform. For more information, see "NFS mounting the MarkVision UNIX Client" on page 49.

If you choose, you can install the MarkVision UNIX Client on the same workstation with the MarkVision Server and other packages, although this is not necessary.

Note: If your network is set up with a dedicated print server on it, you *must* install the MarkVision UNIX Client on that system.

During installation of the MarkVision UNIX Client, you'll be prompted for the MarkVision Server IP address or hostname. Make sure you enter the address or hostname of the workstation on which you installed the MarkVision Server software.

See the README file in /usr/markvision/docs for more information about the MarkVision UNIX Client.

MarkVision font package

The MarkVision font package contains all the fonts you need to run the MarkVision UNIX Client. The fonts are packaged separately from the MarkVision UNIX Client for easy installation in various X server configurations.

Where to install it

The MarkVision fonts are used by your X server software to display MarkVision screens correctly. You must install the fonts on the same workstation as your X server. If you are using a network font server, then the package must be installed on the workstation with the font server.

If you are using an X server on a system other than UNIX (for example Windows or OS/2), install the font package on a convenient UNIX workstation and copy the fonts to your system. Check your X server documentation for instructions about adding fonts. See the README.fonts file in /usr/markvision/docs for more information.

BOOTP Server (Sun only)

The BOOTstrap Protocol (BOOTP) server provides information such as the IP address, netmask, and gateway to the network adapter each time the adapter is turned on. Most UNIX systems use their own BOOTP server. If you are using a Sun system, you may want to install the BOOTP server package provided with MarkVision.

BOOTP is optional, but you may choose to install this package to use BOOTP to set the IP address, netmask, and gateway.

If used, a copy of the BOOTP server package *must* be installed and running on *one* workstation in each IP network domain or subnet that has an adapter. You can install this package on the same workstation with the MarkVision Server.

For more information about using BOOTP, see Appendix A: Using BOOTP on page 103.

MarkVision extras

The MarkVision installation CD-ROM may contain snap-ins for third party utilities. Refer to the /extras directory on your CD-ROM to locate these snap-ins.

Network adapters supported

MarkVision is designed to work with Lexmark's internal network adapters (INAs) and external network adapters (ENAs). The options available with MarkVision may vary depending on the kind of printer adapter and its firmware level in your printer.

The options available also depend on the configuration of the printer you are using. For example, to take full advantage of MarkVision, the printer must have bidirectional capabilities. To use the MarkVision remote operator panel, the printer must be enabled for Network Printing Alliance (NPA) Protocol.

MarkVision also works with most Hewlett-Packard JetDirect adapters. However, certain functions may not be available.

See Appendix C: Verifying adapter configuration on page 109 for more information.

DHCP

You can set the IP address, netmask, gateway, hostname, and WINS Server using a Dynamic Host Configuration Protocol (DHCP) server. The DHCP server or a forwarding agent must be attached to the same IP subnet as the adapter. Make sure the DHCP server has a scope defined for the subnet.

See Appendix B: Using DHCP on page 107.

Integrating MarkVision into the CDE

MarkVision can be integrated into the Common Desktop Environment (CDE). Integrating MarkVision into the CDE installs CDE icons, actions, and online help.

What to do next

Now that you have an overall understanding of how MarkVision works, it's time to install and enjoy the ease of network printer management with MarkVision.

Installing MarkVision

Chapter 2

Before you install

This chapter explains how to install *MarkVision for UNIX Networks* and *MarkVision for Intranet Servers*.

Do the following before you install MarkVision:

1. **Read Chapter 1: "Getting started with MarkVision" beginning on page 1 for an overview of MarkVision.**
2. **Make sure you're logged on with root user authority.**
3. **Make sure you have enough disk space available for a complete installation. See the "Getting Started" sheet included with this product.**

4 Set up a MarkVision administrative user group.

During the installation of the MarkVision Client you will be asked if you want to change the administrative user group for MarkVision. The default user group is either bin (System V and SunOS) or printq (AIX).

If you have an administrative group on your system, you might want to use that group as the MarkVision administrative group. Non-administrative users can still use many MarkVision features. They just cannot change printer and network adapter settings.

5 Decide where to install the MarkVision Server.

Install the MarkVision Server on *only one* workstation in each network domain or subnet. When installing, make a note of the workstation IP address or hostname. You'll need it to install MarkVision clients.

If you want, you may install any of the other packages on the same workstation that is running the MarkVision Server, although this is not necessary.

Installing MarkVision

Make sure you're running a version of UNIX listed in the table below, then go to the page number listed for instructions.

Operating System	Hardware	UNIX Version	Go to Page
AIX 3.2.5	IBM RISC System/6000	AIX	20
AIX 4.1.x, 4.2.x			
HP-UX 9.01, 9.05	Hewlett-Packard 9000/700 and 9000/800	System V	22
HP-UX 10.01, 10.20			26
NCR SVR4 (MP RAS)	Intel	System V	30
SCO 3.2v4.2 and SCO V	Intel	System V	32
Silicon Graphics IRIX 5.3, 6.2	Silicon Graphics (MIPS)	System V	35
Sun Solaris x86 2.4, 2.5	Intel	System V	38
Sun Solaris SPARC 2.4, 2.5	Sun SPARC and UltraSPARC	System V	41
SunOS 4.1.3, 4.1.4		BSD	44
UnixWare 2.1.x	Intel	System V	47

Note: For workstations without a CD-ROM drive, see "Workstations without a CD-ROM" on page 51 before installing.

Upgrading from a previous version

If you have a previous version of MarkVision, you may upgrade. Before removing your existing version of MarkVision, make sure the MarkVision Server is not running on that workstation. See “Stopping the MarkVision Server” on page 19.

- If you are upgrading from the *Network Printer Utility for TCP/IP*, simply install MarkVision. You don’t have to delete any files or reconfigure your system.
- If you are upgrading from the *MarkVision Utilities for TCP/IP Networks*, remove the old package from the system. You do not need to remove print queues or queue devices. Simply use the pkgrm command (System V) or equivalent to remove the packages. You must upgrade both the MarkVision Client and the MarkVision Server at the same time. See “Removing MarkVision packages” on page 55.
- If you are upgrading from a demo product, after installing your licensed version you must re-enter the printers that you want to monitor. You can use the Network Printer Discovery tool to add many printers at once. For more information about adding printers, see “With the Network Printer Discovery tool” on page 77.

To save your printer settings:

a **Before upgrading, type the following on the command line:**

```
lslexprt -L > /tmp/demo_printers
```

b **After upgrading, type the following on the command line:**

```
markvision -h ‘cat /tmp/demo_printers‘
```

See the Readme files located in /usr/markvision/docs for more information.

Stopping the MarkVision Server

a **Check to see if the MarkVision Server is running.** To check, type the following on the command line:

```
ps -ef | grep markvisiond
```

If you get a response, the MarkVision Server is running. The process ID is usually the number in the second column.

b **Kill the MarkVision Server process.** For example, if the markvisiond process ID is 25367, type the following on the command line as root:

```
kill 25367
```

See your system documentation for more information.

AIX 3.2.5, 4.1.x, 4.2.x

MarkVision installs with printq group ownership. Any user who is a member of the printq group has administrator access to all of the functions in MarkVision. Users who are not in the printq group may use MarkVision to view and monitor printers but will not have access to printer administrative functions.

1. **Read "Installing MarkVision" on page 15.**
2. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/cd0, the command is:

   ```
   mount -o ro -v cdrfs /dev/cd0 /cdrom
   ```

   Note: Make sure that the /cdrom directory exists.
3. **Type the following on the command line, then press Enter:**

   ```
   smit install_latest
   ```
4. **When prompted to enter the input device/directory for software, type one of the following:**

   ```
   /cdrom/packages/aix3.2.5/markvision.pkg
   ```

   ```
   /cdrom/packages/aix4.1/markvision.pkg
   ```
5. **If you want, select which packages to install.** All packages are installed by default.
   a. **On the *SOFTWARE to install* option, choose *List*.**
   b. **Select the packages you want to install.**
   c. **Choose *Do*.**

6 **Specify any other install options, such as COMMIT.**

CAUTION: On AIX 3.2.5, *YES* is the default setting for COMMIT. If the COMMIT software option is set to *YES*, the package cannot be removed from the system automatically. Therefore, *NO* is the recommended setting.

Note: ***SAVE*** replaced files must be set to ***YES*** if COMMIT software is set to ***NO***.

7 **Choose *Do* to begin installing MarkVision.** You will receive a message when the installation is finished.

8 **Type the following on the command line and answer any questions that appear:**

```
/usr/lpp/markvision/setup.aix
```

This file creates required symbolic links and prompts you for information you must provide after installation.

If you want other workstations to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

HP-UX 9.01, 9.05

The following instructions use the update command to install MarkVision on your workstation. The update command copies files into directories and sets the owner groups and permissions. It also establishes symbolic links to the MarkVision package.

1. **Read “Installing MarkVision” on page 15.**
2. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/dsk/c201d2s0, the command is:

   ```
   mount /dev/dsk/c20ld2s0 /cdrom -o ro -t cdfs
   ```

   Note: Make sure that the /cdrom directory exists.
3. **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.
4. **Type the following on the command line, then press Enter.** Make sure you are using a hpterm.

   ```
   /etc/update
   ```

   The main menu appears with the ***Change Source or Destination*** option highlighted.
5. **Press *Enter* to open the *Change Source or Destination* menu.** The ***From Tape Drive to Local System*** option is highlighted.

6 **Press Enter to open the *From Tape Drive to Local System* menu.** In this menu, you can use the Tab key to change fields.

7 **Use the Tab key to move to the *Source:* prompt.**

8 **Type the following to specify the source for the update package:**

```
/cdrom/PACKAGES/HPUX9/MARKVISION.PKG;1
```

9 **Press the F4 key to return to the main menu.**

10 **Use the arrow keys to move to the *Select/View Partitions and Filesets* option, then press Enter.**

11 **Choose *View Filesets*, then press F6.** There are two ways to select the packages you want to install.

- **To install the entire MarkVision package:**
  - a **Click the *MarkVision* bundle.**
  - b **On the *Actions* menu, click *Mark for Install*.** This marks all the MarkVision packages for installation.
  - c **Go to step 12.**
- **To install individual packages:**
  - a **Double-click the *MarkVision* bundle.** This displays the server and client packages.
  - b **Double-click each package bundle to view their contents.**
  - c **For each package that you want to install, click the package.**
  - d **On the *Actions* menu, click *Mark for Install*.** This puts a ***yes*** beside the packages you want to install.

12 **Press F4 to start the installation.** When a message appears asking you whether to load filesets, type ***y*** at the prompt.

13 **Follow the directions on the screen to check for errors in the log.**

If there isn't enough space to install, see "Installing MarkVision for HP-UX 9.01, 9.05 in an alternate directory" on page 25 for instructions on installing in alternate directory.

14 **Type the following on the command line and answer any questions that appear:**

```
/usr/local/lexmark/setup.hp
```

If you want other systems to NFS mount the UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

Installing MarkVision for HP-UX 9.01, 9.05 in an alternate directory

MarkVision installs in the directory /usr/local/lexmark. If there is not enough space in the filesystem, you can create a symbolic link to that directory and install in another directory.

To configure your system so that MarkVision installs in another directory:

1. **Create a directory in the location where you want the packages to be installed.** For example:

   ```
   mkdir /disk2/lexmark
   ```

2. **Create a symbolic link pointing to the directory you created.** For example:

   ```
   ln -s /disk2/lexmark /usr/local/lexmark
   ```

HP-UX 10.01, 10.20

1. **Read “Installing MarkVision” on page 15.**
2. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/c0t5d0, the command is:

   ```
   mount /dev/dsk/c0t5d0 /cdrom -o ro -F cdfs
   ```

   Note: Make sure that the /cdrom directory exists.
3. **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.
4. **Start the *System Administration Manager* by typing:**

   ```
   /usr/sbin/sam &
   ```
5. **On the *Sam areas* screen, click *Software Management*.**
6. **Click *Install Software to Local Host*.**

   First, the ***SD Install - Software Selection*** screen appears, then the ***Specify Source*** dialog box appears.

   If these dialog boxes do not appear, on the ***Actions*** menu click ***Change Source*** to open the dialog box.
7. **Make sure that the host name of the workstation you are installing on appears in the *Source Host Name* text box.** If it doesn’t, type the host name or select it from the list.
8. **In the *Source Depot Path* field, type the following to specify the full path to the HP-UX 10 package file:**

   ```
   /cdrom/PACKAGES/HPUX10/MARKVISION.PKG;1
   ```

9 **Make sure the *Change Software View* is set to *All Bundles*.**

If it is not:

1 **Click the *Change Software View* button.**

2 **On the *Software View* screen, click *All Bundles*.**

3 **Click *OK*.**

10 **On the *Specify Source* screen, click *OK*.**

11 **Choose *View Filesets*, then press F6.** There are two ways to install the packages.

- **To install all the MarkVision packages at once:**

  a **Click the *MarkVision* bundle.**

  b **On the *Actions* menu, click *Mark for Install*.** This marks all the MarkVision packages for install.

  c **Go to step 12.**

- **To install individual packages:**

  a **Double-click the *MarkVision* bundle.** This displays the server and client packages.

  b **Double-click each package bundle to view their contents.**

  c **For each package that you want to install, click the package.**

  d **On the *Actions* menu, click *Mark for Install*.** This puts a ***yes*** beside the packages you want to install.

12 **On the *Actions* menu, click *Install (analysis)*.**

13 **When the *OK* button is available, click it.** A confirmation message appears.

14 **Click *Yes* to start the installation.**

Note: If the $HOME variable was not set for root when you started SAM, an error message appears. Ignore the message and click ***OK***.

15 **During installation, select *Logfile* to view the installation log.**

Important: ***Make sure that there are no errors or warnings during installation.***

Note: If there is not enough space to install, see "Installing MarkVision for HP-UX 10.01, 10.20 in an alternate directory" on page 29.

16 **When installation is finished, select *Done.*** This returns you to the ***SD Install-Software Selection*** screen.

17 **Click *File,* then *Exit* to return to the *Software Management* screen.**

18 **Type the following on the command line and answer any questions that appear:**

```
/opt/lexmark/setup.hp
```

This file creates required symbolic links and prompts you for information you should provide after installation.

If you want other workstations to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

Installing MarkVision for HP-UX 10.01, 10.20 in an alternate directory

MarkVision installs in the directory /opt/lexmark. If there is not enough space in the filesystem, you can create a symbolic link and install in another directory.

To configure your system so that MarkVision installs in an alternate directory:

1. **Create a directory in the location where you want the packages to be installed.** For example:

   ```
   mkdir /disk2/lexmark
   ```

2. **Create a symbolic link pointing to the directory you created.** For example:

   ```
   ln -s /disk2/lexmark /opt/lexmark
   ```

NCR SVR4

1. **Read "Installing MarkVision" on page 15.**
2. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/dsk/c0t5d0s0, the command is:

   ```
   mount -F cdfs -ol,m /dev/dsk/c0t5d0s0 /cdrom
   ```

   Note: Make sure that the /cdrom directory exists.
3. **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.
4. **Make sure you have a directory named /install.**
5. **Type the following on the command line, then press *Enter*:**

   ```
   pkgadd -d /cdrom/ncr/mkvision.pkg
   ```
6. **When a list of available packages appears:**

   - **If you want to install all the packages type the following on the command line, then press Enter:**

     ```
     all
     ```
   - **If you want to install individual packages, on the command line type each package number separated by a comma, then press Enter.** For example:

     ```
     1,2,3
     ```

7 Follow the prompts and answer any questions that appear on the screen.

- **To accept the defaults, press Enter.**
- **To answer yes/no questions, type *y*, *n*, or *?*, then press Enter.**
- **When a message appears telling you the installation was successful, type *q* to quit.**

Note: You must install *all* the packages in the same location.

If you want other systems to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

SCO 3.2v4.2 and SCO V

1. **Read “Installing MarkVision” on page 15.**

2. **Check to make sure that the MarkVision Server is not running.**

   SCO cannot write over a file that is currently running. If you have a previous version of MarkVision installed on your system, make sure that the MarkVision Server is not running before installing the new package. To find out, type the following on the command line:

   ```
   ps -ef | grep markvisiond
   ```

   If you receive no response, the MarkVision Server is not running. Otherwise, kill the server. For example, if the markvisiond process ID is 26464, type the following on the command line:

   ```
   kill 26464
   ```

3. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/cd1, the command is:

   ```
   mount -f HS,lower -r /dev/cd1 /cdrom
   ```

   Note: Make sure that the /cdrom directory exists.

   If you get an error that HS is an unknown filesystem format:

   a. **Add the HS file system to the operating system by typing the following on the command line:**

      ```
      mkdev high-sierra
      ```

   b. **Follow the instructions on the screen.**

   c. **Reboot the workstation after the new kernel is made.**

4 **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.

5 **Make sure you have a directory named /install.**

6 **To begin installing MarkVision, type the following on the command line, then press Enter:**

```
pkgadd -d /cdrom/packages/sco/markvision.pkg
```

7 **When a list of available packages appears:**

- **If you want to install all the packages type the following on the command line, then press Enter:**

  ```
  all
  ```

- **If you want to install individual packages, on the command line type each package number separated by a comma, then press Enter.** For example:

  ```
  1,2,3
  ```

8 **Follow the prompts and answer any questions that appear on the screen.**

- **To accept the defaults, press Enter.**
- **To answer yes/no questions, type *y*, *n*, or *?*, then press Enter.**

- **When a message appears telling you the installation was successful, type *q* to quit.**

Note: If you are installing the MarkVision Server and the MarkVision Client on the same workstation, substitute the local loopback (127.0.0.1) for your MarkVision Server hostname.

Note: You must install *all* the packages in the same location.

If you want other systems to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

Silicon Graphics IRIX 5.3, 6.2

1. **Read "Installing MarkVision" on page 15.**
2. **Mount the CD-ROM.**

   If your workstation is configured to mount the CD under the /CDROM directory when you insert a CD, simply insert the CD now. It is automatically mounted.

   Use the /CDROM directory when referencing the package files.

   Note: Make sure the /CDROM directory exists. Use the mount command to verify that the /CDROM directory is in the list of the mounted file systems.

   To mount the CD-ROM manually, see "Mounting the CD-ROM manually" on page 37.
3. **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.
4. **On the desktop *System* menu, click *Software Manager*.**
5. **In the *Available Software* field, type:**

   ```
   /CDROM/packages/irix/
   ```
6. **Click the *Customize Installation* button.**
7. **Wait for the *Log* pane to display this message:**

```
Ready to select products for installation or removal
```

8 **Select the packages you want to install.**

- **To install the entire product, click the square beside the product.**
- **To install individual packages:**

  a **Click the folder icon.**

  b **Click on the squares of the packages that you want to install.**

If the display graphic displays a red slice, there is not enough disk space to install the selected packages. See "Installing in an alternate directory" on page 37 for information on installing MarkVision in a directory other than the default.

Note: You must install *all* the packages in the same location.

9 **Click *Start* to begin installation.**

During installation, the ***Status*** dialog box shows the package installation progress. The ***Log*** pane displays messages about the installation.

10 **Click *OK* on the pop-up that appears when installation is finished.**

11 **If you installed all MarkVision products or markvision.client.MVclient, run the following command as root:**

```
/opt/lexmark/setup.irix
```

If you want other systems to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

Mounting the CD-ROM manually

1. **Make sure that mediad is not running.** To stop mediad from running as root, type:

   ```
   mediad -k
   ```

2. **Make sure that the /cdrom directory exists.**

3. **Mount the CD-ROM.** For example, if the SCSI device is /dev/scsi/sc0d710, type the following on the command line:

   ```
   mount -t iso9660 /dev/scsi/sc0d710 /cdrom
   ```

   For more information, see your operating system documentation.

   Note: In the string sc0d710 the l is the lowercase letter "l".

Installing in an alternate directory

MarkVision installs in the directory /opt/lexmark. If there is not enough space in the filesystem, you can create a symbolic link and install in another directory.

To install in another directory:

1. **Create a directory in the location where you want the packages to be installed.** For example:

   ```
   mkdir /disk2/lexmark
   ```

2. **Create a symbolic link pointing to the directory you created.** For example:

   ```
   ln -s /disk2/lexmark /opt/lexmark
   ```

3. **Return to the *Software Manager* window and click *Customize Installation.*** This recalculates available space. If the red slice on the graph still appears, restart ***Software Manager***.

Sun Solaris x86 2.4, 2.5

1. **Read “Installing MarkVision” on page 15.**
2. **Set the NONABI_SCRIPTS environment variable to TRUE.** For example in the Korn and Bourne shells, type the following:

   ```
   NONABI_SCRIPTS=TRUE
   export NONABI_SCRIPTS
   ```

3. **Make sure the OPENWINHOME environment variable is set.** To check, type the following on the command line:

   ```
   env | grep OPENWINHOME
   ```

   If you get no response, you must set the OPENWINHOME environment variable to the openwin directory. For example, in the Korn and Bourne shells if your openwin directory is /usr/openwin, type the following on the command line:

   ```
   OPENWINHOME=/usr/openwin
   export OPENWINHOME
   ```

4. **Check to see if you are running Volume Manager.** To find out type the following on the command line, then press Enter:

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

   If you get a response that indicates the vold process is running, Volume Manager is running. If there is no response, Volume Manager is not running.

5 **Mount the CD-ROM.**

- **If you are running Volume Manager, the CD-ROM is automatically mounted.**
- **If you are not running Volume Manager:**

  a **Make sure that the /cdrom directory exists.**

  b **Type the following on the command line:**

```
mount -F hsfs -o ro /dev/dsk/c1d0s2 /cdrom
```

6 **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.

7 **To begin installing MarkVision:**

- **If you are running Volume Manager, type the following on the command line:**

```
pkgadd -d /cdrom/cdrom0/packages/solaris2.4_x86/markvision.pkg
```

- **If you are not running Volume Manager, type the following on the command line:**

```
pkgadd -d /cdrom/packages/solaris2.4_x86/markvision.pkg
```

8 When a list of available packages appears:

- **If you want to install all the packages type the following on the command line, then press Enter:**

  `all`

- **If you want to install individual packages, on the command line type each package number separated by a comma, then press Enter.** For example:

  `1,2,3`

9 Follow the prompts and answer any questions that appear on the screen:

- **To accept the defaults, press Enter.**
- **To answer yes/no questions, type *y*, *n*, or *?*, then press Enter.**
- **When a message appears telling you the installation was successful, type *q* to quit.**

Note: You must install *all* the packages in the same location.

If you want other systems to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

Sun Solaris SPARC 2.4, 2.5

1. **Read "Installing MarkVision" on page 15.**

2. **Set the NONABI_SCRIPTS environment variable to TRUE.** For example in the Korn and Bourne shells, type the following:

   ```
   NONABI_SCRIPTS=TRUE
   export NONABI_SCRIPTS
   ```

3. **Make sure the OPENWINHOME environment variable is set.** To check, type the following on the command line:

   ```
   env | grep OPENWINHOME
   ```

   If you get no response, you must set the OPENWINHOME environment variable to the openwin directory. For example, in the Korn and Bourne shells if your openwin directory is /usr/openwin, type the following on the command line:

   ```
   OPENWINHOME=/usr/openwin
   export OPENWINHOME
   ```

4. **Check to see if you are running Volume Manager.** To find out type the following on the command line, then press Enter:

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

   If you get a response that indicates the vold process is running, Volume Manager is running. If there is no response, Volume Manager is not running.

5 **Mount the CD-ROM.**

- **If you are running Volume Manager, the CD-ROM is automatically mounted.**
- **If you are not running Volume Manager:**

  a **Make sure that the /cdrom directory exists.**

  b **Type the following on the command line:**

```
mount -F hsfs -o ro /dev/dsk/c0t6d0s2 /cdrom
```

6 **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.

7 **To begin installing MarkVision:**

- **If you are running Volume Manager, type the following on the command line:**

```
pkgadd -d /cdrom/cdrom0/packages/solaris2.4_sparc/markvision.pkg
```

- **If you are not running Volume Manager, type the following on the command line:**

```
pkgadd -d /cdrom/packages/solaris2.4_sparc/markvision.pkg
```

8 When a list of available packages appears:

- **If you want to install all the packages, type the following on the command line, then press Enter:**

  ```
  all
  ```

- **If you want to install individual packages, on the command line type each package number separated by a comma, then press Enter.** For example:

  ```
  1,2,3
  ```

9 Follow the prompts and answer any questions that appear on the screen:

- **To accept the defaults, press Enter.**
- **To answer yes/no questions, type *y*, *n*, or *?*, then press Enter.**
- **When a message appears telling you the installation was successful, type *q* to quit.**

Note: You must install *all* the packages in the same location.

If you want other systems to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

SunOS 4.1.3, 4.1.4

1. **Read “Installing MarkVision” on page 15.**
2. **Make sure the OPENWINHOME environment variable is set.** To check, type the following on the command line:

   ```
   env | grep OPENWINHOME
   ```

   If you get no response, you must set the OPENWINHOME environment variable to the openwin directory. For example, in the Korn and Bourne shells, if your openwin directory is /usr/openwin, type the following on the command line:

   ```
   OPENWINHOME=/usr/openwin
   export OPENWINHOME
   ```

3. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/sr0, the command is:

   ```
   mount -o ro -t hsfs /dev/sr0 /cdrom
   ```

   Note: Make sure that the /cdrom directory exists.
4. **Check the Readme file in the CD-ROM root directory.** This Readme file may contain last-minute information about installing MarkVision that was not available when this guide was published.
5. **Change directory to your CD-ROM directory.** If your CD-ROM directory is /cdrom, type:

   ```
   cd /cdrom
   ```

6. **Change directory to the SunOS packages directory by typing:**

   ```
   cd packages/sunOS4.1.3
   ```

7 **Run the installation script by typing:**

```
./install.markvision
```

This installs the Lexmark Installation Utility in /var/lexpkg directory and creates symbolic links in /usr/bin for lexpkgadd and lexpkgrm executables. For more information on Lexmark Installation Utilities, refer to the man pages on lexpkgadd and lexpkgrm.

The install.markvision script will also start the lexpkgadd executable. A list of available packages will be shown for selection.

Note: If for some reason the installation is interrupted during or before the lexpkgadd program is running, you can always run it from the command line. Please ensure that you are in the package directory for SunOS 4.1.3, as in:

```
/cdrom/packages/SunOS4.1.3
```

and as root type:

```
/usr/bin/lexpkgadd
```

8 **Select the package you would like to install.** You can only select one package at a time. Once the package is installed, you will be prompted to select any other package.

9 Follow the instructions on the screen.

An already installed package is shown with an asterisk (*) in the first column. A partially installed package is shown with a (!) in the first column.

WARNING: If you interrupted the installation procedure and the package was partially installed, DO NOT RE-INSTALL the package over the partial one. First, remove the partially installed package using the lexpkgrm utility, then re-install.

If you want other systems to NFS mount the MarkVision UNIX Client, see “NFS mounting the MarkVision UNIX Client” on page 49. Otherwise, go on to Chapter 3.

UnixWare 2.1.x

1. **Read "Installing MarkVision" on page 15.**
2. **Mount the CD-ROM.** For example, if the CD-ROM path is /dev/cdrom/c0b0t210, the command is:

   ```
   mount -o ro -f cdfs /dev/cdrom/c0b0t2l0/cdrom
   ```

   Note: Make sure that the /cdrom directory exists.
3. **Make sure you have a directory named /install.**
4. **Type the following on the command line, then press Enter:**

   ```
   pkgadd -d /cdrom/packages/unixware/markvision.pkg
   ```
5. **When a list of available packages appears:**

   - **If you want to install all the packages type the following on the command line, then press Enter:**

     ```
     all
     ```
   - **If you want to install individual packages, on the command line type each package number separated by a comma, then press Enter.** For example:

     ```
     1,2,3
     ```

6 Follow the prompts and answer any questions that appear on the screen.

- **To accept the defaults, press Enter.**
- **To answer yes/no questions, type *y*, *n*, or *?*, then press Enter.**
- **When a message appears telling you the installation was successful, type *q* to quit.**

Note: You must install *all* the packages in the same location.

If you want other systems to NFS mount the MarkVision UNIX Client, see "NFS mounting the MarkVision UNIX Client" on page 49. Otherwise, go on to Chapter 3.

NFS mounting the MarkVision UNIX Client

You can install MarkVision on one workstation and export the filesystem to other workstations for mounting. Using NFS eliminates the need to perform individual installations at each workstation and conserves disk space.

Administrators might want to install both the MarkVision UNIX Client and MarkVision Server packages on one workstation. Then you can designate that machine as an NFS server, as well as the MarkVision Server. Client workstations can mount the MarkVision directory on the server and run the MarkVision UNIX Client on their local system.

Important:

The NFS Server and Client workstations *must* use the same operating system.

To NFS mount the MarkVision UNIX Client:

1. **Configure the server system.**
   a. **Make sure you're logged on with root user authority.**
   b. **Install the MarkVision UNIX Client. Follow the directions for the system you're using.** For more information, see "Installing MarkVision" on page 17.
   c. **Export the directory where you installed the MarkVision UNIX Client (for example, /opt/lexmark/ or /usr/local/lexmark).** If you need help, refer to your operating system documentation.

2 **Configure MarkVision on the local machine.**

a **Make sure you're logged on with root user authority.**

b **NFS mount the MarkVision directory from the server.** Refer to your operating system documentation for mounting instructions.

c **Run the install script in the mounted MarkVision directory.** The script creates symbolic links to this directory in /usr/markvision. The following example uses /mnt as the mount point.

```
cd /mnt/lexmark
./MVclient.link
```

To uninstall and unmount the MarkVision UNIX Client:

1 **Run the uninstall script, which removes the symbolic links to the mounted directory from /usr/markvision.**

```
./MVclient.unlink
```

2 **Unmount the MarkVision directory.** Refer to your operating system documentation for mounting instructions.

For more detail about this process, see "Uninstalling MarkVision" in Appendix E: Technical Notes on page 121 for more information.

Workstations without a CD-ROM

There are two ways to install MarkVision on a workstation without a CD-ROM drive:

- Using NFS
- Using FTP

Using NFS

1. **On the workstation *with* the CD-ROM:**
   a. **Mount the CD-ROM.**

      For help, see "Installing MarkVision" on page 17. Find the operating system and workstation that you're using and follow the instructions in that section for mounting the CD-ROM.

   b. **Export the CD-ROM filesystem.** If you need help, refer to your operating systems documentation.
2. **On the workstation *without* the CD-ROM:**
   a. **Mount the CD-ROM on /cdrom.**

      For help, see "Installing MarkVision" on page 17. Find the section that pertains to your workstation and operating system. Follow those instructions to install MarkVision. Ignore the part that tells you how to mount the CD-ROM.

Using FTP (except SunOS 4.1.x)

If you are using SunOS 4.1.x, go to "Using FTP (SunOS 4.1.x only)" on page 54.

1. **On the workstation *with* the CD-ROM, mount the CD-ROM.**

   For help, see "Installing MarkVision" on page 17. Find the operating system and workstation that you're using and follow the instructions in that section for mounting the CD-ROM.

2. **On the workstation *without* the CD-ROM:**

   a. **Change directory to /tmp.**

   b. **Make sure you have enough disk space available.** Type the following on the command line:

   ```
   df -k .
   ```

   c. **Type the following, substituting the directory name of your operating system for os_type. For example, substitute os_type with sco on SCO systems.**

   ```
   ftp hostname
   bin
   cd /cdrom/packages/os_type
   get markvision.pkg
   quit
   ```

   Note: The package path on NCR systems is /cdrom/ncr/mkvision.pkg

   Note: On Sun systems running Volume Manager, substitute /cdrom/cdrom0 for /cdrom. The '0' in cdrom0 is a zero.

4 **Go to “Installing MarkVision” on page 17.** Follow the instructions that pertain to your workstation and operating system to install. Ignore the part that tells you how to mount the CD-ROM.

When you normally type this filename:

```
/cdrom/packages/os_type/markvision.pkg
```

Replace it with:

```
/tmp/markvision.pkg
```

Using FTP (SunOS 4.1.x only)

1. **On the workstation *with* the CD-ROM, mount the CD-ROM.**

   For help, see “Installing MarkVision” on page 17. Find the operating system and workstation that you’re using and follow the instructions in that section for mounting the CD-ROM.

2. **On the workstation *without* the CD-ROM:**

   a. **Change directory to /tmp.**

   b. **Make sure you have enough disk space available.** Type the following on the command line:

   ```
   df -k .
   ```

   c. **Make a directory called markvision by typing the following on the command line:**

   ```
   mkdir markvision
   ```

   d. **Type:**

   ```
   ftp hostname
   bin
   cd /cdrom/packages/sunos4.1.3
   get markvision.pkg.tar
   quit
   ```

   e. **Extract the contents of the tar file by typing:**

   ```
   tar -xvf markvision.pkg.tar
   ```

   f. **Go to “SunOS 4.1.3, 4.1.4” on page 44.** Follow the instructions to install. Ignore the part that tells you how to mount the CD-ROM.

Removing MarkVision packages

Operating system	Package removal tool
AIX 3.2.5, 4.1.x, 4.2.x	`smit`
HP-UX 9.01, 9.05	`rmfn`
HP-UX 10.01, 10.20	`sam`
NCR SVR4 (MP RAS)	`pkgrm`
SCO 3.2v4.2. & SCO V	
Silicon Graphics IRIX 5.3, 6.2	`swmgr`
Sun Solaris x86 2.4, 2.5	`pkgrm`
Sun Solaris 2.4, 2.5	
SunOS 4.1.3., 4.1.4	`lexpkgrm`
UnixWare 2.1.x	`pkgrm`

MarkVision can be removed from your system using the utilities listed in this table. Simply run the utility as root, and mark the MarkVision packages for removal.

See “Technical Notes” on page 117 and your system documentation for more information.

MarkVision Features

Chapter 3

The following features are available in the MarkVision packages installed on your workstation.

MarkVision Features	Intranet	X/Motif	Character	Command line	See Page
Bidirectional communication	X	X	X	X	60
Remote operator panel	X	X	X		60
Dynamically viewing the printer	X	X	X		62
Sorting and filtering the printer list	X				63
Network Printer Discovery				X	63
Printer inventory				X	64
Collecting print job statistics				X	64
Copying printer configuration (Quick Setup)		X	X		64

MarkVision Features	Intranet	X/Motif	Character	Command line	See Page
Managing printer resources		X	X		65
Partitioning printer hard disks		X	X		65
Virtual devices		X	X	X	65
End-of-job notification		X	X	X	66
Print queues		X	X	X	66
Customizing PDDs				X	67
Customizing MarkVision's appearance		X			67
Security	X	X	X	X	67

Note: To get information about the latest versions of MarkVision, which may include new features or enhanced functions, visit our website at *http://www.lexmark.com.*

Overview

MarkVision provides ongoing status for Lexmark and other printers attached to the network. The status reported includes all messages appearing on the operator panel display, if you are administrating the remote operator panel, as well as information about options installed on the printer and printer default settings. Administrators and key operators can configure MarkVision to monitor only those printers they are responsible for, and to notify them only when particular errors occur.

MarkVision can save you time setting up a network of Lexmark printers. The Quick Setup feature lets you create a printer configuration file at your workstation, save the printer settings in the file, and then send the settings to other printers on the network.

Administrators can mount the MarkVision Client on one workstation and export the filesystem to other workstations for mounting. NFS mounting the MarkVision Client eliminates the need to perform individual installations at each user workstation and conserves disk space.

MarkVision job statistics feature keeps track of network printer activity. MarkVision helps collect printer usage statistics and create charge-back reports, including information about total jobs printed, total pages, and average print time.

MarkVision features

The following sections provide an overview of each MarkVision feature. For specific information on configuring these features in MarkVision, see Chapter 4.

Bidirectional communication

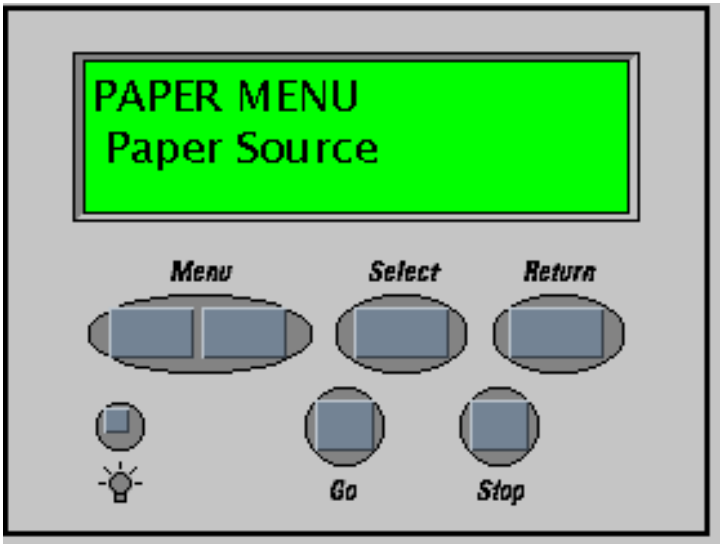
A Lexmark printer is capable of intelligent, dynamic communication with the network. It can receive information such as print jobs, but can also send back information about the work it's doing and what it needs to complete the task.

This intelligent bidirectional communication, Network Printing Alliance Protocol (NPA) 1.0 (IEEE 1284.1) standard, is part of the printer design. MarkVision takes advantage of this advanced communication capability.

Remote operator panel

The MarkVision remote operator panel provides an exact replica of the selected printer operator panel. The menus and messages appear just as they do on the printer display. You can use the operator panel buttons to step through the menus and change printer settings. Any changes you make on the remote operator panel are reflected on the physical operator panel of the printer.

Click the icon to open the remote operator panel. You'll see a display similar to the following:



Any changes you make on this operator panel are reflected on the printer's physical operator panel.

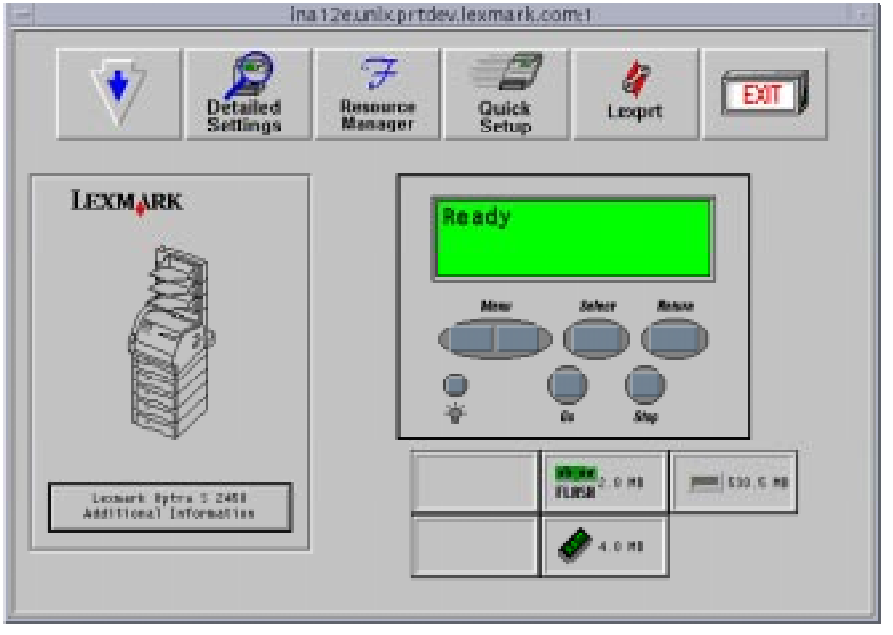
If the printer is currently communicating using NPA, you can view and change the remote operator panel. If the printer is using SNMP, you can view the remote operator panel, but not make changes. If neither NPA or SNMP is available, you cannot view the remote operator panel.

Dynamically viewing the printer

MarkVision has an intelligent printer graphic that dynamically reflects the current status of your printer. For example, if the printer cover is open, MarkVision will display a picture of the printer with its cover open. As soon as you close the cover on the printer, the picture changes to reflect your action.

Note: Dynamic updates occur only if you are using Network Printing Alliance Protocol (NPA). If the printer you're using supports NPA, make sure NPA is enabled. You can check this on the printer operator panel or by printing a setup page.

The intelligent printer graphic looks similar to this:



This feature is available *only* on network-attached printers that support the Network Printing Alliance (NPA) Protocol, such as the Lexmark Optra printer family and the IBM LaserPrinter 4039 plus.

If the printer you're using supports NPA, make sure NPA is enabled. You can check this on the printer operator panel or by printing a setup page.

With this information, you can easily identify the printer best suited for a particular print job.

Important:

The MarkVision alert-driven architecture lets you actively monitor the status of many printers on a real-time basis. If an error occurs on a printer attached to your network, MarkVision immediately provides a visual alert.

Sorting and filtering the printer list

MarkVision lets you sort and filter the list of printers. For example, you can view all the printers that currently have an error condition or all the printers that do not have errors.

Finding network printers

The MarkVision Network Printer Discovery tool searches TCP/IP networks for Lexmark and Hewlett-Packard network printers. MarkVision collects information about printers it finds on the network in a file administrators can use to add the printer to the MarkVision printer list.

The MarkVision Network Printer Discovery tool is a command line utility packaged with the MarkVision Server. See the npsearch man page for more information.

Printer inventory

MarkVision collects printer inventory information about installed options for each printer, such as RAM, duplexing, and color. It can also collect hardware information such as serial numbers, model numbers, and so on.

The MarkVision printer inventory tool is a command line utility packaged with the MarkVision UNIX Client.

See the mv_pinv man page and the README.inventory file in /usr/markvision/docs/ for more information.

Collecting print job statistics

By default, the MarkVision Server collects print job statistics for each printer that supports job statistics reporting.

To disable job statistics reporting, or to learn more about print job statistics, on the machine where MarkVision Server is installed, see the trans_js man page and the README.job_stats and README.markvision.cf files in /usr/markvision/docs.

Copying printer configuration (Quick Setup)

MarkVision Quick Setup feature lets you configure multiple printers easily. Simply set up one printer, save the settings into a file, and send that file to all the other printers you want to update through MarkVision.

Partitioning the printer hard disk

You can use MarkVision to designate a percentage of the optional printer hard disk memory for job buffering to printer hard disk. You can enable or disable job buffering for each of the interface ports (parallel, serial, network 1, network 2, and network 3).

Refer to your printer documentation for more information about job buffering to printer hard disk.

Managing printer resources

MarkVision provides a directory of all the fonts, overlays, and forms stored in the flash memory or on the hard disk. The directory also lists the amount of available memory for each storage device. You can use MarkVision to delete, move, or copy files from one storage device to another on the same printer.

Virtual devices

To attach a printer to your UNIX system, MarkVision uses the concept of virtual device. After you've created a virtual device, you can create print queues and assign them to the device.

For example, you can create a virtual device named *office_printer* and connect it to the printer IP address 157.184.20.42. Queues assigned to the *office_printer* device print to the printer at 157.184.20.42

See "Creating a virtual device (except AIX)" on page 80 or "Creating queues and devices (AIX)" on page 82.

End-of-job notification

You can specify to notify users when their print jobs are completed by selecting End-of-job notification when you create a virtual device. MarkVision notifies users by sending an email message to them.

See “Creating a virtual device (except AIX)” on page 80 or “Creating queues and devices (AIX)” on page 82.

Print queues

MarkVision provides a menu driven interface for creating print queues on your UNIX system. Print queues let you send jobs with different settings to the same printer without changing the settings on the printer. Additionally, MarkVision provide access to many of the features and functions of the printer that are not available on the standard UNIX print spool. For example, features such as printer resolution and duplex may be controlled by the print queue.

For non-AIX systems, see “Creating a print queue (except AIX)” on page 81.

For AIX systems, see “Creating queues and devices (AIX)” on page 82.

Customizing Printer Definition Databases (PDD)

Printer Definition Database (PDD) files contain information about options available on individual printer models. Lexprt uses the PDDs to display printer configuration settings appropriate for the selected printer type. For example, Lexprt does not display color options for a monochrome printer.

Administrators can create PDD files that more closely match installed printer options at their site. Administrators can then compile the PDD text file into a binary format using the MarkVision digest compiler. Once compiled, the binary PDD is a valid printer type in Lexprt.

For more information on writing and compiling PDDs, refer to the digest man page.

Customizing the appearance of MarkVision

You can change the appearance of MarkVision by editing its X resources. A file containing default X resources for each application can be found in /usr/markvision/etc. For more information, refer to the X Window System documentation for your system.

Security

Members of the MarkVision administrative group have access to all administrative features in MarkVision. When you install MarkVision, you are prompted to provide an administrative group name. By default, *bin* is the default administrative group on all systems except AIX. The default administrative group on AIX is `printq`.

Only root or members of the MarkVision administrative group, specified during installation, have authority to change settings.

Configuring MarkVision

Chapter 4

Before you start

Follow these steps to set up your workstation for MarkVision and to gain a basic understanding of MarkVision functions.

For instructions about installing MarkVision on your operating system, see the appropriate section in Chapter 2 “Installing MarkVision” on page 15.

Before you begin this section, check the Readme files that were installed with MarkVision. These files, located in the path /usr/markvision/docs, may contain information that was not available when this guide was published.

Starting MarkVision

You can use the MarkVision UNIX Client with a graphical interface, a character interface, or directly from the command line.

The MarkVision Intranet Client lets you run a MarkVision client as a Java applet in your web browser.

With a graphical user interface

If your workstation supports it, you can use MarkVision with the X Window System. To use MarkVision with X, you must set the display variable.

1. **To set the display variable:**

   - ***Korn and Bourne shell users type the following:***

     ```
     DISPLAY=hostname:0.0
     export DISPLAY
     ```

     where hostname is the name of your workstation

   - ***C shell users type the following:***

     ```
     setenv DISPLAY hostname:0.0
     ```

2. **Type the following on the command line, then press Enter:**

   ```
   markvision
   ```

With a character interface

You can also use the MarkVision UNIX Client with a character-based terminal. Make sure the display and terminal variables are set correctly for use with a character interface. If the DISPLAY variable is not set, the MarkVision UNIX Client runs in character mode by default.

From the command line

You may also use MarkVision UNIX Client directly from the command line. For additional information, refer to the man pages.

From a web browser

MarkVision for UNIX Intranet Servers lets you run a MarkVision Client as a Java applet in your web browser. Once the MarkVision Intranet Client is configured on a web server, a MarkVision Intranet Client starts when you connect to /markvision on that server with your browser.

For example, to start a MarkVision Intranet Client on a web server named *hydra*, point your browser to the following URL:

```
http://hydra/markvision
```

Restricting web access to MarkVision

MarkVision provides administrator and user levels of access. All user IDs added to the administrative user group are allowed to access ***all*** of MarkVision's functional capabilities with administrative privileges. User IDs not in the administrative group are allowed to access only a limited set of functions. You must configure your web server to restrict MarkVision Intranet Client access to administrator features.

On a Netscape FastTrack 2.0 web server

1. **Open your Administration Server.** Connect to the administration port of your web server.

   For example, if the administration port for the host *hydra* is 1692, type the URL:

   ```
   http://hydra:1692
   ```

   a. **Provide the correct administrator ID and password for your server when prompted.**

   b. **Click the link for your web server.**

2. **Create a MarkVision user database.**

   a. **Click *Access Control* in the top frame.**

   b. **Click *Manage User Databases* in the frame on the left.**

   c. **On the *Manage User Databases* page, type a name for the new database.** For example:

   ```
   markvision
   ```

   d. **Click *Create New Database*.**

3 **Add users to the MarkVision user database**

a **Click *Create User* in the *Access Control* frame on the left.**

b **Provide information about the user.**

1 **Type the user ID in the *Login Name* text box.** For example:

bjackson

2 **Type the user's "real" name in the *Full Name* text box.** For example:

Bob Jackson

3 **Type a password for the user, then type the same password again to verify that you typed it correctly.**

4 **If you want, specify a group for the user.**

5 **Make sure the name of the database you have created is selected in the *Database list* box.** For example:

markvision

6 **Click OK.**

7 **Add another user or continue to the next step.**

4 **Restrict access to the mvweb/secure directory.** The following example uses /usr/ns-home/docs as the server document directory.

a **Click *Restrict Access* in the *Access Control* frame on the left.**

b **Click *Wildcard*.**

c **When prompted, type the following in the text box:**

```
/usr/ns-home/docs/mvweb/secure/*
```

d **Make sure the follow symbolic links option for your web server is enabled.**

1 **Click *Browse*.**

2 **Click *Options*.**

3 **Click *Follow sym-links*.**

4 **Click *OK*.**

e **Click *Turn on access control*.**

f **Verify that *Deny* is the specified action for both *Read* and *Write* access types on the *Restrict Access* page.**

g **Click *OK*.**

h **Click *Save and Apply*.**

5 **Click *System Settings* in the top frame to verify that your server is running.** Your server is now configured.

On other web servers

1. **Using tools provided with your web server, create a user database.**
2. **Add the users and groups to have administrator access to MarkVision into the new database.**
3. **Make sure the *Follow Symbolic Links* option for your web server is enabled.**
4. **Restrict access to the <document-root>/mvweb/secure directory so that only the new users and groups have access.**

   The document root is the top level directory on your web server.

   On a Netscape server, the default document root is /usr/ns-home/docs.

   On an Apache server, the default document root is /usr/local/etc/httpd/htdocs.

Adding printers

When you first start MarkVision, the printer list is empty. You must add the printers that you want MarkVision to monitor.

With MarkVision

1. **From the menu bar at the top of the screen, select *Edit*.**
2. **Select *Add Printer*.**
3. **Type the printer hostname or IP address.** If your printer is attached to the second port of a MarkNet XLe, then the hostname or address must be followed by :2 for example:

   `157.184.217.121:2 or printer_hostname:2`
4. **Enter the adapter SNMP community name if it is different than the default name *public*.**
5. **Press *OK*.**

   The printer is added to the status list.

   Note: If you receive an error message about the printer, check your adapter settings. See Appendix C: “Verifying adapter configuration” on page 109 for more information.

With the Network Printer Discovery tool

1. **To find all the printers on your network, on the MarkVision Server workstation, use npsearch to save the results in a file, such as printers.db.** For example, using printers.db as the filename, type the following on the command line:

   ```
   npsearch -n 157.184.67.0 printers.db
   ```

   Note: If you want, you can edit the printers.db file. Editing the file lets you remove printers from the file that you do not want to add to MarkVision.

2. **To add the list of printers to MarkVision, type npsearch on the command line again, this time with the -a flag set.**

   ```
   npsearch -a printers.db
   ```

   Refer to the npsearch man page for more information.

Managing MarkVision Servers

MarkVision Servers keep track of printers for MarkVision clients. Usually one MarkVision Server tracks all the printers within its domain. Being able to select between many MarkVision servers lets you monitor more printers.

Adding MarkVision Servers to the Intranet Client

To add additional MarkVision servers to the Intranet Client list of servers, use the mvwebsetup program. For example, to add the MarkVision servers running on the hosts *hydra*, *spruce*, and *flora*, type the following on the command line:

```
mvwebsetup -a hydra spruce flora
```

Refer to the mvwebsetup man page for more information.

Specifying a MarkVision Server with the UNIX Client

To select which MarkVision Server to use with the MarkVision UNIX Client, specify the server on the command line when you start MarkVision. For example, to start MarkVision using the MarkVision Server, *flora*, type the following on the command line:

```
markvision -S flora
```

Removing MarkVision Servers from the Intranet Client

To remove MarkVision servers from the Intranet Client list of servers, use the mvwebsetup program. For example, to remove the MarkVision servers running on the hosts *hydra*, *spruce*, and *flora*, type the following on the command line:

```
mvwebsetup -r hydra spruce flora
```

Refer to the mvwebsetup man page for more information.

Changing the default MarkVision Server

When you install the MarkVision Client, you'll be prompted to enter the IP address or hostname of the MarkVision Server. This is the address or hostname of the workstation on which you installed (or plan to install) the MarkVision Server software. If possible, make a note of that address or hostname before you begin the installation process.

If you don't know the server address or hostname now, or you need to change it later, follow the steps below after you install the client package:

1. **Type the following on the command line, then press Enter:**

   ```
   vi /usr/markvision/etc/mv_server_hostname
   ```

2. **Add or change the IP address or hostname in the following line:**

   ```
   mv_server_host=hostname
   ```

Note: This changes the default server for both the UNIX Client and the Intranet Client.

Creating a virtual device (except AIX)

You can create a virtual device from either MarkVision UNIX Client or the command line. The following information tells you how to create a virtual device for all systems except AIX. If you are using AIX, see "Creating queues and devices (AIX)" on page 82.

Important:

You *must* create a virtual device before you can create a print queue.

1. **On the *Utilities* menu of the MarkVision main screen, click *Lexprt*.**
2. **Click *Create a Virtual Device*.**
3. **Enter a device name.**
4. **Choose a transport option from the following list**:
   - ***Serial***
   - ***Parallel***
   - ***Network***
   - ***Network connection with End-of-job notification***
5. **Answer the questions on the remaining screens**. The questions vary depending upon your transport options.

Creating a print queue (except AIX)

The following sections explains how to create a print queue using the MarkVision UNIX Client.

Important:

Before you create a print queue, you must create a virtual device to which you can assign the queue. See “Creating a virtual device (except AIX)” on page 80 for more information.

1. **On the *Utilities* menu of the MarkVision main screen, click *Lexprt*.**
2. **Click *Create a Queue*.**
3. **Enter a queue name.**
4. **Choose a virtual device for the print queue to connect to.** You must create a virtual device before you can create a print queue. See “Creating a virtual device (except AIX)” on page 80 for more information.
5. **Choose a printer type from the list of printers provided.** Select the printer type in the list that most closely matches the physical printer attached to the virtual device.
6. **Answer the questions on the remaining screens to choose print queue characteristics such as emulation and paper size.**

   Note: Only use MarkVision utilities to add and remove queues created with MarkVision.

   CAUTION: Do not manually edit queues.

Creating queues and devices (AIX)

This section tells you how to configure queues and devices for an AIX UNIX Client.

For AIX 3.2.5

1. **On the *Utilities* menu of the MarkVision main screen, click *SMIT*.** The AIX administrative utility SMIT is started.
2. **Click *Manage TCP/IP Network Attached Printers*.**
3. **Click *Add a TCP/IP Attached Virtual Printer*.**
4. **Follow the instructions on the screen.** Both the print queue and virtual printer are created.

   Note: End-of-job notification may be selected on the print queue configuration screen and MarkVision will mail a notice to each user upon completion of the print job.

For AIX 4.1.x, 4.2.x

1. **On the *Utilities* menu of the MarkVision main screen, click *SMIT*.** The AIX administrative utility SMIT is started.
2. **Click *Add a Print Queue*.**
3. **Select the MarkNet adapter that most closely matches your network adapter.**
4. **Follow the instructions on the screen.** Both the print queue and virtual printer are created.

   Note: End-of-job notification may be selected on the print queue configuration screen and MarkVision will mail a notice to each user upon completion of their print job.

Copying printer settings (Quick Setup)

MarkVision lets you copy printer configuration. This is useful if you have several identical printers on a network and want to configure them with the same settings.

Uploading a printer setup copies it to a file on your workstation that you can later download to other printers of the same type.

Uploading the setup from the printer

1. **Use the remote operator panel to set up the printer whose settings you want to copy.**
2. **On the MarkVision main screen, click *Utilities*.**
3. **Click *Quick Setup*.**
4. **Select *Upload setup file from printer* whose settings you want to copy.**
5. **Select the printer.**
6. **Select the directory and file to hold the settings.**
7. **Click *Upload*.**

Downloading the setup to a printer

1. **On the MarkVision main screen, click *Utilities*.**
2. **Click *Quick Setup*.**
3. **Select *Download setup file to printer*.**
4. **Select the printer(s) to receive the file.**
5. **Select the directory and file to hold the settings.**
6. **Click *Download*.**

Managing printer resources

You can use the MarkVision Resource Manager to control fonts and forms stored in the printer. For example, if your printer has a disk or flash option you can download fonts and forms from MarkVision to be stored in non-volatile disk or flash memory as well as the printer RAM memory.

To manage printer resources:

1. **On the MarkVision main status screen, click *Utilities*.**
2. **Click *Resource Manager*.**
3. **Select the printer that you want to work with.**
4. **Select whether the device to be managed is *flash* or *disk*.**
5. **Highlight the file you want on the device.**
6. **Click the appropriate action button for the feature you want to perform.**

   Note: Depending on the printer and features installed, some actions may not be available. For example, the copy function is not available unless the printer has both a flash and disk option installed.

Example: downloading fonts and macros to the printer

1. **On the *Resource Manager* screen, click *Download*.**
2. **Select the file to be downloaded to the printer.**

3 **Select the type of file you are downloading.**

Note: If you are downloading a font or PCL macro, you must enter an ID.

4 **Select the download destination: *RAM*, *Disk*, or *Flash*.**

Note: Both fonts and macros may be downloaded to the printer's RAM memory as well as to disk or flash memory.

5 **Select *Add* to add the file to the list of *Selected Files*.**

6 **Repeat steps 2 through 5 above for each file you want to download.**

7 **Select the printer(s) that you want to receive the files.**

8 **Click *Download*.**

9 **When prompted, enter a name for the log file and click *OK* to start the download process.** The files are downloaded to the printer.

Printer page counters

MarkVision displays three types of printer page counters: all pages in the printer lifetime, all pages since power-on, and a user-resetable counter.

Viewing printer page counters

1. **On the MarkVision main screen, click *View*.**
2. **Click *Printer settings*.**
3. **Click the button beside the printer you want to select.**
4. **Click *Page counter*.**

Resetting the user page counter

1. **Click *Page counter* and select *Reset counter*.**
2. **Click *Apply*.**

Changing TCP/IP settings

To view or change TCP/IP settings on the network adapter for MarkVision:

1. **On the MarkVision main screen, click *Change*.**
2. **Click *Adapter settings*.**
3. **Click the button beside the adapter you want to select.**
4. **Click *TCP/IP settings*.**

WARNING: Changing some TCP/IP settings, such as the IP address, may cause your adapter to become unaccessible over the network.

Viewing or changing adapter settings

To view or change the settings on the network adapter:

1. **On the MarkVision main screen, click *Change*.**
2. **Click *Adapter settings*.**
3. **Click the button beside the adapter you want to select.**
4. **Once you've completed all changes to the adapter configuration, click *Apply* to have the changes take effect.**

   Note: Some changes will require resetting the adapter to take effect. MarkVision will prompt you before proceeding with the reset.

Updating adapter firmware

MarkVision provides tools to update the software in your network adapter.

On AIX systems

1. **On the MarkVision main screen, click *Utilities*.**
2. **Click *SMIT*.**
3. **Click *Update TCP/IP attached MarkNet Adapter Microcode*.**
4. **Click *Download to single printer* or *Download to multiple printers*.**
5. **Answer the questions on the screen.**

For more information, refer to the updlexprt and multiupdlexprt man pages.

All systems except AIX

1. **On the MarkVision main screen, click *Utilities*.**
2. **Click *Lexprt*.**
3. **Click *Update adapter firmware*.**
4. **Click *Download to multiple printers* or *Download to one printer*.**
5. **Answer the questions on the screen.**
6. **Click *Accept*.**

For more information, refer to the updlexprt and multiupdlexprt man pages.

Changing the administrative group

Members of the MarkVision administrative group have access to all administrative features in MarkVision. When you install MarkVision, you are prompted to provide an administrative group name. By default, *bin* is the default administrative group on all systems except AIX. The default administrative group on AIX is `printq`.

For example, to change the administrative group to adm, as root, type the following on the command line:

```
cd /usr/markvision/bin
chgrp adm *
```

Troubleshooting

Chapter 5

Diagnosing problems

The following are suggested for solutions to some common problems you may encounter with MarkVision:

Symptom	Solution
Intranet Client URL not responding	**1** Make sure the HTTP sever is running **2** Make sure mvwebd is running.
MarkVision seems unable to find the network printer	**1** Make sure the printer is turned On (|) and is ready. **2** Make sure the LAN cable is plugged into both the adapter and into the LAN and is working properly. **3** If you are using an INA adapter: • Make sure the adapter is properly installed and enabled. To check, print a setup page for the printer. Refer to your adapter documentation for instructions. The adapter should appear in the list of attachments on the setup page. • If a network-related message appears on the operator panel, go to “Error messages” on page 98. • Make sure TCP/IP on the adapter is activated. The protocol must be active for the adapter and MarkVision to work. You can do this from the printer operator panel. See “Error messages” on page 98 for instructions.

Symptom	Solution
MarkVision seems unable to find the network printer (continued)	**4** If you're using an ENA adapter: - Check the adapter lights. Refer to your adapter documentation for instructions. - Print a setup page from the adapter. Refer to your adapter documentation for instructions. **5** Make sure the SNMP community name you supplied to MarkVision is the same as the one set in the adapter. **6** PING the adapter. - If PING works, send the finger command. Finger should return the correct information. If it does not, check the IP address, netmask, and gateway to be sure they are correct. - If PING works, turn printer off and PING again to check for duplicate IP addresses. - If PING does not work, check the setup page you printed to be sure IP is enabled. - If TCP/IP is enabled, check the IP address, netmask, and gateway to be sure they are correct. - Make sure bridges and routers are functioning correctly. - Make sure all the physical connections among the adapter, the printer, and the network are working. **7** Turn the printer and adapter off and back on. You should turn the printer back on first so that when you turn on the adapter, it can determine whether the printer is enabled for NPA.

Symptom	Solution
The server does not appear to be sending jobs to the network printer you specified Jobs are in the queue and appear to be waiting for a long time	The printer is probably busy receiving jobs from other servers or from other links. If you are using a Lexmark adapter, you will probably receive a Check the Printer message when this situation occurs. **1** Use MarkVision to check printer status. **2** Use `lexprt` to check the print queue status. If you are using AIX, you need to type: `enq -A.` **3** Check the printer to make sure it is working properly.
The hostname does not resolve	Update the name server or the /etc/hosts file to make sure it contains the TCP/IP hostname for the printer. ***or*** Check your name server (DNS). Add the hostname to either NIS, DNS or /etc/hosts file.
Print jobs disappear from the print queue but have not printed	The print job is probably in the buffer of the adapter or printer. As soon as the printer is available, the job prints. **1** Make sure you are sending print jobs to the correct printer address. **2** Use MarkVision or `lslexprt` to check printer status. **3** Check the printer to make sure it is working properly.
Status messages appear to be lost or delayed	The print job has been sent from the print queue to the printer. While printing the job, the printer has run out of paper or has a similar error. Someone else might have received the error message. Error messages are sent to the user whose job is being transferred to the printer. This user might not be the same person who submitted the job that caused the error. Use MarkVision or lslexprt to check printer status.

Symptom	Solution
The remote operator panel does not work	**1** Verify the printer you are using supports NPA Protocol. **2** Verify the printer is enabled for NPA. Refer to your adapter documentation for instructions. **3** Check the adapter firmware level. Some early levels do not support the remote operator panel feature. To do this, type the following on the command line: `lslexprt -v -h host:port` **4** Refresh the printer in MarkVision.
The printer is not receiving print jobs ***or*** The print queue is down ***or*** The following message appears on your screen: `Connection to printer was lost`	**1** Make sure the printer is turned On (|) and is ready. **2** Make sure the LAN cable is plugged into both the adapter and into the LAN and is working properly. **3** If you are using an INA adapter: - Make sure the adapter is properly installed and enabled. To check, print a setup page for the printer. Refer to your adapter documentation for instructions. The adapter should appear in the list of attachments on the setup page. - If a network-related message appears on the operator panel, go to “Error messages” on page 98. - Make sure TCP/IP is activated on the adapter. The protocol must be active for the adapter and MarkVision to work. You can do this from the printer operator panel. Refer to your adapter documentation for instructions. **4** If you’re using an ENA adapter: - Check the adapter lights. Refer to your adapter documentation for instructions. - Print a setup page from the adapter. Refer to your adapter documentation for instructions.

Symptom	Solution
The printer is not receiving print jobs ***or*** The print queue is down ***or*** The following message appears on your screen: `Connection to printer was lost` **(continued)**	**5** PING the adapter. - If PING works, send the finger command. Finger should return the correct information. If it does not, check the IP address, netmask, and gateway to be sure they are correct. - If PING works, turn printer off and PING again to check for duplicate IP addresses. - If PING does not work, check the setup page you printed to be sure IP is enabled. - If TCP/IP is enabled, check the IP address, netmask, and gateway to be sure they are correct. - Check to be sure bridges and routers are functioning correctly. - Make sure all the physical connections among the adapter, the printer, and the network are working. **6** Use MarkVision or lslexprt to see if the server can contact the printer. **7** Compare the IP address of the adapter to the address stored for the network printer in the name server or /etc/hosts file. If the addresses do not match, edit the /etc/hosts file or update the name server to correct the address. Print a setup page from the adapter. For instructions on printing a setup page, refer to your adapter documentation. If the page prints, then the connection between the adapter and the printer is working correctly. If the page does not print, check all the physical connections. **8** Make sure you bring the print queue back up after you correct the problem.

Error messages

If an error occurs while you are printing, a message similar to the one shown below may appear on your screen.

> Message from *queue name*: *date*
> Printer Intervention Required: *hostname* or
> *IP address*
> Printer Condition: *IR condition* `message from printer`

The following table lists error messages you might encounter. In most cases, the print job is still in the queue. After you have corrected the error, bring the print queue up. If necessary, resubmit the print job.

Message	Cause	Action
`Connection to printer was lost`	The printer connection timed out due to a delay while sending data.	In the Common Unix network printing problems table, see "The printer is not receiving print jobs" on page 96 for solutions to this problem.
`Could not bind to address`	The intranet daemon, mvwebd, has been killed.	Restart mvwebd. **Note:** On some systems you may need to reboot before you can restart mvwebd.
`Could not init server`	The server is already running.	No action is necessary.

Message	Cause	Action
Could not resolve hostname	An unknown printer or host name was specified.	**1** If you are using AIX, edit the stanza in /etc/qconfig to correct the hostname. **2** Add the hostname to either NIS, DNS, or the /etc/hosts file. **3** Resubmit the print job.
Hostname is unreachable	An incorrect or faulty network connection exists.	**1** If you are using AIX, edit the stanza in /etc/qconfig to add the hostname. **2** Notify the network administrator of the problem. **3** When the problem is resolved, resubmit the print job.
Lost connection to MarkVision Server on host hostname	Your computer has lost network connection with the server.	Make sure the MarkVision Server is running on the IP address or hostname specified on the client.
Printer hostname rejected command	No available adapter connections. This may be caused by multiple MarkVision servers trying to manage the same printers.	**1** Reset printer and repeat the task that gave you the error. **2** Rearrange MarkVision servers so that only one MarkVision server manages any one particular printer. **WARNING:Resetting the adapter disconnects all users from the adapter and result in the loss of print data..**

Message	Cause	Action
Printer Intervention Required! Busy Change Paper Clear Cover Open Disk Failure Job Error Load Paper Offline Output Full Paper Jam Port Timeout Printer Error Service Printer Toner Low	While printing a job, a number of things can happen at the printer. MarkVision sends a message to let you know what happened so you can correct the situation and continue printing. Most of the messages are self-explanatory.	Check the printer operator panel for additional information about the error. In most cases, the print job resumes automatically when you fix the situation at the printer.
The MarkVision daemon must be executed with root permissions	The server must be run as root.	Log on as a root user.
Unable to connect to MarkVision Server or host hostname	Your computer cannot connect to the specified hostname.	Make sure the MarkVision Server is running on the IP address or hostname specified on the client.

Before calling technical support

Read Chapter 5: Troubleshooting for help with diagnosing problems. If you encounter a problem that requires technical support, you should determine the adapter firmware level and the version of MarkVision *before* you call for service. See “Contacting Lexmark” on page xi for address, web site, and phone information.

To determine the version of MarkVision

1. **On the MarkVision main screen, click *Help*.**
2. **Click *About*.**

To determine the adapter firmware level

Type one of the following commands on the command line, then press Enter:

- `lslexprt -v -h host:port`
- `finger info@hostname`

Additional information

Each feature described in this chapter is also explained in a man page. To view a man page, type the following on the command line followed by a feature name, then press Enter:

```
man markvision
```

You can also click Help or press F1 if you need help using MarkVision.

Refer to the Readme files located in /usr/markvision/docs for updated information. There are several Readme files: one for the MarkVision Client, one for the MarkVision Server, one for job statistics, and so forth.

If you need more information about adapters, refer to your adapter documentation.

For additional help with setup or operation of MarkVision or the printer, contact Lexmark or your point of purchase.

Using BOOTP

Appendix A
Setting the IP address, netmask, and gateway

To use the BOOTstrap Protocol (BOOTP) to configure your adapter, you must have the BOOTP server installed and running on your network.

Most UNIX systems use their own BOOTP server. If you are running a Sun system, you may want to install the BOOTP server package provided with MarkVision.

Complete the following steps to set the IP address, netmask, and gateway for the network adapter.

1. **Find the hardware address of the adapter by looking at the adapter label or printing a setup page.**
2. **Set up the BOOTP server by editing the BOOTP file on the host computer running the BOOTP server.** The file is usually located in /etc/bootptab.

The BOOTP file contains information such as the hostname and the IP address. For example, a bootptab record in AIX running on a Token-Ring adapter might look similar to this:

```
jdlprt:\
ht=tr:\
ha=10005A101348:\
ip=9.51.8.212:\
sm=255.255.255.128:\
gw=9.51.8.132
```

where:

`jdlprt`	is the hostname.
`ht=tr`	is the hardware type (Token-Ring).
`ha=10005A101348`	is the hardware address.
`ip=9.51.8.212`	is the IP address.
`sm=255.255.255.128`	is the IP netmask.
`gw=9.51.8.132`	is the IP gateway.

Note that the second line in this example represents a Token-Ring adapter (ht=tr). If you are using Ethernet, please use ht=ether.

If you need help editing the BOOTP file, refer to the bootp man page. If that doesn't work, consult your system documentation.

3 Make sure BOOTP is enabled.

If you're using an internal network adapter (INA), make sure the ***Enable BOOTP*** setting in the Internet Protocol menu is ***Yes***.

For more information, consult your adapter documentation.

4 Set up the printer hostname.

If you haven't already, you'll need to define the printer name and IP address in the /etc/hosts file or on the name server.

This IP address and hostname must match those you set earlier in the BOOTP file. You may want to use a hostname that is meaningful in your environment (for example, a name that identifies the printer location).

Using DHCP

Appendix B
Setting IP parameters using DHCP

These instructions do not apply to the MarkNet XL or MarkNet XLe adapters. They apply *only* to the MarkNet S adapter.

You can set the IP address, netmask, gateway, hostname, and WINS Server using a Dynamic Host Configuration Protocol (DHCP) server. The DHCP server or a forwarding agent must be attached to the same IP subnet as the adapter. Make sure the DHCP server has a scope defined for the subnet.

Ensure that the DHCP server provides the following options:

001	Netmask for IP subnet
003	Router IP address of router (such as 9.10.8.250)
044	WINS / NBNS server IP address of WINS server

If you are using a WINS server, use telnet to set the adapter hostname.

Verifying adapter configuration

Appendix C

Checking adapter configurations

- ❒ **Is the adapter running TCP/IP?** To check, print a setup page. For more information, consult your adapter documentation.
- ❒ **Is the adapter configured for the correct network speed (Token-Ring 4 Mbps or 16 Mbps, Ethernet 10 Mbps and 100 Mbps)?** Consult your adapter documentation for the correct speeds.
- ❒ **Are the IP address, netmask, and gateway set?** See "Setting the adapter configuration" on page 111 for more information.
- ❒ **Have you set the printer hostname in the /etc/hosts file, in the NIS tables, or on the name server?**

Checking adapter connections

For internal network adapters (INAs):

- ❒ **Is the adapter installed in the printer?** Instructions for installing the adapter are shipped with the printer.
- ❒ **Is the printer physically connected to the LAN with the appropriate Ethernet or Token-Ring cable?**

Refer to your printer documentation if you need more information.

For external network adapters (ENAs):

- ❒ **Is the adapter physically connected to the LAN with the appropriate Ethernet or Token-Ring cable?**
- ❒ **Is the network switch on the adapter set correctly for use with either a thin (10Base2) or twisted pair (10BaseT) cable?**
- ❒ **Is the printer properly connected to the adapter?**

Refer to your adapter documentation for more information.

Setting the adapter configuration

If you haven't already set the IP address, netmask, and gateway for the adapter, do that now. There are many ways to set this information.

If you're running a BOOTP server, you can use the TCP/IP BOOTstrap Protocol (BOOTP). See Appendix A: "Using BOOTP" on page 103 for instructions.

- **If you are using an internal network adapter (INA), the simplest way to set the information is from the printer operator panel.** For help, refer to your adapter documentation.
- **If you are using an external network adapter (ENA), you can use *telnet* and either the Address Resolution Protocol (ARP) or the Reverse Address Resolution Protocol (RARP) to set this information.** For help, refer to your adapter documentation.

If the methods listed above won't work for your network, contact Lexmark or your point of purchase. Ask for a parallel cable converter and instructions for loading the address, netmask, and gateway.

Using MarkVision on the command line

Appendix D

The MarkVision UNIX Client is a collection of specialized utilities. Administrators can run each one directly from the command line or in a shell script.

If you know how to perform a MarkVision feature from command line, it is often quicker than using one of the interactive interfaces.

To obtain detailed information about each feature and its command line options, refer to the man pages for the particular feature. For example, to view the man page for mv_res, type:

```
man mv_res
```

Note: Not all features are available on all operating systems.

Command	Function
cat_network	Send data to a TCP/IP network printer
cat_npa	Send data to a TCP/IP network printer connected to a Lexmark adapter and is also used for End-of-job notification
cat_parallel	Parallel port printing program
cat_serial	Serial port printing program
chlexdev	Change virtual device settings
chlexprt	Change the value of specific adapter settings for TCP/IP-networked printers and adapters

Command	Function
chlexque	Change print queue settings
digest	Compile the printer and device definition data
dspopts	Display queue settings
formatter	Format print jobs for printing according to queue settings
lexprt	Open a menu for other utilities or provide a fast path to SMIT (AIX)
lslexdev	Display virtual device settings
lslexprt	Display the status of TCP/IP-networked printers
lslexque	Display print queue settings
markvision	Monitor and change TCP/IP-networked printers and adapters
markvisiond	Starts the MarkVision Server daemon
mkbootp	Add a bootp entry to /etc/bootptab
mklexdev	Create a virtual device
mklexque	Create a print queue
multiupdlexprt	Update the firmware in the Lexmark adapters
mv_pinv	Collect printer inventory information
mv_qs	Copy printer settings (Quick Setup)
mv_res	Manage fonts and forms stored on the printer
mvwebd	Start the Intranet Server daemon

Command	Function
mvwebsetup	Add MarkVision Servers to the Intranet Client
npsearch	Find network printers on a TCP/IP network
pddadm	Administer the Printer Definition Databases
rmlexdev	Remove an existing virtual device
rmlexque	Remove an existing print queue
trans_js	Translate job statistics file
transport	Generate command-line arguments for other MarkVision transport agents, such as cat_npa
updlexprt	Update the firmware in Lexmark adapters

Note: Not all features are available on all operating systems.

Technical Notes

Appendix E

All systems

The following are suggestions for solutions to some common problems you may encounter with your MarkVision installation.

Adding network devices

The following are suggested solutions to some common problems you may encounter with MarkVision.

AIX

1. **Set the printer timeout period on the printer operator panel.** Between 5 and 15 seconds is the recommended setting.
2. **As root, type the following on the command line:**

   `/usr/markvision/bin/add_net_device`

   You will be prompted for a printer name, a printer IP address or hostname, an adapter port, and a device name.

   The /etc/rc.tcpip file is modified by add_net_device.
3. **Reboot your system to activate the network devices.**

4 **You can now print to these devices using the following command structure:**

```
cat filename > /dev/device
```

HP-UX 9

1 **Set the printer timeout period on the printer operator panel.** Between 5 and 15 seconds is the recommended setting.

2 **As root, type the following on the command line:**

```
/usr/markvision/bin/add_net_device
```

You will be prompted for a printer name, a printer IP address or hostname, an adapter port, and a device name. The /etc/rc.local file is modified by add_net_device.

3 **Reboot your system to activate the network devices.**

4 **You can now print to these devices using the following command structure:**

```
cat filename > /dev/device
```

SunOS

1 **Set the printer timeout period on the printer operator panel.** Between 5 and 15 seconds is the recommended setting.

2 **As root, type the following on the command line:**

```
/usr/markvision/bin/add_net_device
```

You will be prompted for a printer name, a printer IP address or hostname, an adapter port, and a device name. The /etc/rc.local file is modified by add_net_device.

3 **Reboot your system to activate the network devices.**

4 **You can now print to these devices using the following command structure:**

```
cat filename > /dev/device
```

All other systems

1 **Copy /usr/markvision/etc/lexprinters file to the /etc directory.**

2 **Edit the file. For example:**

```
vi /etc/lexprinters
```

This file has one line entry per network device that has the following format:

```
# Device name  IP/Hostname    Printer name

pubprt         3.51.82.111    Pub_printer
laser1         netprt.pub.com Laser_printer_1
```

where *Device name* is the name of the device, *IP/Hostname* is the IP address or hostname of the printer, and *Printer name* is the name returned during printer intervention.

3 **Reboot your system to activate the network devices.**

4 **You can now print to these devices using the following command structure:**

```
cat filename > /dev/device
```

Adapter community names

Before you change the adapter community name in MarkVision, you need to change the community name on the adapter. Changing the community name in MarkVision only changes the name that the MarkVision Server uses to talk to the adapter. If you change the community name on the MarkVision Server before you change the community name on the adapter, the MarkVision Server will no longer be able to talk to the adapter until the community name on the adapter has been changed.

To change the community name on the adapter, telnet to port 9000 of the adapter. For example, to change the community name on an adapter with the hostname *office_printer*, type the following on the command line:

```
telnet office_printer 9000
```

Printer information appears incorrect

From time to time, the printer may lose contact with MarkVision because of something that happens to the printer. For example, if the printer is turned off, the information in MarkVision is not updated until the printer is turned back on.

If MarkVision displays information for a printer that appears not to be correct, try refreshing the printer.

To refresh the printer:

1. **On the MarkVision main screen, click *View*.**
2. **Click *Refresh printers*.**
3. **Select the printer you want.**
4. **Click *OK*.**

MarkVision font package

The MarkVision Client relies on the fonts in the MarkVision fonts package. Make sure you install the font package on the system with your X server or font server. AIX and HP-UX systems require that you run a setup script after installing the package. The setup script is located in the fonts directory of your install location.

See the Readme file located in the fonts directory in /usr/markvision/docs.

Converting paper size (except AIX)

If you want to use A4 as the default paper size for a print queue, run the pddadm utility. Choose the first option: ***Install support for A4 paper size***.

See the README.pdd file located at /usr/markvision/docs for more information.

Uninstalling MarkVision

Some directories are shared by both the MarkVision Client and Server, and may need to be removed by hand once both the client and the server packages have been removed.

To verify that all directories are removed after uninstalling MarkVision packages, check your install location. For example: /opt/lexmark or /usr/local/lexmark.

AIX

The following are solutions to some common problems you may encounter on this system.

Starting utilities in character mode from SMIT

When using SMIT in character mode, make sure your DISPLAY variable is unset before starting SMIT if you want the MarkVision utilities to also start in character modes.

HP-UX

The following are solutions to some common problems you may encounter on this system.

Changing the LINES setting in HP-UX 9

By default, your lines are set to 22. If you encounter problems, set your LINES environment variable equal to the number of lines your terminal is currently using. For example, in the Korn and Bourne shells, if your terminal is using 50 lines, type the following on the command line:

```
LINES=50
export LINES
```

Backspace problems in HP-UX 10

If you encounter backspace problems using the MarkVision character interface, try setting your TERM environment variable to ansi. For example, in the Korn and Bourne shells, type the following on the command line:

```
TERM=ansi
export TERM
```

Sun

The following are solutions to some common problems you may encounter on this system.

Problems viewing the MarkVision man pages

If you have trouble viewing the man pages for MarkVision:

- Make sure your MANPATH environmental variable is set to the manual page directory.
- Rebuild the windex file.
- Run catman -w in the man page installation directory.

1. **Go to your man page directory.**
2. **Remove the windex file.**

   ```
   rm windex
   ```

3. **Type the following on the command line:**

   ```
   catman-w
   ```

Problems viewing the printer graphic window

If the "SetInput" entry in the X resource database for OpenWindows is set to ***select***, then double-clicking on the status line will not bring up the printer graphic window. Try the following solutions:

- Change the ***SetInput*** entry to ***followmouse***.
- Open the printer graphic from the menubar.

  1 **On the MarkVision main screen, click *View*.**

  2 **Click *Printer graphic*.**

  3 **On the Printer graphic dialog box, select the printer you want to view.**

  4 **Click *OK*.**

Problems using the Motif interface

If your terminal fills up with garbage characters when trying to start a program using the Motif interface:

- Make sure the OPENWINHOME environment variable is set. To check, type the following on the command line:

  ```
  env | grep OPENWINHOME
  ```

  If you get no response, you must set the OPENWINHOME environment variable to the openwin directory. For example, in the Korn and Bourne shells if your openwin directory is /usr/openwin, type the following on the command line:

  ```
  OPENWINHOME=/usr/openwin
  export OPENWINHOME
  ```

- Make sure your XKeySymDB is correct. You may need to append your system XKeySymDB file with the /usr/markvision/etc/XKeySymDB file

Running earlier versions of SunOS

MarkVision has been tested to run on SunOS 4.1.3 and 4.1.4. MarkVision may run on earlier version of SunOS, but you may encounter various warning messages due to mismatches in the level of various system libraries on your system.

SCO

The following are solutions to some common problems you may encounter on this system.

Printing from NFS filesystems

Some SCO systems appear to hang when printing files located on a NFS filesystem. If your system hangs while printing on an NFS filesystem, manually cat the file to the appropriate transport agent for your virtual device. For example, if your virtual device is connected to a parallel port, the transport agent is cat_parrallel.

parallel port	`cat_parallel`
serial port	`cat_serial`
network	`cat_network`
network with End-of-job notification	`cat_npa`

Substituting loopback for hostname in SCO V

If you are running the MarkVision Server on the same workstation as the MarkVision Client, substitute the local loopback (127.0.0.1) for your MarkVision Server hostname.

See “Specifying a MarkVision Server with the UNIX Client” on page 78 and “Changing the default MarkVision Server” on page 79 for more information.

Glossary

A

adapter. See *external network adapter* and *internal network adapter.*

Address Resolution Protocol (ARP). A protocol that resolves IP addresses to hardware addresses.

alert-driven architecture. A Markvision feature that lets you monitor many printers on a real-time basis. This means that the printer notifies MarkVision when a change in its status or configuration occurs, rather than MarkVision constantly polling the printer for this information.

AIX. IBM's version of the UNIX operating system.

ARP. See *Address Resolution Protocol.*

B

bits per second (bps). The speed a character can be transmitted.

bidirectional communication. Two-way communication between MarkVision and printers using NPA protocol.

BOOTstrap Protocol (BOOTP). A TCP/IP protocol that enables a workstation or printer to find its IP address.

bps. See *bits per second.*

C

cat_network. A MarkVision command line program that sends data to a TCP/IP network printer.

cat_npa. A MarkVision command line program that sends data to a TCP/IP network printer connected to a Lexmark adapter. It is also used for End-of-job notification.

cat_parallel. A MarkVision command line program that sends data to a printer connected to a parallel port.

cat_serial. A MarkVision command line program that sends data to a printer connected to a serial port.

CDE. See *Common Desktop Environment*.

chlexdev. A MarkVision command line program that changes virtual device settings.

chlexprt. A MarkVision command line program that changes the value of specific adapter settings for TCP/IP-networked printers and adapters.

chlexque. A MarkVision command line program that changes the print queue settings.

Common Desktop Environment (CDE). A desktop environment for the X Window System available on UNIX systems, such as AIX 4.x, Solaris 2.4, 2.5, and HP-UX 10.

D

digest. A MarkVision command line program that compiles the printer and device definition data.

DNS. See *Domain Name System***.**

domain. A division within a large network using DNS.

Domain Name System (DNS). DNS resolves IP addresses to hostnames.

dspopts. A MarkVision command that displays print queue settings.

E

ENA. See *external network adapter*.

End-of-job notification. A MarkVision feature that notifies you when a print job is complete.

Ethernet. A type of network that can use any of three cabling systems: 10BaseT (*Thicknet*), 10Base2 (*Thinnet*), and 10Base5 (*AUI*). Ethernet uses 10 Mbps and 100 Mbps data transfer rates.

external network adapter (ENA). Hardware used to connect printers to a LAN using either a Token-Ring or Ethernet cable (for example, the MarkNet XLe adapter).

F

file transfer protocol (FTP). A TCP/IP protocol that transfers files from one computer to another. It is usually implemented in application programs. This is considered a better way to send files than TFTP (Trivial File Transfer Protocol) because it uses TCP rather than UDP.

finger. A TCP command that normally displays user information on a host computer.

firmware. Software that resides in the adapter, also called Microcode.

firmware level. The revision of the firmware.

flash memory. A type of ROM (read-only memory) used in network adapters. Flash memory can be erased electronically and reprogrammed without being removed from the printer.

formatter. A MarkVision command line program that formats print jobs for printing according to queue settings.

FTP. See *file transfer protocol***.**

G

gateway. The connection device between the LAN and other equipment such as computers.

H

hardware address. The unique identification number on each adapter that identifies it to the network.

hostname. Name used to identify a network printer or computer.

I

INA. See *internal network adapter.*

intelligent printer graphic. A MarkVision feature that displays a dynamic image of the printer, as well as a remote operator panel and current printer information.

internal network adapter (INA). A card installed inside a printer to connect the printer to the LAN (for example, the MarkNet S adapter).

Internet Protocol (IP). A standard protocol that specifies how packets are passed through networks. It identifies the format of the packet and describes how they should be delivered in a seamless manner. Although it is a separate protocol from TCP, it is often referred to as TCP/IP because both TCP and IP protocols are often used together.

IP. See *Internet Protocol*.

IP address. Number that identifies a network printer.

J

Java applet. An application written in the Java programming language that runs in a web browser.

L

LAA. See *locally administered address***.**

LAN. See *local area network***.**

LAN segment. Any portion of a LAN that operates independently of, but is connected to, the network by bridges or routers.

LexLink Protocol. A proprietary network printer protocol developed by Lexmark International, Inc., based on IEEE 802.2. The LexLink protocol is used by the IBM 4033 adapter and the MarkNet, MarkNet XL, and MarkNet XLe adapters in environments such as AIX, OS/2, and Windows NT.

lexprt. A MarkVision program that opens a menu for other utilities or provides a fast path to SMIT (AIX)

local area network (LAN). A computer network located on a user's premises within a limited geographical area.

locally administered address (LAA). An address that a network administrator assigns to a network adapter on the LAN.

lslexdev. A MarkVision command line program that displays virtual device settings.

lslexprt. A MarkVision command line program that displays the status of TCP/IP-networked printers.

lslexque. A MarkVision command line program that displays print queue settings.

M

MarkNet adapters. A Lexmark network printer adapter.

MarkVision. A software package designed for use with TCP/IP network printers.

markvision. A MarkVision command line program that monitors and changes TCP/IP-networked printers and adapters.

markvisiond. A MarkVision command that starts the MarkVision Server daemon.

MarkVision Client. A term that refers to either the MarkVision UNIX Client or the MarkVision Intranet Client.

MarkVision Intranet Client. A set of utilities that works with the MarkVision Server and a web server to run a MarkVision Client as a Java applet through a web browser.

MarkVision Server. Collects data from network-attached printers and provides information to MarkVision Clients.

MarkVision UNIX Client. A set of utilities that runs on a UNIX workstation, and works with the MarkVision Server to let you monitor and control printers on the network.

Mbps (megabits per second). One million bits per second used as rate of data transfer speed.

Microcode. See *firmware***.**

mkbootp. A MarkVision command line program that adds a bootp entry to /etc/bootptab.

mklexdev. A MarkVision command line program that creates a virtual device.

mklexque. A MarkVision command line program that creates a print queue.

multiupdlexprt. A MarkVision command line program that updates the firmware in the Lexmark adapter.

mv_pin. A MarkVision command line program that collects printer inventory information.

mv_qs. A MarkVision command line program that copies printer settings.

mv_res. A MarkVision command line program that manges font and forms stored on the printer.

mvwebd. A MarkVision command line program that starts the MarkVision Intranet Server daemon.

mvwebsetup. A MarkVision command line program that configures mvwebd.

N

name server. A DNS server that resolves hostnames to addresses.

netmask. A bit mask that specifies the local network portion of an IP address, allowing you to logically subdivide a network.

network adapter. The adapter card installed in the printer.

network address. The logical location on the LAN where a device such as a printer is located, typically 12 characters long.

Network Information System (NIS). A UNIX service that lets administrators configure users, groups, hostnames and other network information for a group of systems, rather than on each individual system

network printer. A printer with either an INA or an ENA connecting it to the LAN.

Network Printing Alliance Protocol (NPA). A IEEE 1284.1 standard protocol that specifies how data is passed from network printers to computers.

nickname. A name that a network administrator gives to the network card. It can have various uses, one of which is to identify the location of the printer.

NIS. See *Network Information System (NIS).*

NIS tables. Configuration tables. See *Network Information System (NIS).*

NPA. See ***Network Printing Alliance Protocol.***

npsearch. A MarkVision command line program.

P

Packet InterNet Groper (PING). Software that tests whether an IP destination can be reached by sending it an ICMP echo request and waiting for a reply.

pddadm. A MarkVision command line program that administers the Printer Definition Databases.

PING. See *Packet InterNet Groper.*

pkgrm. The System V software package removal utility.

printq group. An AIX group authority. Members typically have authority to perform functions such as setting up printers, making print queues, and deleting printers.

print queue. The place in the server where print jobs are stored for printing.

print server. Hardware or software (or a combination of hardware and software, such as adapters) that takes information from a print queue and sends it to a printer.

protocol. A set of rules governing the communication and the transfer of data between two or more devices in a communication system.

Q

Quick Setup. A MarkVision program that lets you copy printer configuration information from one printer to another. Quick Setup can be run from the command line or within MarkVision. See *mv_qs*.

R

RARP. See *Reverse Address Resolution Protocol.*

remote operator panel. A MarkVision feature that provides a graphic representation of a printer operator panel that lets you view and change printer settings from your screen. To use this feature, the printer you are using must be enabled for NPA.

Reverse Address Resolution(RARP). A protocol that resolves hardware addresses to IP addresses.

Resource Manager. A MarkVision program that lets you manage resources such as fonts and forms stored on your printer. Resource Manager can be run from the command line or within MarkVision. See *mv_res*.

rmfn. The software removal program on HP-UX 9 systems.

rmlexdev. A MarkVision command line program that removes an existing virtual device.

rmlexque. A MarkVision command line program that removes an existing print queue.

S

sam. The system administration utility on HP-UX 10 systems.

server. A device that allows people using LAN workstations to share resources such as printers and plotters on the network.

Simple Network Management Protocol (SNMP). A TCP/IP protocol that defines how computers communicate management information.

SMIT. See *System Management Interface Tool*.

SNMP. See *Simple Network Management Protocol*.

swmgr. The software management on Silicon Graphics systems.

System Management Interface Tool (SMIT). Administration tool used on the AIX operating system.

T

TCP/IP. Transmission Control Protocol/Internet Protocol. A network protocol used to connect workstations and hosts, commonly used in UNIX environments.

TFTP. See *Trivial File Transfer Protocol.*

Token-Ring. A network with a ring topology that passes a token from adapter to adapter and conforms to IEEE 802.5 standard.

trans_js. A MarkVision command line program that translates the job statistics file.

transport. A MarkVision command line program that generates command-line argument for other MarkVision transport agents, such as cat_npa.

Trivial File Transfer Protocol (TFTP). A TCP/IP protocol that transfers files using UDP.

U

UAA. See *universally administered address.*

UDP. See *User Datagram Protocol*.

universally administered address (UAA). The factory-set default address of an adapter. The UAA cannot be changed. Network administrators may choose to set a locally administered address (LAA) for the adapter so that its address is more meaningful in their workplace.

updlexprt. A MarkVision command line program that updates the firmware in Lexmark adapters.

User Datagram Protocol (UDP). The protocol that allows one computer to send a datagram (unit of data) to another. It uses the IP protocol to deliver datagrams. UDP datagrams include a protocol port number so that the sending computer can differentiate among several destinations on the remote computer. UDP uses less overhead than TCP, but cannot guarantee packet delivery.

V

virtual device. A device (for example, a printer) simulated by an operating system and software.

W

web server. An HTTP 1.0 compliant server, such as Netscape Enterprise Server 2.0, that is necessary to use *MarkVision for UNIX Intranet Servers.*

Windows Internet Naming System (WINS). WINS resolves IP addresses to hostnames automatically.

WINS. See *Windows Internet Naming System***.**

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