

A horizontal rainbow gradient background, transitioning from green on the left to yellow, orange, red, purple, and blue on the right.

*Image Scan!* for Linux  
*User's Guide*

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# Contents

## *Introduction*

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Before Using Image Scan! for Linux .....	1
About the License .....	2
Cautions and Notes .....	2
About This Guide .....	2
System Requirements .....	3

## *Chapter 1 Installing the Software*

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Installing Image Scan! for Linux .....	4
Uninstalling Image Scan! for Linux .....	5
Configuring USB Scanner Devices .....	6

## *Chapter 2 Using Image Scan! for Linux*

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Overview on Scanning .....	10
Running Image Scan! for Linux .....	11
From the command line .....	11
From the GIMP graphic software .....	12
Scan Selector dialog box .....	12
Main Window .....	13
Document Settings .....	18
Adjust Settings .....	23
Scanning an Image .....	26
Scanning to a File .....	26
Scanning to a Printer .....	28

## *Chapter 3 Configuring SANE Network*

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Setting Up the Client . . . . .	29
Setting Up the Server. . . . .	30
Troubleshooting. . . . .	32

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# Introduction

Image Scan! for Linux provides a graphical user-interface to directly control all of the features of your EPSON scanner. With this software you can scan images in color or black and white and obtain professional quality results. Since Image Scan! for Linux supports network scanning, the client users can use the scanner that is connected to the server.

In this manual, a computer running Image Scan! for Linux is called “the client”, and the computer that is connected to the scanner is called “the server”.

---

## ***Before Using Image Scan! for Linux***

Before using Image Scan! for Linux, check the following:

- The SANE package version 1.0.3 or later must be installed before installing Image Scan! for Linux.
- When using Image Scan! for Linux on the network, you need to configure the SANE network on the client and server. For detailed information, see Chapter 3, “Configuring SANE Network.”

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## About the License

Image Scan! for Linux contains sources covered by the following licenses:

- GNU General Public License
- GNU Lesser General Public License
- EPSON AVASYS Public License

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## Cautions and Notes



*contain important information and useful tips on using this software.*

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## About This Guide

This guide contains information on using Image Scan! for Linux.

For information about your scanner, see the manual shipped with your scanner.



- *Some screen shots in this guide may be different from yours. This difference does not change the instructions.*
  - *Commands are indicated in fixed width font.*
-

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## ***System Requirements***

Go to the website ([http://www.avasys.jp/english/linux\\_e/index.html](http://www.avasys.jp/english/linux_e/index.html)) for information on supported operating systems and scanners.

## Chapter 1

# Installing the Software

This chapter explains how to install and uninstall Image Scan! for Linux.

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## Installing Image Scan! for Linux

Follow the steps below to install Image Scan! for Linux.

---

**Note**

- *When using the scanner on the network, Image Scan! for Linux must be installed on both the server connected to a scanner and client computers.*
- *The SANE package version 1.0.3 or later must be installed before installing Image Scan! for Linux.  
(<http://www.sane-project.org/>)*

- 
1. Log in as root.
  2. Execute the following rpm command to install Image Scan! for Linux (Substitute the version of your Image Scan! for Linux for 1.5.x-x).

```
# rpm -i iscan-1.5.x-x.i386.rpm
```

If an old version of Image Scan! for Linux exists, run the following command and update it to the latest version.

```
# rpm -U iscan-1.5.x-x.i386.rpm
```

---

**Note**

- *If the message “error: failed dependencies” appears during installation of Image Scan! for Linux, quit the installation. Install the necessary packages listed in the message, and then install Image Scan! for Linux again.*
  - *For detailed information on rpm commands, refer to the rpm website (<http://www.rpm.org/>).*
  - *If you fail to install Image Scan! for Linux, refer to the EPSON AVASYS website ([http://www.avasys.jp/english/linux\\_e/index.html](http://www.avasys.jp/english/linux_e/index.html)).*
- 

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## ***Uninstalling Image Scan! for Linux***

To uninstall Image Scan! for Linux, follow the steps below.

1. Log in as root.
2. Execute the following rpm command to uninstall Image Scan! for Linux.

```
# rpm -e iscan
```

---

## Configuring USB Scanner Devices

Using your USB scanner device with “Image Scan! for Linux” or other SANE frontend could be quite a bit of a hassle to set up. With the release of version 1.14.0 setting things up has been automated for most situations. If your system has the `libusb` and `hotplug` packages installed, chances are that just installing `iscan` is enough to get going.

Below, we will try to explain how to get your scanner to work in those cases that just installing is not quite enough or you really want to do things the old fashioned way.

But before that, we would like to point out that the kernel’s scanner module was declared obsolete as of kernel version 2.6.0 and removed from the kernel altogether in version 2.6.3. We recommend you switch to using `libusb` if you have not done so already.

---

**Note**

*More information regarding the kernel’s scanner module and `libusb` is available from the `sane-usb(5)` manual page.*

```
$ man sane-usb
```

---

### CASE 1: Using `libusb`

With the addition of `hotplug` support in version 1.14.0 this has become the default. If `hotplug` is installed on your system, then you should not have to configure anything. Just connect your scanner, turn it on and start `iscan`.

When you don’t have `hotplug` installed on your system, you may have to change the access permissions for the device in order to scan as a normal user. Typical symptoms of this case are communication errors when scanning as a normal user and no trouble at all when scanning as root. If this happens to you, do the following to fix things:

1. run `sane-find-scanner` to find the USB connection

```
$ sane-find-scanner | grep 0x04b8
found USB scanner (vendor=0x04b8,
product=0x0110) at libusb:001:002
```

From the sample output above the USB connection is at 001/002.

2. change the permissions with

```
# chmod 0666 /proc/bus/usb/001/002
```

Of course, replace the numbers with those you found in step 1.

Note that you will have to do this every time you (re)connect or power cycle your USB scanner or reboot your computer.

If you want to check whether you are using libusb, just have a look at the `/etc/sane.d/epkowa.conf` configuration file. It should have an

```
usb
```

line (without a leading '#'). Specifically, the

```
# usb /dev/usb/scanner0
```

line (and the lines like it) should all start with a '#'.

---

**Note**

- *It may happen that your kernel decides to load its scanner module anyway when you connect your USB scanner. This may interfere with the use of libusb, so we recommend that you rename (or remove) the module. The scanner module is typically installed as one of*

```
/lib/modules/$version/kernel/drivers/usb/  
scanner.o  
/lib/modules/$version/kernel/drivers/usb/  
image/scanner.ko
```

- *You can check whether the scanner module is loaded with the following command:*

```
# lsmod | grep scanner
```

*If it was inadvertently loaded, you may be able to unload it with one of:*

```
# modprobe -r scanner  
# rmmod scanner
```

*but note that with 2.6 kernels this may not work and even hang. In those cases, rename (or remove) the module and reboot.*

---

## ***CASE 2: Using the kernel's scanner module***

This is the old fashioned way to use a USB scanner under Linux. It only works for kernels from the 2.4 series. We recommend you use a kernel version 2.4.12 or later. You can check your kernel's version with

```
$ uname -r
```

To get the scanner module loaded correctly every time you start your computer, add the following line to your `/etc/modules` file:

```
scanner vendor=0x04b8 product=0xHHHH
```

where you have to substitute 0xHHHH with the USB product ID of your scanner. You can find this ID in the output of:

```
$ cat /proc/bus/usb/devices | grep 04b8
P: Vendor=04b8 ProdID=HHHH Rev= x.yy
```

Of course, you don't have to reboot your computer to make these changes effective right away. All you need to do to use your scanner now is:

```
# modprobe scanner vendor=0x04b8 product=0xHHHH
```

The module will access your scanner via one of the `/dev/usb/scanner*` device files. For proper operation, you will need both read and write access to this device. If necessary, you can change access permissions with the `chmod` command (see the `chmod(1)` manual page for details). Doing (as root):

```
# chmod 0666 /dev/usb/scanner*
```

will give everybody read and write access to your scanner devices. Users of the (now obsolete) `devfs` file system should consult its documentation on how to get the proper permissions set. Make sure your `/etc/sane.d/epkowa.conf` configuration file contains

```
usb /dev/usb/scanner0
```

without a leading `#`. Other `usb` lines should all start with a `#`. Now you should have no trouble using your USB scanner.

## Chapter 2

# Using Image Scan! for Linux

Image Scan! for Linux directly controls all of the features of your EPSON scanner. With this software you can scan images in color or black and white and obtain professional quality results.

---

## Overview on Scanning

You can scan an image with Image Scan! for Linux using the following steps.

1. Make sure the scanner and the computer connected to the scanner are turned on.
2. Place a document on the scanner. See the user's guide of the scanner.
3. Run Image Scan! for Linux on your computer. See "Running Image Scan! for Linux" on page 11.
4. If the Scan Selector dialog box appears, select the scanner from the list. Click OK. See "Scan Selector dialog box" on page 12.

The main window appears.

5. On the Document tab, make settings such as document source, image type, and resolution. See "Document Settings" on page 18.
6. Click the Preview button to preview the full page. See "Preview button" on page 14.

7. Create a marquee of the image you want to scan. See “Marquee” on page 14.
8. Make the color adjustment settings.  
Click the **Auto Exposure** button to automatically activate and optimize the image enhancement for image source. Or, click the **Adjust** tab, and then set the color adjustments as you prefer. See “Auto Exposure button” on page 15 or “Adjust Settings” on page 23.
9. Select a destination to send the scanned image. You can either save a scanned image as a file or send it directly to a printer. See “Destination list box” on page 16.
10. Click the **Scan** button. The scanned image is saved as a file or sent to the printer. See “Scanning an Image” on page 26.

---

## ***Running Image Scan! for Linux***

You can start Image Scan! for Linux either from the command line or through the GIMP.

### ***From the command line***

At the command prompt, execute the following command to start Image Scan! for Linux.

```
$ iscan
```

Image Scan! for Linux starts. If more than one scanner are connected to the network, the Scan Selector dialog box appears. See “Scan Selector dialog box” on page 12.

## From the GIMP graphic software

You can also start Image Scan! for Linux from the GIMP. In this case, the scanned image is transferred to the GIMP.

1. Execute the following command to register Image Scan! for Linux as a GIMP plug-in.

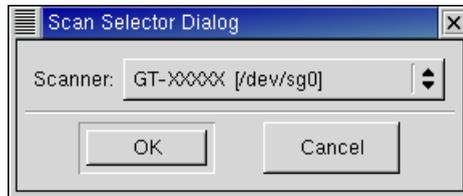
```
$ ln -s /usr/bin/iscan ~/.gimp-1.2/plugin-ins/
```

2. Start the GIMP.
3. From the Xtns menu, select Acquire Image, and then Scanning (iscan).

Image Scan! for Linux starts. If more than one scanner are connected to the network, the Scan Selector dialog box appears. See “Scan Selector dialog box” on page 12.

### Scan Selector dialog box

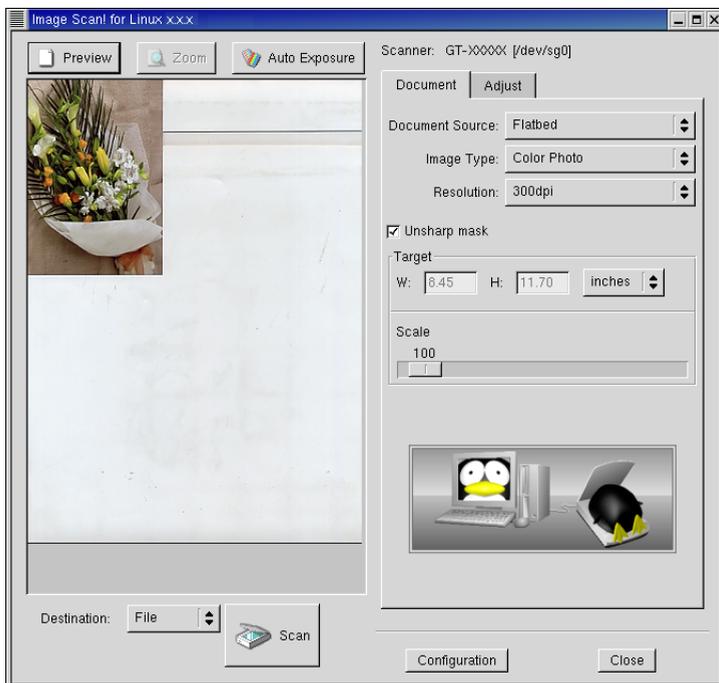
If more than one scanner are connected to the network, the Scan Selector dialog box appears when you run Image Scan! for Linux. Select a scanner you want to use, and then click OK.



---

## Main Window

The main window allows you to make the following settings.



## Preview button

Before you scan an image, you can use the Preview window to see the effects of most Image Scan! for Linux settings, and to make additional image adjustments. Image Scan! for Linux can automatically adjust and optimize the exposures and colors of scanned images during previewing. You can also use a marquee (frame) to scan only selected area of an image.

---

### Note

- *When using the Automatic Document Feeder, the document is ejected after previewing. To scan documents, set documents to be scanned in the Automatic Document Feeder including the ejected documents.*
  - *For some scanner models, the size of paper captured is detected automatically to become Maximum Scanning Area. The value becomes the maximum size when it is set as a default or the detected paper size is unknown.*
- 

## Marquee

A marquee is a sizeable frame that determines what part and how much of an image will be scanned.

To create a marquee, move the pointer over the image in the Preview window. The pointer becomes a set of cross-hairs. Hold down the mouse button and drag the cross-hairs over an area of the image, then release the mouse button to create a marquee.

To move the marquee, place the mouse pointer within the marquee, and drag the marquee anywhere in the Preview window.

To resize the marquee, place the mouse pointer on the edge of the marquee and drag an arrow.

To delete the marquee, click the Preview window.

## Zoom button

Click the ZOOM button to zoom in on a selected area of the image. Use a marquee to select the part of the image you want to zoom and then click this button.

---

**Note**

- *The Zoom button is dimmed if there is no preview image or no marquee in the preview window.*
  - *When using the Automatic Document Feeder, the document is ejected after previewing. To scan documents, set documents to be scanned in the Automatic Document Feeder including the ejected documents.*
- 

## Auto Exposure button

Click the Auto Exposure button to automatically optimize the exposure for an image. The Gamma, Highlight, and Shadow settings in the Adjust dialog box are automatically set.

---

**Note**

*The Auto Exposure button is dimmed if there is no preview image or if Line Art is selected for Image Type.*

---

## Scanner

Displays the scanner name you have selected.

If you want to use a different scanner on the network, you need to quit Image Scan! for Linux and then run it again. Then select the scanner in the Scan Selector dialog box.

### Start Button check box

When you check this box, the scanner will not perform a scan until you press the Start Button of your scanner. This is convenient if your scanner is, for example, located in another room, or you want to make several scans in a row (not unlike what happens when scanning from an ADF unit).

---

**Note**

*For scanners that do not support the Start Button, this check box is not displayed.*

---

### Destination list box

You can specify where the scanned image is to be sent: either File or Printer.

When you select Printer, the scanned image is sent to the default printer. If you want to use a different printer, click the Configuration button to specify the printer.

---

**Note**

*If you start Image Scan! for Linux from the GIMP, this setting is dimmed.*

---

### Scan button

Click the SCAN button to start scanning. For detailed information, see “Scanning an Image” on page 26.

### Configuration button

When you select Printer for the destination, the scanned image is sent to the default printer. If you want to use a different printer, click the Configuration button to specify the printer.

## Print Command

Specify a print command (up to 256 characters). When using an EPSON printer, we recommend you install Photo Image Print System for high quality printing.

---

**Note**

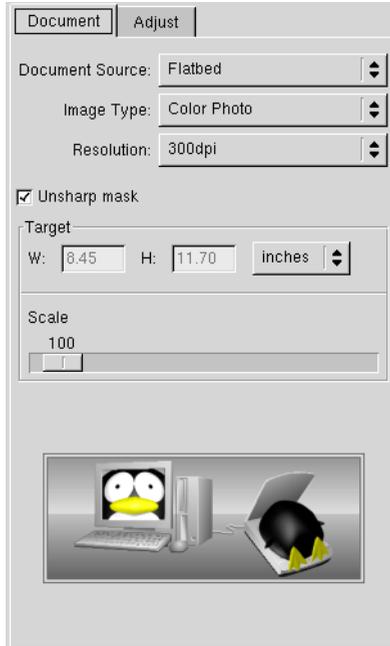
*If you start Image Scan! for Linux from the GIMP, the Configuration button is dimmed.*

---

---

## Document Settings

In the Document dialog box, you can make settings such as document source, image type, and output resolution.



## Document Source

The Document Source list contains the following settings: Flatbed, TPU for Neg.Film, TPU for Pos.Film, and Auto Document Feeder. When scanning a reflective document placed on the document table of the scanner, leave Document Source set to Flatbed.

### **Flatbed**

Select Flatbed to scan reflective document.

### **TPU for Neg.Film/TPU for Pos.Film**

Select one of them depending on the type of film (negative or positive) you are scanning. Select TPU for Neg.Film for negative film and TPU for Pos.Film for positive film.

### **Auto Document Feeder**

Select Auto Document Feeder when using Automatic Document Feeder for scanning.

---

**Note**

- *TPU for Neg.Film and TPU for Pos.Film do not appear if Transparency Unit is not connected to your scanner.*
  - *Auto Document Feeder does not appear if Automatic Document Feeder is not connected to your scanner.*
-

## Image Type

The Image Type list contains the following settings: Color Photo, Color Document, Black & White Photo, Black & White Document, and Line Art.

### **Color Photo**

24-bit color

This setting is useful when scanning color photos.

### **Color Document**

24-bit color

This setting is useful when scanning magazines or catalogs in color.

### **Black & White Photo**

8-bit gray

This setting is useful when scanning black and white photos.

### **Black & White Document**

8-bit gray

This setting is useful when scanning magazines or catalog in black and white.

### **Line Art**

Black and white

This setting is useful when scanning characters-only documents or line drawings without coloring.



*If Document Source is TPU for Neg.Film or TPU for Pos.Film, Line Art is dimmed.*

---

## Resolution

Resolution is the indication of how finely an image is resolved into pixels. It can be measured in dots per inch (dpi).

When you specify a high resolution, the number of pixels of the data increases and the scanned image becomes fine in texture. Increasing the resolution causes the data size to increase. Specify a suitable resolution according to the scanning purpose.

---

A red flag icon with the word "Note" written in white.

*The range of resolution depends on your scanner.*

---

## Unsharp mask check box

You can improve the sharpness of an image by selecting the Unsharp mask check box.

---

A red flag icon with the word "Note" written in white.

*If Image Type is Line Art, this check box is dimmed.*

---

## Target

### **W (width) and H (height)**

You can confirm the size of the output image. The width and height appear in the selected unit of measurement. You can change the image area in the Preview window by creating a marquee.

### **Units**

Select a unit of measurement: inches, pixels, or cm.

## Scale slider

An image can be reduced or enlarged by moving the scale slider. The range of possible reduction or enlargement varies depending on the current resolution.

## Focus

You can specify the focus position. The default focus position with a flatbed document source is 0.0 and the TPU document source is 2.5.

---

**Note**

*The focus setting appears for scanners that have an adjustable focusing mechanism.*

---

---

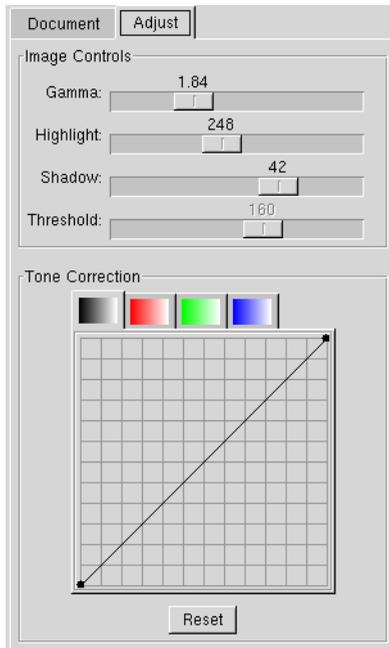
# Adjust Settings

In the Adjust dialog box, you can modify the brightness and tone correction settings.

**Note**

*If there is no preview image, all of the settings are dimmed.*

---



## *Gamma*

Gamma is the difference in contrast between the light tones and dark tones of an image. Changes in the gamma level only affect mid-tones, and can be effective for bringing out details normally hidden in shadow or highlight. To change the values, move the slider left or right.

When Image Type is Line Art, the Gamma control is dimmed.

## *Highlight*

You can adjust the brightness in the lighter parts of an image. If the value is decreased, the image becomes brighter; if the value is increased, the image becomes darker. To change the values, move the slider left or right.

When Image Type is Line Art, the Highlight control is dimmed.

## *Shadow*

You can adjust the darkness in the darker parts of an image. If the value is decreased, the image becomes brighter; if the value is increased, the image becomes darker. To change the values, move the slider left or right.

When Image Type is Line Art, the Shadow control is dimmed.

## *Threshold*

You can adjust the threshold value of an image. The threshold is what allows the scanner to distinguish between an image and its background. Since the best threshold depends on the document condition, find the best value by moving the slider left or right.

When Image Type is Color Photo or Black & White Photo, the Threshold control is dimmed.

## *Tone Correction*

### **Channel**

Click a colored button you want to adjust. When the left button next to the red/green/blue color set is selected, your adjustments affect all of the three colors. Selecting one of the other buttons allows you to adjust red, green, or blue individually.

### **Tone curve editor**

You can adjust the tone curve, which helps to ensure well-balanced coloring of the image. The tone curve editor allows you to change the shape of the tone curve. The horizontal axis is the brightness of the original (input value), and the vertical axis is the brightness of the scanned image (output value).

The tone curve editor has two fixed points: (0, 0) and (255, 255). In addition, you can create eleven fixed points inside the tone curve editor. To create a fixed point, move the mouse pointer into the tone curve editor. The pointer becomes a set of cross-hairs. Click the location you want to select as the fixed point. The point you click becomes a new fixed point.

The black square appears on the fixed point, indicating that it is the current fixed point that you most recently adjusted.

When the mouse pointer is placed near the fixed point, it changes to an arrow allowing you to move the point. Select the fixed point you want to move and then drag it.

To delete a fixed point, select it with an arrow. Drag and drop the point out of the grid.

### *Reset button*

Click the **Reset** button to return the Tone Correction settings to their default values.

---

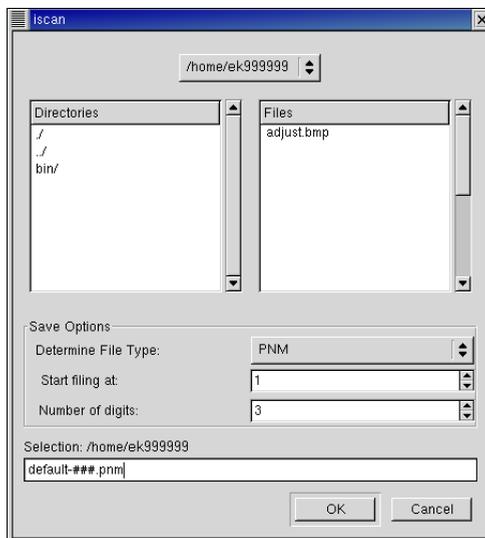
## Scanning an Image

You can either save a scanned image as a file or send it directly to a printer. To save a scanned image as a file, see “Scanning to a File” on page 26; to print a scanned image on a printer, see “Scanning to a Printer” on page 28.

### Scanning to a File

When you select File in the Destination list box and then click the SCAN button in the main window, the File Save Settings dialog box appears. Use the File Save Settings dialog box to save a scanned image as a file. You can specify an image format and a file name.

For scanning using the Automatic Document Feeder, you can name files with sequential numbers. The default format is “default-###.pnm” where ### stands for sequential numbers set in the Start filling at list box and the Number of digits list box.



The screen shot is when Auto Document Feeder is selected for document source.

## Location

Indicates the directories where image files are saved.

## Determine File Type

Select a file type to be saved, for example PNM, PNG, or JPEG.

## Start filling at

This menu appears if Auto Document Feeder is selected for the document source or the Start button is enabled. Specify a number to be added to the end of the file name. The number will increase by one for each subsequent file.

## Number of digits

This menu appears if Auto Document Feeder is selected for the document source. Specify the number of digits for the sequential number.

---

**Note**

*The digit increases as the sequential number exceeds the number of digit. For example, if the number of digits is set to 1 and the sequential number comes to 9, the number of digits becomes 2 and the next sequential number becomes 10.*

---

## Save file edit box

Specify a file name for the scanned image.

## Scanning to a Printer

You can send the scanned image to the printer specified in the Configuration dialog box. Follow the steps below.

---

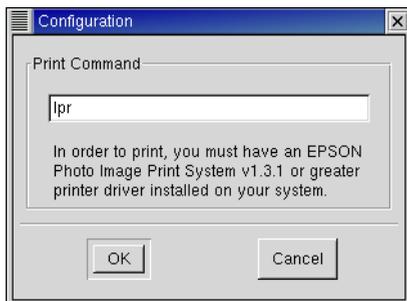
**Note**

*To print the scanned image on an EPSON printer, we recommend you install Photo Image Print System Ver. 1.3.1 or later for high quality printing. The latest version of Photo Image Print System is available at: <http://www.avasys.jp/>*

---

1. Modify the settings as you prefer in the main window.
2. Select Printer in the Destination list box.
3. If you are not using the default printer, click the Configuration button and then enter the print command. Click OK.

For example, if the printer name is scxxxx, enter `lpr -Pscxxxx`.



4. Click the SCAN button. The scanned image is sent to the printer.

## Chapter 3

# Configuring SANE Network

Image Scan! for Linux uses the SANE library to access your scanner(s). This library contains a network module\*<sup>1</sup> that, with a little configuration, makes accessing scanners over the network a breeze. This section explains how to get a network setup to work. Here, a computer running Image Scan! for Linux is called “the client”, and the computer that is connected to the scanner is called “the server”\*<sup>2</sup>.

---

### Note

- \*<sup>1</sup> *The SANE developers call this a backend, but other people may be more familiar with the term “driver”.*
  - \*<sup>2</sup> *It is very well possible that the client and the server refer to the one and the same computer.*
- 

---

## Setting Up the Client

On the client side, you need to check that the net module is enabled in `/etc/sane.d/dll.conf` and that the server(s) you want to use are listed in `/etc/sane.d/net.conf`. Sample versions of the files may look like:

```
net
epkowa # needed by iscan
```

for a minimalistic network enabled `dll.conf` usable with `iscan`, and

```
scan-server
192.168.0.1
```

for a simple two server `net.conf`. Hosts can be specified by name or by IP address. Both files are plain text files and can be edited with your favorite text editor. You do need root permissions to do this, though. For more detailed information about these files (and more), refer to the `sane-dll(5)` and `sane-net(5)` manual pages.

You also need a `sane` entry in `/etc/services`, but installing Image Scan! for Linux should have taken care of that. The required entry looks like:

```
sane 6566/tcp # SANE network scanner daemon
```

You can easily find it with the following command:

```
$ grep 6566/tcp /etc/services
```

---

## ***Setting Up the Server***

On the server side, you need to add the clients that are allowed to use the scanner(s) to the `/etc/sane.d/scaned.conf` file. A sample setup may look like:

```
scan-client  
192.168.0.2
```

For detailed information about the `scaned.conf` file (and more), refer to the `scaned(1)` manual page.

The server's `/etc/sane.d/dll.conf` should have the `epkowa` module enabled. Installation of Image Scan! for Linux adds this module and enables it by default.

Just as on the client, the server's `/etc/services` needs a `sane` entry. Again, the installation of Image Scan! for Linux should have taken care of that.

The *saned* daemon (the program that handles all SANE network scan requests) is typically started and stopped via the internet super-server: *inetd* or *xinetd*. If your system uses *inetd*, you need to add a line like

```
sane stream tcp nowait root.root /usr/sbin/saned saned
```

to your */etc/inetd.conf* file and restart the daemon. This requires root privileges. Restarting is typically achieved via

```
# /etc/init.d/inetd restart
```

On *xinetd* based systems, you need to add a sane file in the */etc/xinetd.d/* directory and possibly tweak */etc/xinetd.conf*. A sample sane file is provided with Image Scan! for Linux in the documentation directory and looks like

```
# default: off
# description: SANE network scanner daemon
service sane
{
    disabled      = no
    port          = 6566
    socket_type   = stream
    wait         = no
    user         = root
    server        = /usr/sbin/saned
}
```

Restart *xinetd* after adding the file.

---

## Troubleshooting

Many factors play a role in networking and some of these may prevent your configuration from working. Some of the more common, network related culprits are:

### *The sane service*

Although the SANE documentation refers to it as the *sane* service, the IANA has registered it as the *sane-port* service. This means that your systems may only have a *sane-port* service in its `/etc/services` file. This can wreck havoc on your network scanner setup.

To fix this, you can:

- 1) add an alias to your `/etc/services` so the entry looks like

```
sane-port 6566/tcp sane # SANE network scanner daemon
```

and/or

- 2) modify your `/etc/inetd.conf` or `/etc/xinetd.d/sane` file to use the *sane-port* service instead of the *sane* service. You may also have to adjust the `/etc/hosts.allow` and/or `/etc/hosts.deny` files (see below).

### *firewall*

Many distributions allow you to set up a packet filtering firewall during installation. If this firewall rejects or drops network packets directed at port 6566, the port used by *saned*, you will not be able to contact the scan server. Note that both the server and client need to accept packets on the input and output chains.

## ***TCP wrappers***

Another access control mechanism that may prevent you from accessing *saned* on the server is *tcpd*. This wrapper utility decides access based on information in the `/etc/hosts.allow` and `/etc/hosts.deny` files. Naturally, the server needs to allow the client and *vice versa*. Refer to the `hosts_access(5)` manual page for details.

## ***host name resolution***

The *saned* daemon does reverse name lookups before it responds to scan requests. This means that it checks whether host name and IP address match. If your domain name service (DNS) server is slow to respond, misconfigured or temporarily unavailable, reverse name lookups will fail and clients will not be allowed to connect.

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