



# **Linux CUPS Printer and SANE Scanner Drivers**

**for e-STUDIO166, 167, 206, 207 and 237**

## Contents

1	Supported Linux Distributions.....	3
2	Supported MFPs.....	3
3	Installation.....	3
3.1	On PC to which the MFP is connected.....	3
3.1.1	Installing another supported e-STUDIO MFP.....	4
3.1.2	Sharing the CUPS printer with other Linux PCs.....	4
3.1.3	Sharing the CUPS printer with other Windows PCs.....	5
3.1.4	Sharing the SANE scanner with other Linux and Windows PCs.....	5
3.2	On a LAN PC other than where the MFP is connected.....	5
3.2.1	When the MFP is connected to a PC running Linux.....	5
3.2.1.1	When the remote (client) PC is running Linux.....	5
3.2.1.2	When the remote (client) PC is running Windows.....	7
3.2.1.2.1	Installing scanner drivers.....	7
3.2.1.2.2	Installing printer drivers.....	7
3.3	Firewalls and shared scanning.....	7
3.3.1	Linux Server PC.....	8
3.3.2	Linux Client PC.....	8
4	Operation.....	8
4.1	Printing.....	8
4.1.1	Viewing the printer's status.....	8
4.1.2	From "The GIMP".....	8
4.1.3	Deleting print jobs in CUPS webpage – forbidden.....	8
4.2	Scanning.....	9
4.2.1	Scanner Sources.....	9
4.2.1.1	Flatbed.....	9
4.2.1.2	Flatbed/ADF.....	9
4.2.1.3	RADF.....	9
4.2.2	Scanning Multiple pages.....	9
4.2.3	Contrast.....	10
5	Troubleshooting.....	10
5.1	Printer not created.....	10
5.2	Scanning using xscanimage (from The GIMP) on NLD/SLED9.....	11
5.3	Scanning with Kooka.....	11
5.4	USB Modems not working after MFP drivers installed on NLD/SLED9.....	11
6	Uninstallation.....	11

# 1 Supported Linux Distributions

All Linux distributions must already have the CUPS package installed.

The following Linux distributions are supported via an RPM installer:

- Novell SUSE Linux Enterprise Desktop [SLED] Version 9 with SP4.  
Previously known as Novell Linux Desktop [NLD] Version 9.
- Novell SUSE Linux Enterprise Desktop [SLED] Version 10 with SP1.
- Red Hat Enterprise Linux WS Version 3.
- Red Hat Enterprise Linux WS Version 4.
- Red Hat Enterprise Linux Desktop with Workstation option Version 5, including SELinux in targeted mode.

# 2 Supported MFPs

The following monochrome laser printer/scanner/copier/fax MFPs are supported:

- e-STUDIO166
- e-STUDIO167
- e-STUDIO206
- e-STUDIO207
- e-STUDIO237

# 3 Installation

## 3.1 On PC to which the MFP is connected



If Linux detects the connected e-STUDIO MFP as the system boots, select the **Ignore** option or skip any attempt by Linux itself to install drivers then install them as defined below.

1. Visit [www.wordcraft.com](http://www.wordcraft.com).
2. Click the **Linux** link, this will redirect you to the Linux related Wordcraft International website.
3. Click the **Download** link in the webpage's menu bar.
4. Click the link to download the appropriate **CUPS and SANE drivers** to the PC where they are to be installed.
5. Connect the MFP to the PC via one of the PC's USB ports and power on the MFP.
6. Either install the downloaded .rpm file using your Linux distribution's Package Manager or open a shell session (terminal) and enter the following command as root user:

- `rpm -ivh e-studio-1.1-4.i386.rpm`

where 'e-studio-1.1-4.i386.rpm' is the name of the downloaded .rpm file.



If you press the TAB key after typing the "e-studio" portion of the filename, Linux will, if the .rpm is stored in the current folder and there are no other similarly named files, complete the filename for you.

7. Browse to <http://localhost:631> and click the **Printers** link to confirm that the CUPS e-STUDIO printer is present. If no new e-STUDIO printer is listed, refer to section 5.1 in the troubleshooting portion of this guide starting on page 10.



When using NLD/SLED9 we recommend that you reboot the PC after installing the e-STUDIO MFP drivers so that the CDC\_ACM kernel module can be unloaded. On NLD/SLED9 the CDC\_ACM kernel module will crash if it is running when either:

- Linux is shutdown while the e-STUDIO MFP is connected and powered on;
- The e-STUDIO MFP is disconnected or powered-off.

### 3.1.1 Installing another supported e-STUDIO MFP

After the CUPS printer and SANE scanner drivers have been installed...

SANE compatible applications will automatically detect additional supported e-STUDIO MFPs when they are connected.

To install an additional CUPS printer driver for the additional supported (see the list in section 2 above) e-STUDIO MFP:

1. Connect the e-STUDIO MFP to the PC via one of the PC's USB ports and power on the MFP.



This will run the `/usr/sbin/estudio_update` script (as root) which:

- Checks for connected MFPs and creates CUPS printer drivers for supported models if they don't already exist.
- Registers the e-STUDIO MFP scanner driver with the installed SANE scanner system.

2. Browse to <http://localhost:631> and click the **Printers** link to confirm that the CUPS printer is present.

### 3.1.2 Sharing the CUPS printer with other Linux PCs

The following is not specific to the Wordcraft Linux printers:

1. Edit both the following files:
  - `/etc/cups/mime.types`
  - `/etc/cups/mime.convs`
2. Delete the “#” character at the start of the following line:
  - `#application/octet-stream`To leave:
  - `application/octet-stream`
3. Save the edited file.

4. When using Red Hat Linux, as noted in <http://preview.tinyurl.com/6xfc6j>, it is also necessary to:
  - Edit (as root user) `/etc/cups/cupsd.conf` file to:
    - Change any “Listen 127.0.0.1:631” or “Listen localhost:631” lines to “Listen \*:631”.
    - Inside the “<Location />” section, change “Allow 127.0.0.1” or “Allow localhost” lines to “Allow @LOCAL”
  - Red Hat changed the integrity of CUPS and how it handles configuration and you may need to disable the cups-config-daemon when running on Red Hat. This is done by entering the following commands in a shell session (terminal) as root user:
    - `chkconfig cups-config-daemon off`
    - `/etc/init.d/cups-config-daemon stop`
5. Restart CUPS either by restarting Linux or using the following command in a shell session (terminal) as root user:
  - `/etc/init.d/cups restart`



You should also configure CUPS to allow connections from remote PCs and set permissions that allow network users to print. By default, Red Hat often only allows local access to CUPS printers.

### 3.1.3 Sharing the CUPS printer with other Windows PCs

Samba Server must be installed on the Linux PC to which the MFP is connected and on which the Wordcraft CUPS printer and SANE scanner drivers have been installed. Then, grant access to the appropriate Windows users via Samba.

### 3.1.4 Sharing the SANE scanner with other Linux and Windows PCs

The Wordcraft e-STUDIO SANE scanner is shared automatically so that it can be accessed from both:

- Linux PCs on the LAN where the Wordcraft CUPS and SANE drivers are installed.
- Windows PCs on the LAN where the Wordcraft e-STUDIO TWAIN network scanner driver from the Viewer V2 CD supplied with the MFP is installed.

## 3.2 On a LAN PC other than where the MFP is connected

### 3.2.1 When the MFP is connected to a PC running Linux

Presuming you have already installed the printer and scanner drivers on the PC to which the MFP is connected elsewhere on the LAN and then shared the printer, follow the instructions below depending on whether the client PC is running a supported version of Linux or Windows.

#### 3.2.1.1 When the remote (client) PC is running Linux

1. Visit [www.wordcraft.com](http://www.wordcraft.com).
2. Click the **Linux** link, this will redirect you to the Linux related Wordcraft International website.
3. Click the **Download** link in the webpage’s menu bar.

4. Click the link to download the appropriate **CUPS and SANE drivers** to the PC where they are to be installed.
5. Either install the downloaded .rpm file using your Linux distribution's Package Manager or open a shell session (terminal) and enter the following command as root user:

- `rpm -ivh e-studio-1.1-4.i386.rpm`

where 'e-studio-1.1-4.i386.rpm' is the name of the downloaded .rpm file.



If you press the TAB key after typing the "e-studio" portion of the filename, Linux will, if the .rpm is stored in the current folder and there are no other similarly named files, complete the filename for you.

6. Configure the CUPS printer.

- **If the MFP is connected to a Linux PC:**

- Browse to <http://localhost:631>
- Click on the **Printers** button/link on the CUPS webpage.
- Click on the **Add printer** button/link on the CUPS webpage.
- Complete the **Name**, **Location** and **Description** fields appropriately and then click on the **Continue** button/link on the CUPS webpage.
- Select **Internet Printing Protocol (http)** device in the **Device** list and then click on the **Continue** button/link on the CUPS webpage.
- Type in **http://###.###.###.###:631/printers/PrinterName** where **###.###.###.###** is the IP address of the Linux PC to which the MFP is connected and **PrinterName** is name the printer on that PC.
- Then click on the **Continue** button/link on the CUPS webpage.
- Select **Wordcraft** from the list of **Makes** and then click on the **Continue** button/link on the CUPS webpage.
- Select the appropriate e-STUDIO model from the **Model** list and then click on the **Continue** or **Add Printer** button/link (depending on the Linux distribution in use) on the CUPS webpage.
- The printer is now created but it may need configuring, via the **Configure Printer** or **Set Printer Options** button/link, to set the correct paper size.

- **If the MFP is connected to a Windows PC:**

- Browse to <http://localhost:631>
- Click on the **Printers** button/link on the CUPS webpage.
- Click on the **Add printer** button/link on the CUPS webpage.
- Complete the **Name**, **Location** and **Description** fields appropriately and then click on the **Continue** button/link on the CUPS webpage.
- Select **Windows printer via SAMBA** from the **Device** list and then click on the **Continue** button/link on the CUPS webpage.
- Type in **smb://###.###.###.###/ShareName** into the **Device URI** field where **###.###.###.###** is the IP address of the Windows PC to which the MFP is connected and **ShareName** is name the printer is shared as on that Windows PC.
- Then click on the **Continue** button/link on the CUPS webpage.

- Select **Wordcraft** from the list of **Makes** and then click on the **Continue** button/link on the CUPS webpage.
- Select the appropriate e-STUDIO model from the **Model** list and then click on the **Continue** or **Add Printer** button/link (depending on the Linux distribution in use) on the CUPS webpage.
- The printer is created but it may need configuring, via the **Configure Printer** button/link, to set the correct paper size.

You will now be able to print using the CUPS printer on the MFP and scan using the SANE driver via SANE compatible Linux applications using the MFP.



Print job status is not shown on Linux client PCs' CUPS webpage, that is they do not appear on <http://localhost:631> on the Linux client PCs.

Print status does appear on the Linux Server PC's CUPS webpage, this can be displayed on the server PC by browsing to <http://localhost:631>. The server's CUPS webpage may, depending on how CUPS has been configured, be viewed on client PCs by browsing to <http://###.###.###.###:631> (where [###.###.###.###](http://###.###.###.###:631) is the IP address of the Linux PC to which the MFP is connected).

Some Linux distributions also provide a **Printers** or **Print Managing** utility that can use used to view the print queue and job status at the client PC.

### 3.2.1.2 When the remote (client) PC is running Windows

#### 3.2.1.2.1 Installing scanner drivers

To scan from a Windows PC using an MFP connected to a Linux PC, follow the instructions in the *Installing the Network Scanner Drivers* section of the *Viewer V2 Operator's Manual* provided on CD with the MFP.

#### 3.2.1.2.2 Installing printer drivers

To print from a Windows PC using an MFP connected to a Linux PC, follow the instructions in the *On other compatible Windows PCs elsewhere on the LAN, Installing Printer Drivers* section of the *Viewer V2 Operator's Manual* provided on CD with the MFP.

Or, if the Linux printer is not listed in the *Browse for Printer* dialog shown during the procedure noted in the *Viewer V2 Operator's Manual*:

1. In Windows Explorer, browse to the Linux server.
2. Right-click on the shared Linux printer and select **Connect**.
3. When prompted to select the printer make and model, click the **Have disk** button and then browse to and select the OEMSETUP.INF file in the \Printer folder on the Viewer V2 CD supplied with the e-STUDIO MFP.
4. Select the Manufacturer and e-STUDIO MFP model and follow the on-screen instructions to complete the printer driver installation.

## 3.3 Firewalls and shared scanning

If you are running a firewall and want to allow users to scan using e-STUDIO MFPs connected to other Linux PCs you must configure the firewalls as follows:

### 3.3.1 Linux Server PC

Where the e-STUDIO MFP is connected, allow:

- Inbound broadcasts from local network on port 3023.
- Inbound UDP connections to port 3023.
- Inbound TCP connections to port 3022.

### 3.3.2 Linux Client PC

Where you wish to scan using an e-STUDIO MFP connected to another PC, allow:

- Inbound UDP connections to port 3022.

## 4 Operation

### 4.1 Printing

#### 4.1.1 Viewing the printer's status

1. Browse to the CUPS webpage:
  - On the PC to which the MFP is connected, browse to <http://localhost:631>
  - On another PC, presuming remote access is permitted, browse to <http://###.###.###.###:631> where ###.###.###.### is the IP address of the PC to which the MFP is connected.
2. Click on the **Manage Printers** link to see the list of installed CUPS printers.
3. Click on the appropriate e-STUDIO printer to see its current status and job list.

Paper out (and other) conditions will be shown here. If an error occurs while printing the job will repeatedly retry until it completes successfully or is cancelled. Thus, if an error is corrected (e.g. paper is replenished), the print automatically resumes. While one print job is being retried in this manner, no other print jobs will be started.

#### 4.1.2 From “The GIMP”

When printing from The GIMP it is necessary to remove the “-oraw” option from the “Command line” used to print from The GIMP to the e-STUDIO as follows:

1. In The GIMP, select the **File, Print** menu.
2. Select the e-STUDIO MFP as the target printer.
3. Click the **Setup Printer** button.
4. In the **Command** field delete the **-oraw** setting.
5. Click the **OK** button.
6. Click either the **Print and Save Settings** or the **Save Settings** button, depending on whether or not you want to print the current image immediately.

#### 4.1.3 Deleting print jobs in CUPS webpage – forbidden

If “client error – forbidden” is reported when you attempt to delete a print job via the CUPS webpage this could be because of a CUPS peculiarity. Try clicking the **Administration** link on the CUPS webpage, entering the root username and password (to confirm to Linux who you are) and then click the **Printers** link and try to delete the job again.

Alternatively, some Linux distributions provide a **Printers** or **Print Managing** utility that can often successfully delete queued print jobs.

## 4.2 Scanning

SANE compatible applications such as XSANE, Kooka, GIMP and OpenOffice.org on the PC to which the MFP is connected can scan using the locally connected e-STUDIO MFP connected and any e-STUDIO MFP connected to other Linux PCs on the LAN where the CUPS printer and SANE scanner drivers have also been installed. They can also scan using any e-STUDIO MFP connected to a Windows PC on the LAN if the Viewer V2 Windows Printer and Scanner drivers are installed there and remote scanning was enabled during installation.

Unlike Windows, where the TWAIN scanner driver provides a single TWAIN dialog that is used by all TWAIN compatible Windows applications, each Linux SANE compatible application creates its own SANE scanner dialog. This approach means that the Linux application's UI looks the same for all scanners but it will probably vary between Linux applications.

SANE provides no mechanism to change capabilities dynamically. Therefore, unlike Windows TWAIN, when paper is inserted into the MFP's document feeder the options shown by a Linux application's SANE dialog will not change to reflect this.

### 4.2.1 Scanner Sources

Depending on the feeder options installed on your e-STUDIO you will see the following options in the e-STUDIO's SANE scanner driver's **Source** option:

#### 4.2.1.1 Flatbed

This option is shown if no automatic document feeder is installed.

The page on the MFP's flatbed/platen is scanned.

#### 4.2.1.2 Flatbed/ADF

This option is shown if either the Automatic Document Feeder [ADF] or Reversible Auto Document Feeder [RADF] are fitted to the connected e-STUDIO MFP.

When selected, pages in the document feeder will be scanned (single sided, even if the RADF is installed). If no pages are present in the document feeder then the page on the MFP's flatbed/platen is scanned.

Also see section 4.2.2 below about scanning multiple pages.

#### 4.2.1.3 RADF

This option is shown if the Reversible Auto Document Feeder [RADF] is fitted to the connected e-STUDIO MFP.

When selected, pages in the document feeder will be scanned doubled sided. Insert pages into the scanner top edge first.

Also see section 4.2.2 below about scanning multiple pages.

### 4.2.2 Scanning Multiple pages

Some versions of the XSANE and Kooka scanning applications can only scan one page at a time. When using such a version, click the **Scan** button quickly after a page is scanned to

retrieve the next page and continue this process until all scanned pages are retrieved. If you do not click the **Scan** button again, or you close the scanning application, all remaining pages in the ADF/RADF will be discarded.



When retrieving multiple pages by repeatedly clicking the **Scan** button any changes made to the contrast, resolution, image type or any other scan settings made after the **Scan** button is first clicked to start the scan process are ignored.

If more than 5 seconds elapse between the MFP SANE scanner driver passing a page's image data to the Linux application (e.g. xsane or GIMP) and the driver receiving the request to scan again then the new scan is treated as a new job rather than as a continuation of the previous job. As such, it may be scanned from an alternate source. This can happen with slow computers that take more than 5 seconds to process each page.

Later versions of the XSANE provide a **Pages** option that can be used to specify the number of pages to be scanned when the **Scan** button is clicked once. If there are more pages (or sides, when scanning using the **RADF** source option) in the document feeder than are requested via the **Pages** option then any excess pages/sides are discarded.

Be aware that some applications, such as GIMP, can only scan single pages at a time.

### 4.2.3 Contrast

The e-STUDIO SANE scanner driver provides 7 contrast settings varying from 0 (lightest) to 6 (darkest) with the default being 3.

## 5 Troubleshooting

### 5.1 Printer not created

If no new e-STUDIO printer is listed, do the following:

- Check that the MFP is supported (see the list in section 2 above).
- Check that the MFP is connected to the PC via one of the PC's USB ports.
- Power the e-STUDIO MFP off and then back on.



This will run the `/usr/sbin/estudio_update` script (as root) which:

- Checks for connected MFPs and creates CUPS printer drivers for supported models if they don't already exist.
  - Registers the e-STUDIO MFP scanner driver with the installed SANE scanner system.
- If no new printer is still created:

- Try adding the following parameter to the Linux kernel's command line and restarting Linux:

- `pci=noacpi`



This has been found to be effective when using Novell SUSE Linux Enterprise Desktop Version 9 and may also allow other USB2 devices to be detected more successfully.

- Power the e-STUDIO MFP off and then back on, to cause Linux to re-run the `/usr/sbin/estudio_update` script as noted above.

## 5.2 Scanning using xscanimage (from The GIMP) on NLD/SLED9

If an error occurs while scanning or initialising the scan link the xscanimage application, which is used by The GIMP to scan images, does not re-enable the **Scan** button. If this happens, close xscanimage and reopen it from The GIMP. Any preview done in xscanimage will be remembered when xscanimage is restarted from the same session of The GIMP.

## 5.3 Scanning with Kooka

Some versions of Kooka do not support A3 paper size and as a result when using these versions of Kooka with the e-STUDIO SANE scanner driver the page size selection will not work properly.

For best results always do a preview scan, and then select a rectangle on the previewed image to define the area that is to be scanned in detail.

Alternatively, when scanning A3/A4, select the next smaller paper size to the size you want to scan.

i.e. to scan A4 select A5, to scan A3 select A4.

## 5.4 USB Modems not working after MFP drivers installed on NLD/SLED9

The CDC\_ACM kernel module on NLD/SLED9 crashes both during Linux shutdown and if the connected e-STUDIO MFP is disconnected/powered-off. To avoid this the CDC\_ACM module is disabled during the installation of the e-STUDIO drivers in NLD/SLED9.

A side effect of disabling the CDC\_ACM kernel module is that USB modems connected to the same PC will no longer function. If you need to use a USB modem connected to a PC running NLD/SLED9 where the e-STUDIO MFP CUPS printer and SANE scanner drivers are also installed then open a shell session (terminal) and enter the following command as root user:

- `/usr/sbin/estudio_cdc_acm enable`

Then reboot NLD/SLED9.



If you do re-enable the CDC\_ACM kernel module remember:

- Do not power-off or disconnect the e-STUDIO MFP while NLD/SLED9 is running on the PC to which the MFP is connected.
- The CDC\_ACM module will probably crash during the Linux shutdown process.

## 6 Uninstallation

To uninstall your e-STUDIO scanner and printer drivers, use the following command on your printer server (where you have the MFP connected) and on your client PCs running Linux.

Open a shell session (terminal) and enter the following command as root user:

- `rpm -e e-studio`

Both your SANE scanner and CUPS printer will be removed from the PC.