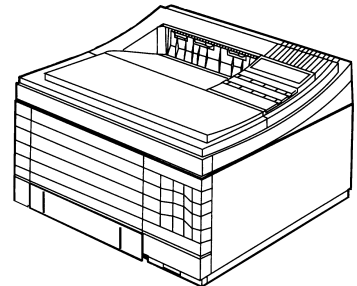
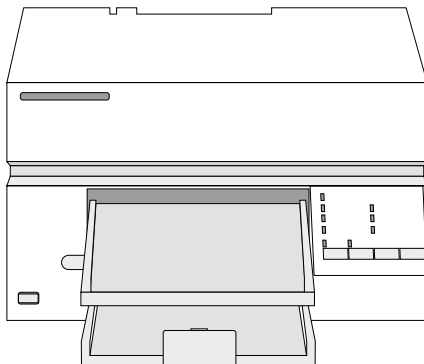


JetPilot

smart printer driver and management



by interpersonal-computing

JetPilot

July 1996

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Refer to the Release Notes supplied with the software for current supported operating system release.

If you use JetPilot on any other hardware than an original NeXT computer, be aware that you would have to purchase an additional Adobe PostScript™ software license on legal matters. This license is not bundled with the HP, Intel or SUN architecture. The price of this license depends on your printer (price and resolution). This license can be purchased from any NeXT reseller or directly from us.

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Offer: interpersonal-computing offers to integrate nearly any popular printer at no extra cost, if you supply us with the printer and the documentation.

Special Thanks: Uwe Meyer-Gruhl and Reimer Mellin - they did a great work with the first basic implementation of JetPilot.

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About JetPilot

JetPilot™ itself is basically a printer driver for non PostScript™ printers on NEXTSTEP™, but it can also be used with PostScript printers because JetPilot brings you some nice features which most PostScript printers don't support.

The main advantage is, that you don't need to supply non-PostScript printers with expensive PostScript units and a lot of RAM because the rendering is done on your machine. This fact brings another advantage compared to real hardware PostScript engines: JetPilot is a piece of software based on the PostScript engine of NEXTSTEP and therefore on the same PostScript Level as your NEXTSTEP system.

The JetPilotManager is the visible frontend to the driver. Though the JetPilot driver must be installed and used only with the NEXTSTEP typical tools, the JetPilotManager adds access to some parameters and features you may find useful for your work with JetPilot printers.

Some sections of the JetPilotManager are:

- customizable printer defaults
- user definable rendering parameters
- valuable printer tips in the online help
- parallel port fixing
- printer accounting
- integrated ordering and licensing

Other sections are still under construction, so if you have suggestions or wishes please let us know. By the way, there is a special part in JetPilotManager, the Reporter, where you can fill out and send suggestions automatically.

JetPilot driver

After we took over the commercial release '94, we decided to increase the list of supported printers, enhance the print quality, extend the printer specific feature support, and reduce the power consumption of the driver. Therefore, we had to rewrite main parts of the driver and make agreements with the largest printer providers. Also, it is our intention to offer a cheap, customer friendly solution, which does its work flawless in the background. After the installation of the JetPilot package, the handling of the printer is totally transparent, so you can install and use JetPilot printers as you would expect it under NEXTSTEP.

support for non PostScript printers

The NEXTSTEP internal PS (PostScript) support allows you to use printers which aren't even offered with a PS unit at all, because any rendering is done within the system.

support for PostScript printers

JetPilot can also be used with PostScript printers because JetPilot brings you some nice features which most PostScript printers don't support.

stable and reliable

If you are annoyed by printer error messages like "PS error" you should choose JetPilot. Error messages like this are caused by incompatible PS CPUs, which are not on the same PS level or do not contain the complete PS set. Whereas JetPilot does the rendering within your system, it is always on the same PS level in which you created your documents. This guarantees that everything which can be displayed can also be printed.

higher quality

Because we can use a generic CPU, we were able to implement several different and more complex algorithms for the rendering. E.g., the Error Diffusion produces a high end output which can even be used for proof printings.

cheaper than any PS unit

No need to discuss this. Just have a look at the PS printers and the same models without PS units.

reduced power consumption

Rendering a 720 dpi, letter sized image in high end quality would need more than 190 MB RAM. As JetPilot is able to split this in smaller pieces, it can be done on any system with just a standard RAM equipment. Even for a simpler printout you will welcome this feature because your system is still available for other tasks during the rendering.

faster than most PS unit

The optimized rendering of NEXTSTEP on your powerful system CPU is in the most cases faster than external PS units. Even the fact that we have to transfer rendered data, which could be more than the PS source doesn't affect the printing time, because we transmit only compressed data.

network printing via standard lpr

If you are sharing printers on a mixed network it is normally a problem to print from a NEXTSTEP System to a non PostScript printer. We have solved this with a special lpr driver which spools the JetPilot output into a standard lpr queue and starts lpd. This way you can use any kind of lpr print server with JetPilot, provided that the target printer is supported by JetPilot.

file printing

Some of our customers asked us, if we can add a feature, so that JetPilot could print to a file instead of the standard devices. We have solved this with a special driver which spools the JetPilot output into a standard file.

DEMO mode

The integrated demo mode allows the instantaneous testing of the driver. With the integrated order system you may even order a free test key to print without any restrictions for a limited time. This is even better than any money back guarantee.

Notice that you first have to turn on the Demo Mode. Switch to the License Section and push the Demo button.

JetPilotManager

For it's second generation we decided to extend the JetPilot driver with an application which offers the user a deeper level of access. Even the normal user now has a tool to alter important system values without knowing how to edit PostScriptPrinterDescription-Files or any NetInfo entries.

customizable printer defaults

The defaults used in your print panel are provided from the printer description file. As editing in this file could break the syntax and may make the options unavailable, this user interface now gives an easy way to change the defaults to your favorite choice and save the changes in the right place. If you print via command line tools or applications like TexView, this is sometimes the only way to make settings like page size or dithering mode (some applications and some of the command line tools didn't offer or just ignore printing options).

user definable rendering parameters

Some rendering defaults could not be changed till this release. Now parameters like page adjustment or the output brightness can be modified by the user.

We are still working on additional inspectors to make further parameters available through JetPilotManager.

parallel port fixing

With NEXTSTEP for Intel Processors the trouble started with incompatible hardware. Now you can access to some important parameters, which allows to make the parallel port stable.

accounting

A special section allows you to view the printer accounting information by many different parameters.

NEXTSTEP Help

The online help won't only tell how to use the manager, but also gives valuable tips about using printers.

DEMO mode

The integrated demo mode allows the instantaneous testing of the driver. With the integrated order system you may even order a free test key to print without any restrictions for a limited time. (This is even better than any money back guarantee.)

Notice that you first have to turn on the Demo Mode. To do this, you only have to switch to the License Section and push the Demo button.

Software Installation

Follow these steps to install the JetPilot driver and Manager from Floppy disks, CD ROM or internet. If you have an earlier release of JetPilot installed, please remove that release first. Don't mix up different JetPilot releases in a network.

The contents of the different distribution media are quite similar:

JetPilotManager.2.0.pkg	Manager application
JetPilotDriver.2.0.pkg	driver and printer types
JPReleaseNotes.2.0.rtf	latest info about this release
JPInstallation.2.0.rtf	Installation guide

If you have an earlier release of JetPilot installed:

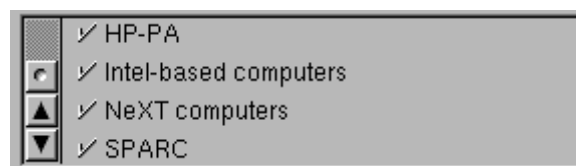
- Delete all earlier JetPilot printers in the PrintManager.app.
- If you still have the empty JetPilot packages in /NextLibrary/Receipts, try to delete the old JP release by opening this package and clicking on the delete button.
- Now check whether all files were deleted:
 - all files with JP prefix in /LocalLibrary/PrinterTypes/...
 - don't forget to look into all language directories
 - delete old JetPilot registration applications
 - if it should still exist, also delete the directory /usr/lib/NextPrinter/Drivers/JetPilot

Now you may start with the installation.

1. Double click on the JetPilotManager.2.0.pkg. The NeXT Installer.app will start and open the package. Now click in the Installer on Install to start. You may choose the directory in which to install the manager, we suggest to put it into /LocalApps.



ATTENTION: If you want to install it for more than one architecture, please select ALL available architectures. Otherwise NEXTSTEP may corrupt binaries due to an OS problem.



2. Now double click on the `JetPilotDriver.2.0.pkg`. Then click in the Installer on Install to start. This software needs to be installed into certain directories, therefore, you have to do this as root.



ATTENTION: Always select only ONE architecture on which to install the driver. Otherwise NEXTSTEP may corrupt binaries due to an OS problem.

3. If you want to connect your printer via network, you now have to configure the TCP/IP interface in the NeXT HostManager.app. See also the chapter HostManager.



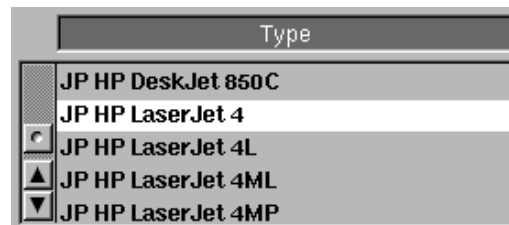
4. Now you may quit the Installer.app and start the NeXT PrintManager.app from `/NextApps`.



Press the button Create in the NeXT PrintManager.



Then select the printer type you want to use (JetPilot printers are those with JP_ prefix)!

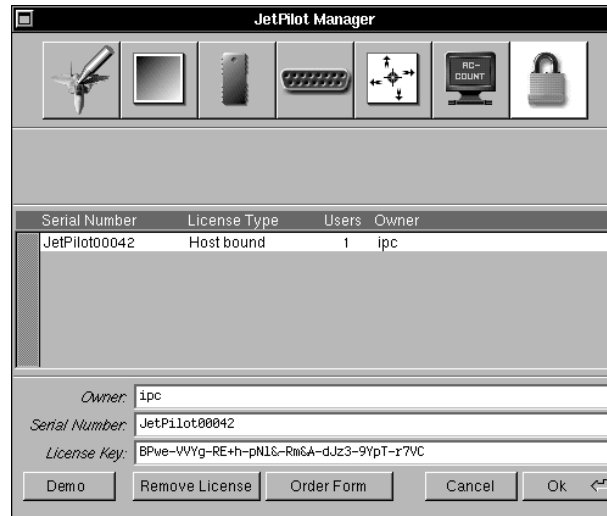


For more info please refer to the NeXT manuals or to the chapter PrintManager.

5. Finally you have to license the JetPilotManager. Start the JetPilotManager by double clicking on its icon. A panel will inform you that it hasn't been licensed yet. Confirm and follow to the license section. There you may enter your license string. Please also refer to the chapter Licensing.

Licensing

The JetPilot license is bound to a certain host. Therefore you may use your license only on one machine, but connect as many printers as you want to that computer. If you don't have write access to the operating system directories, this section may not be accessible.



Demo License

After you have installed JetPilot and have started the JetPilotManager you will be asked to license the software. For a restricted license simply press the Demo button in the license section. You need write access to operating system directories. The restricted demo license will print the word *demo* across all pages. You may order a time limited, unrestricted demo license. Please refer to the manual section Ordering.

Entering License

You will receive a *name*, a *serial number* and a *license string*, which have to be entered in the appropriate fields. When all fields are filled in correctly, you may press OK to write the license. Please make sure that your system date is correct.

Remove License

You may only have one license entered. If want to insert your final license you first have to remove any other license.

TEMPORARY LICENSE

Purchased software packages may contain a TEMPORARY LICENSE. This key enables you to work with the software without any restrictions, except the key will become invalid after one month. You should register and order your free, final key immediately after you installed the software the first time. Simply press the *Order Form* button and refer to the section Registration.

Registration

Register and order your free, final key immediately after you have installed the purchased software for the first time. This is only necessary if we didn't have your host info or you are running on a temporary license.

Order Form

JetPilot	free of charge
Screen Machine II ▾	DEMO
SM II Developer Kit ▾	Order latest
SM II VDOTv ▾	Registration
Movie Machine Pro ▾	
VDorecorder ▾	
JetPilot ▾	

General Info

Send Key Via: EMail:

SW Source: Serial No.:

Hostname: Hostid:

License Owner Info

Company: Dpt:

Name:

Street:

City: Zip: Country:

Phone: Fax:

Payment Method

Card: Expires: / Member EU ☐

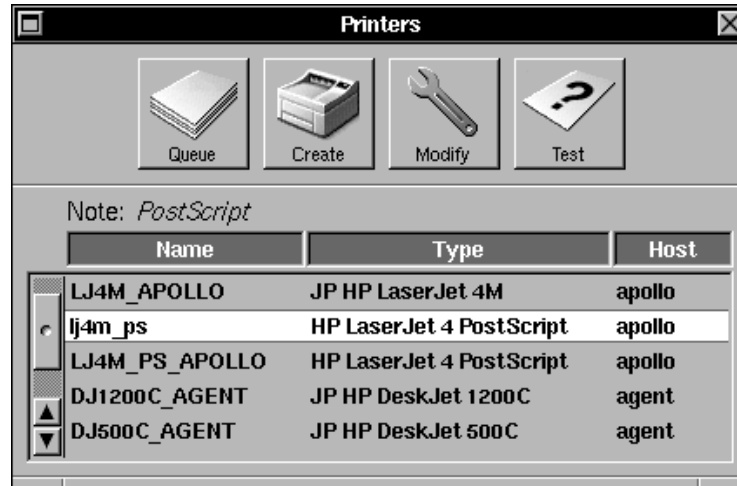
Owner: Number:

- Press the button *Order Form* in the licensing section or select the point [Order Form....] from the [Info] menu to open the above described order panel.
- In the order panel select the product and category (Registration) you want to register.
- Fill in all fields and e-mail, fax or just mail it to us. Your package contains a SERIAL NUMBER. Please fill in this serial number (Jet-Pilot0xxxx) into the appropriate field. This accelerates our check of the legal purchase.
- Don't change any data generated by the system, because we need them to generate the key. We can't accept names like "Donald Duck" or companies like "ACME Inc."

PrintManager

The PrintManager is the official NeXT tool to install and manage printers. You may also control the printer queue, but here we only explain the installation aspect.

You should be logged in on the machine that you want to use as print server. The JetPilotDriver package has to be installed before you can configure your printer within the PrintManager.



Queue

A list of all current running print jobs for the selected printer.

Create

Press to configure a new printer.

Modify

To modify an existing printer. This button is only accessible when you selected the local printer entry, not the network name.

Test

Will print the NeXT test page on the selected printer (boring).

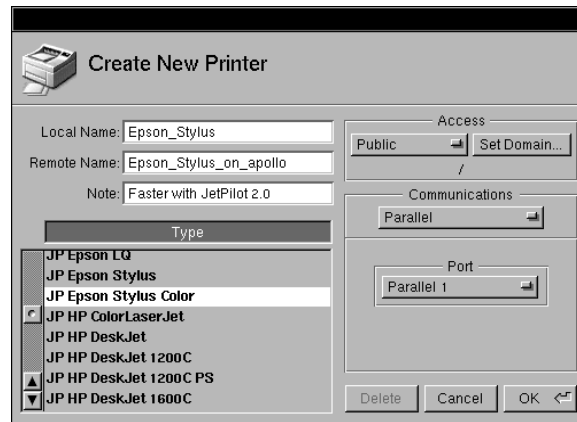
The Browser

The browser displays all printer names, types and hosts. If you are logged in on the machine where a local printer is installed, you may have two entries for one printer (if exported to a network): the local entry and the network name entry.

If you delete the PrinterType from `/LocalLibrary/PrinterTypes`, the entry may not be accessible. Then you have to remove it with the NeXT `NetInfoManager.app` manually.

Install a new printer

1. To install a new printer press the *Create* button. You end up at this window:



2. Choose the printer you want to use or the most similar one from the Type browser. Please use only the entries with the JP prefix.
3. Select whether the printer should be *Private* or *Public* from the Access section. If you want to make it public, you also have to select the appropriate NetInfo domain. Normally it should be the uppermost domain to make it available over the whole network. If you don't know into which domain you want to export the printer, please ask your network administrator.
For stand-alone machines this doesn't make a difference.
4. Choose the port, to which the printer is connected to.
Depending on the printer and your machine it will offer:.

Serial

Choose Port (A or B), Baud Rate (19200 is stable but slow, also maximum for NeXT hardware) and whether to use *Hardware handshaking* or not.

Parallel

Choose Port (1 or 2), most machines do have only one port.

Be aware that this port has to be configured in the Configure.app.

HP JetDirect

Press the button *Select...* to choose a host out of the NetInfo database. This host has to be configured with the HostManager.app beforehand. Please also refer to the chapter HostManager.

IPC lpr

Driver for printers connected to foreign hosts or working with other network interfaces. See section *lpr Printing*

IPCFile

Prints into a file. See section *file Printing*

PCNXL

This Communication class was specially developed by interpersonal-computing GmbH to support printing to the original NeXT Laser printer. So if you use JetPilot to enhance your old NeXT Laser select the PCNXL Communication Class.

5. Now name your child. Choose a *Local Name* and a *Remote Name* (only if exported to a network). You may not use spaces in those name. Also fill in a nice *Note*, like: JetPilot is great...
6. Press OK. (Well, now you are done.)

lpr Printing

If you are sharing printers on a mixed network it is normally a problem to print from a NEXTSTEP System to a non PostScript printer. We have solved this with a special lpr driver which spools the JetPilot output into a standard lpr queue and starts lpd. This way you may use any kind of lpr print server with JetPilot, provided that the target printer is supported by JetPilot.

The trick is that JetPilot is spooling it's output into an lpr queue, instead of sending it directly to a output device. So if you have setup an lpr printer on your mixed network you can print to it and use it from any NEXTSTEP application as a normal PostScript printer. But remember, that this works only if the target print server is NOT a NEXTSTEP system, because the lpr system under NEXTSTEP would try to render the spooled data again.

lpr printer setup :

1. Step

Set the appropriate permissions to allow access to the remote printer. This is usually done by entering the host name of your JetPilot print server in /etc/hosts.lpd on the non-NEXTSTEP print server. If it not already exists, make a printcap entry for the remote printer on the remote system. Maybe you have to create the spooling directory on the remote system also.

2. Step

Log into your JetPilot print server and create a file named something like JetPilotLPR.printcap which has an entry that looks similar to the following:

```
LPRPrinterName|alias\  
:lp=:rm=remotehost:rp=remoteprinter\  
:sd=/usr/spool/NeXT/LPRPrinterName\  
:ty=printertype
```

3. Step

Load the file JetPilotLPR.printcap into your NetInfo domain by entering the following command in a shell window as root:

```
niload printcap <a Netinfo Domain> < JetPilotLPR.printcap  
Make sure that the declared NetInfo Domain is valid for your JetPilot print server.
```

4. Step

Create a spool directory on the JetPilot print server:

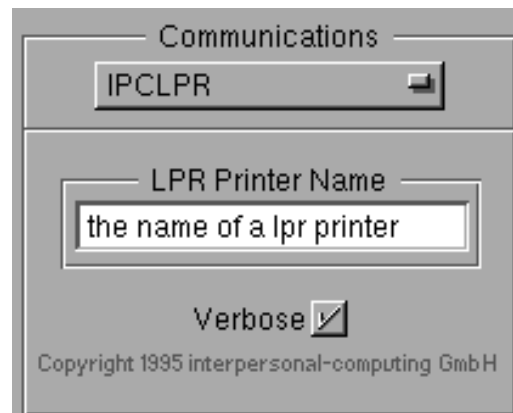
```
cd /usr/spool/NeXT
mkdir LPRPrinterName
chmod -R 770 LPRPrinterName
touch /usr/spool/NeXT/LPRPrinterName/.seq
chmod -R 660 /usr/spool/NeXT/LPRPrinterName/.seq
chown -R root.daemon LPRPrinterName
```

Remember that LPRPrinterName must be equal to the name you have entered into the printcap entry.

Now you have setup an lpr printer for printing from a NEXTSTEP system to a remote printer which is connected to a non-NEXTSTEP system. If the connected printer is a PostScript printer, everything is done, but if the remote printer is a non-PostScript printer, you have to setup JetPilot to render and format the pages, so that the remote non-PostScript printer produce the desired output.

JetPilot Setup for printing via lpr

This part of the setup is really simple, because we have installed a simple Print-Manager interface:



This part of the setup is really simple, because we have installed a simple Print-Manager interface:

Install a JetPilot printer as you would, if the printer would be connected to your local machine (See PrintManager).

The only difference is, that you have to select the IPCLPR Communication Interface where you would normally choose a serial, parallel or JetDirect interface. Now you have to enter the name of the lpr printer into the text field of IPCLPR. This name has to be the same as you have chosen in the lpr printer setup.

file Printing

Some of our customers asked us, if we can add a feature, so that JetPilot could print to a file instead of the standard devices. We have solved this with a special driver which spools the JetPilot output into a standard file.

The trick is that JetPilot is spooling it's output into a file, instead of sending it directly to a output device.

JetPilot Setup for printing into a file

The setup is really simple, because we have installed a simple PrintManager interface:



Install a JetPilot printer as you would, if the printer would be connected to your local machine (See PrintManager).

The only difference is, that you have to select the IPCFile Communication Interface where you would normally choose a serial, parallel or JetDirect interface. Now you have to enter the name of the spooling directory into the text field of IPCFile.

JetPilot will store all output into the specified directory. JetPilot tries to name the files like this:

```
printer name>_<user name>_<printjob name>.jp
```

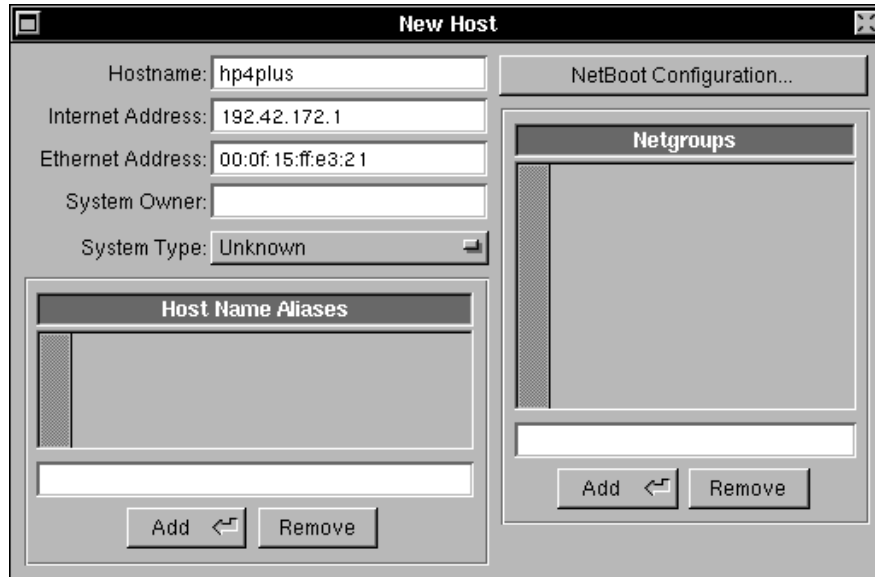
Note:

If you have any problems or made good experiences with our new printing interface and any particular print server system or if you have any suggestions please send us a note (See Reporter). We have added a verbose switch which enables debug outputs into the console. On problems with IPCIpr/IPCFile, switch on the verbose switch and mail us the corresponding statements, you'll find in the console.

HostManager

This NeXT application is to configure or to manage host machines in a network. This needn't to be a computer, but may also be a printer or any other device. Use the HostManager to configure your printer with a HP JetDirect board or the EX box (or any compatible network interface).

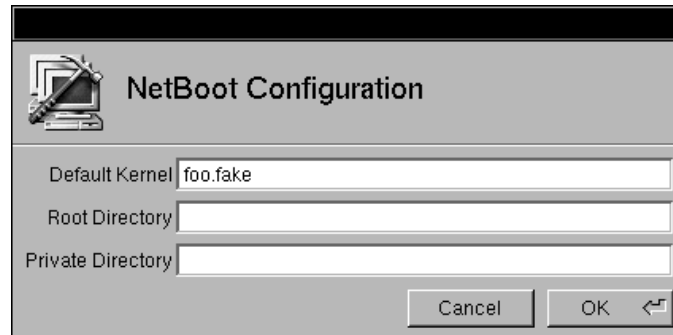
The application can be found in the /NextAdmin directory. If want to learn more than what we will describe here, please refer to the NeXT manuals.



1. Start the HostManager.app by double clicking on its icon.
2. Select New from the Host menu or press [Command]-[n]. Now you will see the above shown window.
3. Fill in a *Hostname*. Try to avoid capital letters.
4. Choose an *Internet Address*. If you have installed your network with the NEXTSTEP tools only, it will suggest a free address automatically. If not, you should consult your system administrator for a free address.
5. *Ethernet Address* is the hardware address of your printer interface. Please refer to your printer or network interface manual. Normally you can get it by doing a printer hardware test.
6. *System Owner* and *System Type* are optional information. You need not to fill in those.
Host Name Alias only is important, if you want to give the same printer different host names (optional).

Netgroups is an additional network management option. (Not necessary.) Please refer to the NeXT manuals for more info.

7. Press the button *NetBoot Configuration* to configure the kernel to be downloaded to the printer.

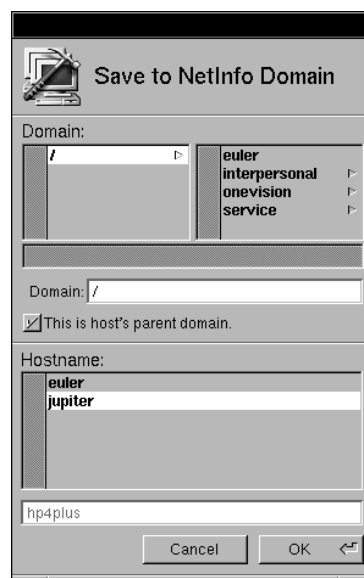


By default NeXT will have mach as *Default Kernel*. Be aware that it doesn't make sense to download the OS kernel to the printer. Indeed we don't need a kernel at all. Therefore, we change mach to something which doesn't exist like foo.fake.

Because we don't run any kernel, we also don't need a *Root Directory* or *Private Directory*.

Return with OK.

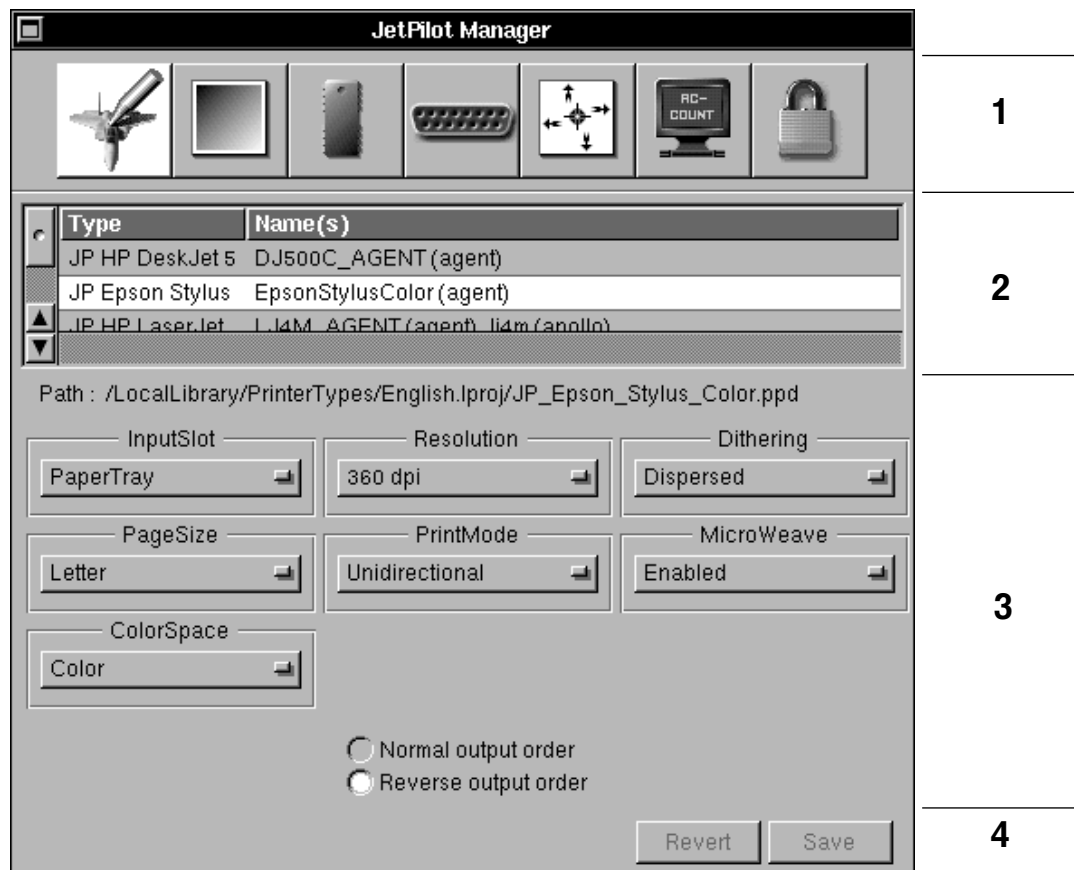
8. Now you're back at the New Host window. All you have to do now is to save it to a NetInfo domain. Normally you save it to the uppermost level, use Save to Domain [Command]-[S] for that. If you are not sure, please consult your system administrator.



That's it. Now you have configured your printer with a HP JetDirect board or the EX box (or any compatible network interface) as new host in your network.

The Main Window

Because there are no inspectors or document windows (except at the accounting), any action starts here.



The main window consists of four parts

- The first part (1) is the button bar. With the button bar you may access the different sections of the JetPilotManager.
- The second one (2) contains, if visible, a list of available JetPilot printers or a subset of them.
- In the middle (3) you will find, depending on the selected section, the control elements.
- The last part (4) contains the *Revert*, the *Save* and sometimes also a *Test* button.

The Button Bar

With the button bar you may access the different sections of the JetPilotManager.



Here you may change the defaults, which appear in the print panel and which are used for the rendering process.



In this section you can change the gamma curve for different settings. This will affect the brightness and the contrast of the printer output.



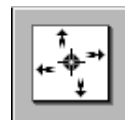
Here you will see important values of your system. Based on this information, you may set up the maximum portion of RAM available for rendering at one time.



We set up some default parameters for the parallel port communication. If your printouts come to slow or printing sometimes breaks after a few pages, change these values.



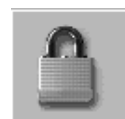
In this section you may adjust your printouts. The default settings for your printer should be right, but sometimes a little tuning may be necessary.



A special feature of the JetPilotManager is the possibility of viewing the printer accounting. This could be useful to keep track of such things as who printed how many pages.

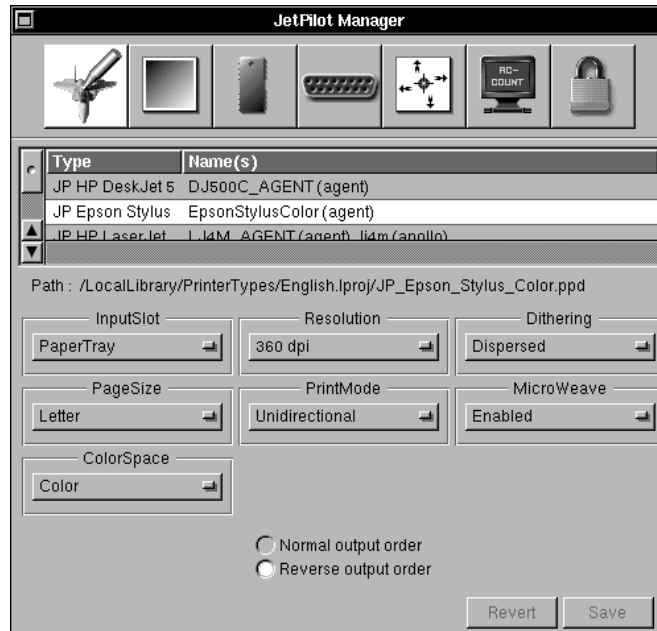


You will access this view only to enter a license string or enable the demo mode.



Printer Defaults

Here you may change the defaults, which appear in the print panel and are used for the rendering. These changes will then be saved into the specific ppd file.



Browser

The browser in the upper part of this section contains a selection of available JetPilot printers already installed on your system/network. As the defaults are only stored once in the .ppd files located in `/LocalLibrary/PrinterTypes/<YourLanguage>/JP_<YourPrinter>` they can only be changed for one printer type. So notice that, if you are working on a network and `/LocalLibrary` is a shared directory, you can change defaults for a specific type of printer only network wide. Therefore, each printer type appears only once in the browser list, with a note about the connected hosts (in brackets).

Note

JetPilotManager only supports Printer Types located in `/LocalLibrary/PrinterTypes`.

Path

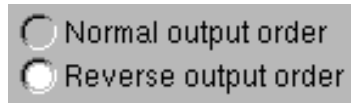
The line below the browser informs you about the file which will be modified.

Popups

The middle section contains the control elements normally found in the option subview of the print panel or the print panel itself.

Output Order

Here you may also decide about the output order of a multiple page document.



Save & Revert

If you change one of the Popups, the Save and the Revert button will be enabled. Of course you may only save the new defaults if you have write access to the `/LocalLibrary/PrinterTypes` and it's subdirectories.



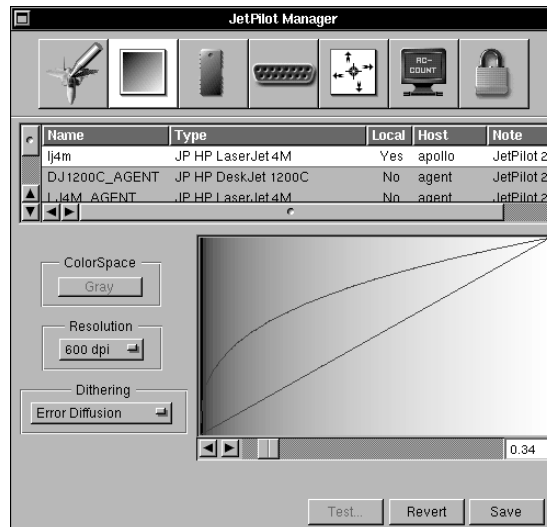
Most of the options are accessible through the standard Print panel and some options like Page Size are set automatically by most of the applications. (Some applications like TeXView don't set the Page Size so this is the only way to set it.)

Note

If you want to make use of the saved defaults within a running application, you first have to restart it.

Gamma Setup

In this section you may change the gamma transfer curve for the different settings. This will effect the brightness and the contrast of the output. As different ink or toner on a different printer look different, you may use other values.

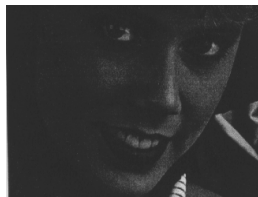


The browser contains **one** entry for each installed printer on the network. This information is retrieved from the uppermost NetInfo domain. You may only select printers from hosts which are **currently running**, because any data beside the browser information is stored in the local machine domains. If you want to save the values you need to have **write access** or an appropriate local domain password.

JetPilot uses different Gamma values for different rendering parameters. The Gamma value may differ for combinations of:

- Color Space
- Resolution
- Dithering

For example, if you think that every color printout you made at 300 dpi with ErrorDiffusion was to dark, then decrease that particular Gamma value. Default Gamma value is normally 1.0.



Gamma 1.5 - too dark

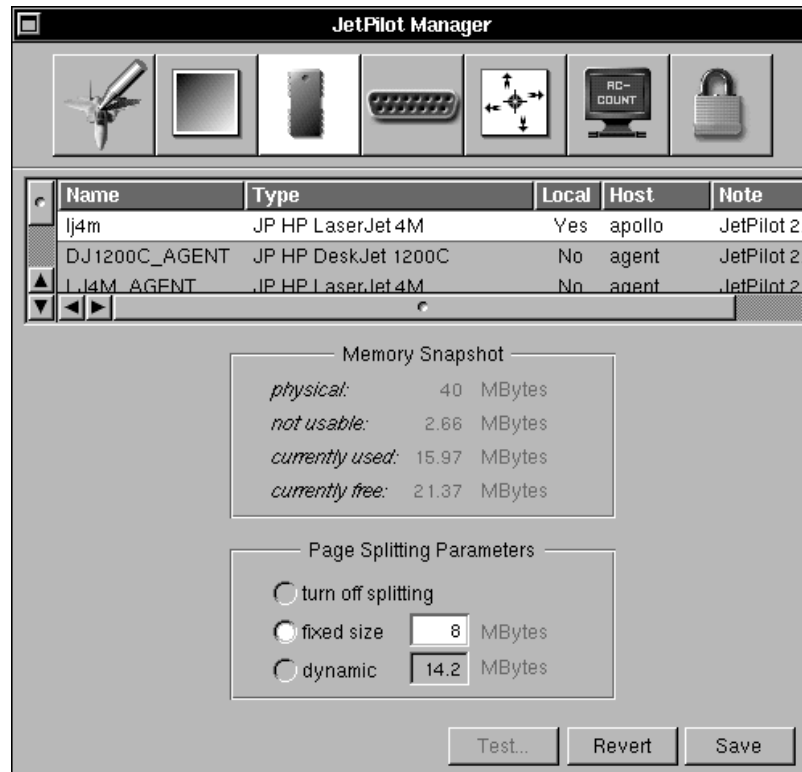


Gamma 0.3 - just fine

Page Splitting Setup

Rendering a 300 dpi color page with high quality and error diffusion takes about 30 MB of RAM. If this memory is allocated in one step, your machine will hang and run on a horrible performance during the print process. If JetPilot renders this page in several steps, we can reduce the amount of real memory needed, which will improve your work during the print process.

Here you may set up how much real memory JetPilot may use.



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Memory Snapshot

Just to give you an idea about what is really going on in your machine. If you use JetPilotManager on a network, you have to start JetPilotManager on that machine, which acts as printserver for the selected printers (or NXHost it).

The Memory Snapshot is requested and displayed dynamically.

- **physical**
real RAM in that machine
- **not usable**
memory hardwired to certain processes,
can't be used, won't be swapped
- **currently used**
memory used by active processes and applications
- **currently free**
memory marked as unused or soon be free

Page Splitting Parameters

Here you may decide whether and which splitting parameters should be used. The Memory Snapshot may give you an idea about how much you may use.

- **turn off splitting**
With this option JetPilot will allocate the whole memory needed in just one step. Should only be selected if:
 - you have a dedicated print server
 - your print server has enough RAM
 - you only need b&w printing
- **fixed size**
You assign JetPilot a certain amount of memory (should be less than currently free from the Memory Snapshot). If JetPilot now has to render a printout it will split the printout in pieces, each of the given size.
- **dynamic**
JetPilot will decide on his own how much memory it will use. The amount of memory JetPilot currently would use is displayed in the text field on the right (only available if Memory Snapshot is available).

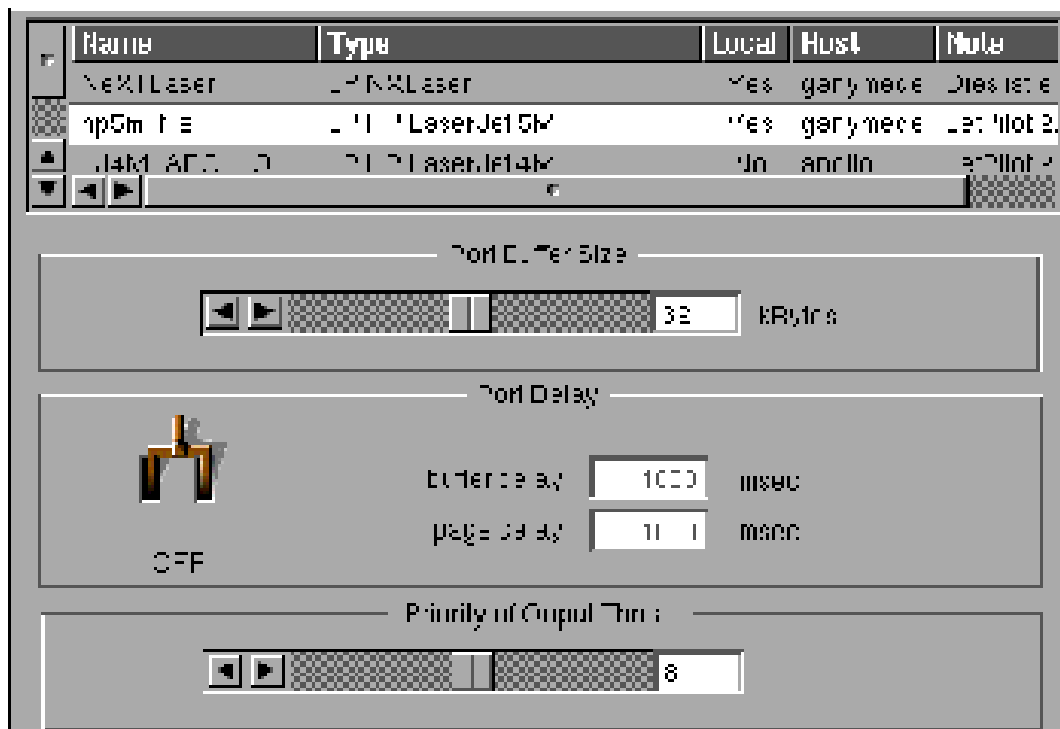
Port Setup

With NEXTSTEP on non-NeXT hardware the never ending story of incompatible hardware began. This section might be useful for different parallel port hardware and the NeXT parallel port driver. All printers are used in the graphics mode, if only one important byte gets lost, the printer switches back to ASCII.

You should only use the delays, if your printer sometimes stops printing normally after some pages and starts to print nonsense (looks like gray noise). If your printer is only equipped with a small buffer, it is sometimes useful to set a port buffer size of 32 kByte and set the delay to 0, because your printer will print much faster this way.

If your printer sometimes stops printing in the middle of the page adjust the buffersize, decrease or better turn off the buffer delay and if you have a very small splitting threshold increase that too. If you want to use a very small splitting threshold it is better to have a very small buffersize (like 1 or 2 kBytes).

This problem occurs on some systems when page splitting is enabled. The problem is that some printers get a time-out while JetPilot is rendering the next split and doesn't send anything to the printer. To solve this problem we have threaded JetPilot (parallel rendering & sending). Have in mind, that the threaded output is only involved when a buffer was assigned.



The browser contains **one** entry for each installed printer on the network. This information is retrieved from the uppermost NetInfo domain. You may only select printers from hosts which are **currently running**, because any data beside the browser information is stored in the local machine domains. If you want to save the values you need to have **write access** or an appropriate local domain password.

buffer size

Here you may set the size of the buffer used in kilobytes. A good value seems to be 32 kByte. Otherwise, it should be equal to or larger than the real buffer size of your printer. If the buffer size is greater 0 the output to the port will be handled threaded. This feature is very important if you are using page splitting.

Power Switch - OFF

Turns on or off customizable port delays.

buffer delay

The time in msec (1/1000 sec) between buffer fill-ups. As one page may consist of many buffers, this value should not be too large or printouts will take too long. This value should only effect serialized printers (not serial port) like InkJet printers. You should start with 100 ms and increase it if a problems occur.

page delay

Similar to the buffer delay, but only between pages. As this buffer only has an effect between pages, it may be larger. This delay let's the printer do what ever he has do between pages (eject paper etc.).

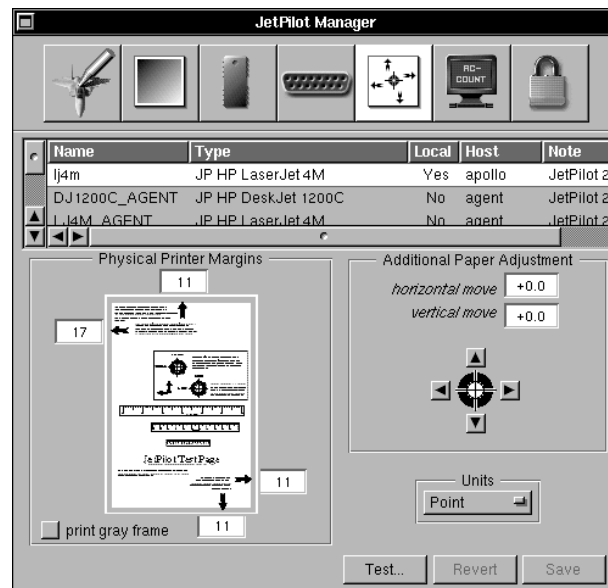
output thread priority

Here you may set the priority of the output threads. Default priority is 8. Remember, that this only effects the output threads, so you have to specify a port buffer which is greater zero.

Page Setup

In this section you can set the page positioning and offset. Be sure to install the printer in the PrintManager.app first.

The first step is to setup up the printer margins, then correct the centering if necessary. On the test page we do have three different rulers (cm/inch/points) you may cut and use. We recommend to use the points ruler.



The browser contains **one** entry for each installed printer on the network. This information is retrieved from the uppermost NetInfo domain. You may only select printers from hosts which are **currently running**, because any data beside the browser information is stored in the local machine domains. If you want to save the values you need to have **write access** or an appropriate local domain password.

Physical Printer Margins

In this section you should set border areas, which the printer can't reach. It is also to tell the driver how large the printable area is, because some printers would use a second page for just a line of points if this setup is not made correctly. The top and left values do have an offset effect, whereas the bottom and the right values have a cropping (cutting) effect.

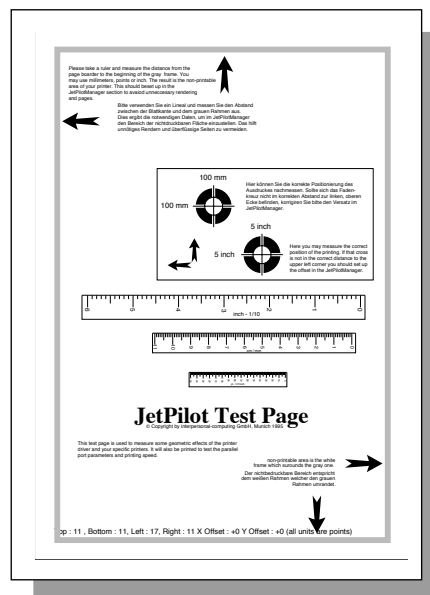
- Select the correct page size in the [Document] -> [Page Layout... P] menu.
- Check the option print gray frame and press the Test... button or click print in the main menu [Command][p].
- Select in the printer panel the printer you want to set up (the currently selected printer is the default).

- What you receive is a page with a gray boarder and several marks on it.
- Now you should cut the ruler printed in the center of the page to measure the white gap between page boarder and the gray frame.
- Now fill in the corresponding fields in the Printer Margins section.
- Be sure to use the same ruler as you set up with the Units PopUp.

Additional Paper Adjustment

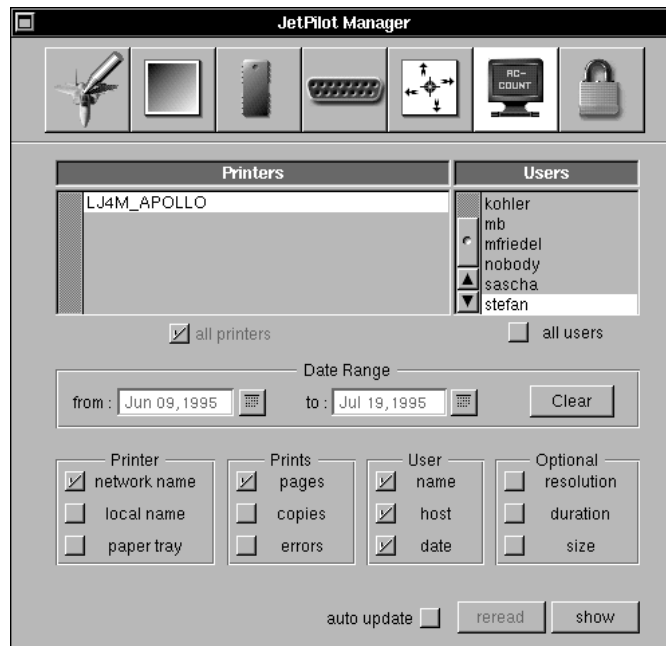
Use this section only after you setup the margins and if the page offset is still not correct.

- Select the correct page size in the [Document] -> [Page Layout... P] menu.
- Print a test page by clicking the Test... button or choosing print in the main menu [Command][p].
- Now use the printed rulers (you should cut them first) to measure the offset to the center marks. You may either use the mark for 100 mm or 5 inches.
- Then correct the offset by entering the values into the horizontal or vertical move fields, or use the arrow buttons around the center mark in the user interface.
- Be aware that these values are absolute values. If you should need to make further corrections on a second or for further test prints, these values have to be added.



Accounting

Ever wanted to know how many pages you printed? Or who used all the ink from your color printer? Well, have a look at the JetPilot accounting tables. For each printout JetPilot records several values into the accounting file (/usr/adm/JetPilot.accounting).



Printers

Here you find a list of used JetPilot printers on this machine. You may also select more than one printer. If you check the button all printers the accounting table will sum the information of all printers on that machine.

Users

This is a list of all users who printed on that machine. You may also select more than one user. If you check the button all users the accounting table will sum the information of all users.

Date Range

The accounting table will be limited to the given date range. By default it is the earliest date listed in the accounting file and the last date. If you click on the button right of the text fields you get a calendar panel and can select the desired date.

Clear

Removes irreversibly all entries from the accounting file in the given date range.

Display Options

Here you may select different values to be displayed in the accounting table.

Printer

- *network name* printer name used in the network
- *local name* printer name used on the local machine
- *paper tray* lists the paper tray used for each print

Prints

- *pages* sum of printed pages (=copies x pag. of document)
- *copies* copies of the same document
- *errors* e.g. if a print was stopped

User

- *name* users name
- *host* host, from which was printed
- *date* date and time of the print

Optional

- *resolution* resolution used for certain print
- *duration* duration in seconds for each print
- *size* document size

auto update

will automatically update all open accounting tables.

reread

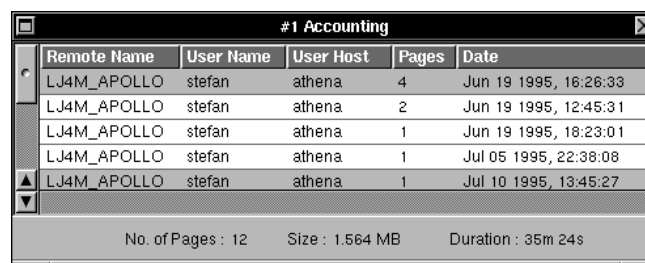
updates the currently opened accounting tables.

show

opens an accounting table with the selected options.

Accounting Table

The Table will sum the number of listed pages, size and the complete time. You may click on the column title and drag to it any position. The table will resort itself starting with the first column.



Remote Name	User Name	User Host	Pages	Date
LJ4M_APOLLO	stefan	athena	4	Jun 19 1995, 16:26:33
LJ4M_APOLLO	stefan	athena	2	Jun 19 1995, 12:45:31
LJ4M_APOLLO	stefan	athena	1	Jun 19 1995, 18:23:01
LJ4M_APOLLO	stefan	athena	1	Jul 05 1995, 22:38:08
LJ4M_APOLLO	stefan	athena	1	Jul 10 1995, 13:45:27

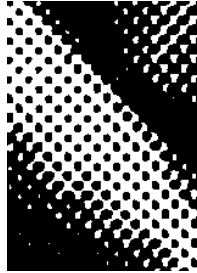
No. of Pages : 12 Size : 1.564 MB Duration : 35m 24s

Dithering Options

One advantage of JetPilot is the choice between different dithering options. Here the different methods are described.

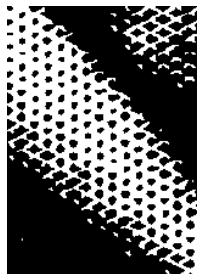
Clustered Dithering

Commonly used, sometimes also called spot function because it is based on regular distributed spots, it is normally the quickest to render and absolutely sufficient for text.



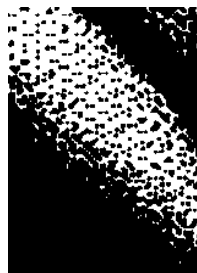
Dispersed Dithering

This dithering is similar to the clustered dithering, but better for images and one colored planes. This rendering should be used for mixed pages, text and graphic. It is not too time intensive.



Error Diffusion

An unique feature of JetPilot. Here the minimal spots are distributed on the basis of a random function. Though it is great for images with many gray-scales or colors in it, it may look rough for large planes of the same tint. As this rendering is time intensive, you should use it only when necessary. To reduced the power consumption use the splitting option.



JetPilot printer options

Some background information about all selectable printer feature.

GENERAL FEATURES

InputSlot

choose paper tray: [PaperTray], [Manual Feed], [Envelope Feed], [Lower Cassette], [MultiPurpose], [Optional Cassette]. The possible values depend on your printer.

Resolution

resolution in dots per inch: [75...720] lower values raise speed and decrease quality. The possible values depend on you printer.

ColorSpace

color mode used for printout: [Grey], [Color] if possible.

Dithering

Dithering mode used for print out: [Dispersed], [Clustered] and [ErrorDiffusion].

Dispersed and Clustered Dithering are both quick and don't need that much memory for rendering. The results depend on the printed page. Sometimes it's better to take Clustered Dithering and sometimes it's better to take Dispersed Dithering.

The ErrorDiffusion mode renders great results but can take a long time and either a lot of memory or swap space. It really doesn't make sense to render a text document with ErrorDiffusion.

PRINTER SPECIFIC FEATURES

HP_DESKJET FEATURES

Shingling

overlapped printed lines: [None], [25%], [50%] better quality is achieved by overprinting at the expense of speed

Depletion

reduces ink consumption: [None], [25%], [50%] This feature goes hand in hand with Shingling because shingling automatically produces a darker printout.

PrintQuality

hardware supported high speed (lower quality) or top quality mode [Draft], [Letter]

MediaType

Most of the DeskJet's supports different Media Types: [PlainPaper], [Bond-Paper], [PremierPaper], [GlossyFilm] and [TransparencyFilm]. This option is useful, because each of these different Media Types needs a different amount of ink. Especially films take offence at too much ink, cause they can't absorb it.

HP_LASERJET FEATURES**RETTM**

(Resolution Enhancement Technology) a hardware supported print mode which improves printout appearance by smoothing lines and curves: [Default], [LIGHT], [MEDIUM], [DARK] and [OFF]. Notice that not all Laser-Jet printers support this feature.

EPSON STYLUS FEATURES**MicroWeave**

hardware supported print mode which improves printout appearance by reducing banding (lasts longer).

Trouble Shooting

Just in case you have trouble while printing with JetPilot.

Empty Pages

Sometimes white or empty pages won't be printed. Well some lasers are too smart ...

Adobe Illustrator TM

AI ignores most/all settings. Send it to Preview instead and print it from there.

Virtuoso TM

Virtuoso does its own color management. If you print an image or graphic from Virtuoso, it may look different than you might be used to. Sometimes *page splitting* makes problems while printing from Virtuoso.

Ejects too many papers

If your printer ejects a second page with nothing on it, you have to increase the settings for top or bottom paper margins of your printer. Especially Epson line printers take offence at wrong settings. See Page Setup.

Printing nonsense after a few lines or pages

If your printer sometimes starts to print nonsense (looks like gray noise) after some pages/lines, and if your printer is connected via parallel port, use the Port Setup to fix.

Printing is too slow

If the printing on a printer, which is equipped with a small buffer, is very slow and you are using this printer via parallel port, you should set a port buffer of 36 kByte and no delay. This happens typically on normal DeskJets, BubbleJets or other line printers. See also Port Setup.

Printer doesn't print

NEXTSTEP doesn't initialize ports with printers off-line connected. Turn the printer on (and go online) before rebooting the system.

Printing with command line tools doesn't work

If you print via command line tools like lpr and you enabled Page Splitting, some kinds of files can not be printed with JetPilot. We have tested file types like ps and tex and made them work, but we couldn't fix ASCII support via lpr. If you want to print ASCII files from the command line, use `enscript` first or turn off Page Splitting. So, if you have any trouble while printing from command line, simply turn off Page Splitting and your problems should be solved.

Misplaced Positioning

Wrong paper adjustment. Please refer to the Page Setup chapter.

Printouts are too dark or too bright

If your printouts are too dark or too bright refer to Gamma Setup.

If you use a Stylus Color printer you should remember one thing:

When printing with 720 dpi turn on Economy Mode. Otherwise, 100% color will produce too much ink on the paper. Sorry, there is no way to do that directly from JetPilot, so you have to push the button.

System seems to be dead while printing

If you print large formats or color, especially with Error Diffusion selected, and your system hangs and runs on a horrible performance during the print process, turn on Page Splitting.

Printing stops after some pages/lines

If your printer sometimes stops to print after some pages/lines, check if you have enabled page splitting. If it's turned on, make sure that you have assigned JetPilot a port buffer. This can be done at the *Port Setup*. The problem is that some printers get a time-out while JetPilot is rendering the next split and doesn't send anything to the printer. To solve this problem we have threaded JetPilot, so that a special thread is writing parallel to the rendering process. But remember that the threaded output is only involved if a buffer is assigned!

PrintServer stops printing

Start JetPilotManager as root and hit Reset PrintServer in the Printer menu.

Printer doesn't print or prints very slow via parallel port

Some Intel motherboard has an advanced power management option. When enabled, it conflicts with the Next 3.3 parallel port driver. Turning off the advanced power management option fixes the parallel port problem.

Some Plug & Play systems doesn't work proper with Next 3.3 parallel port driver. You have to enable the correct Interrupt via Config.app to solve such problems.

Printouts looks vertically compressed

If your printouts looks vertically compressed and you are using a HP LaserJet compatible printer, please try the special driver:

JP_HP_LaserJet_Special.

System seems to be dead while printing

If you print large formats or color, especially with Error Diffusion selected, and your system hangs and runs on a horrible performance during the print process, turn on Page Splitting.

The License panel doesn't come up.

This happens if you forgot to install the JetPilot.pkg

Couldn't access a JetDirect or any other printing box

Most of the printing boxes like JetDirect gets the IP settings when you turn them on via bootpd protocol. Under NEXTSTEP you have to make an host entry into NetInfo (see HostManager). We found out, that some boxes doesn't like a few settings which the NEXTSTEP bootpd tries to send. So if you couldn't /etc/ping the printserver box, open the Netinfo entry via NetInfoManager and remove the entries for serves, bootparams and bootfile from the host entry.

Any unknown problems with JetPilot

If you have any problems which couldn't be solved through this help, please contact us. If possible please use our reporter tool.

Tips & Tricks

Just some useful hints and background information.

Multiple Copies

If you have to print several copies of the same page or document, you might prefer a multiple copies feature.

This means that the machine wouldn't render the same page x times, but renders it only once and then transmits it as often as needed. On page-printers (laser printers) we even don't transmit a second time, but turn on the copy feature in the printer itself.

Due to the fact that this part of the print handling is done by NEXTSTEP, you have to make sure that the print server handles copies correctly.

E.g., pages aren't sent in the order 1-2-3..1-2-3 but 1-1..2-2..3-3

Also, some applications don't generate x separate jobs, but rather one job and set it to x copies. (except Preview ...)

Type this in a terminal: (/NextApps/Terminal.app)

```
dwrite GLOBAL NXMustPrintCollated NO
```

Each user has to do this, as it is written into the users database.

Empty Pages

Sometimes white or empty pages won't be printed. Well some lasers are too smart ...

Speed-up printing via parallel port

If your printer is equipped only with a small buffer, it's sometimes useful to set a port buffer size of 36 kByte and set the delay to 0 msec. Your printer will print much faster this way.

Paper Tray

NEXTSTEP inserts the Paper Feed option Any Tray, though it doesn't really exist. This option will print from the printers default paper tray (whatever you have set up) or from the default you select in the Printer Defaults section of JetPilot. As this option is added at run time, you can't set it as default yourself.

Speed up PostScript printers

Use JetPilot. Why? Because JetPilot can make use out of all system resources (RAM, fast CPU, harddisk), in most cases even several times more than you have in your PS-printer. Because we are using a data compression, we are sometimes even able to reduce the amount of data to be transmitted to the printer.

NEXTSTEP 3.0, 3.1

We discontinued the support for versions of NEXTSTEP older than 3.2. If you really need drivers for the 3.0 or 3.1 release, please contact us.

EPSON Stylus Color

If you use a Stylus Color printer, you should remember one thing: when printing with 720 dpi, turn on Economy Mode. Otherwise, 100% color will produce too much ink on the paper. Sorry there is no way to do that directly from JetPilot, so you have to push the button.

Adobe Illustrator TM

AI ignores most/all settings. Send it to Preview instead and print it from there.

Virtuoso TM

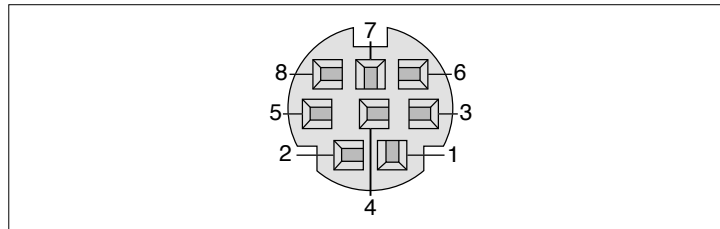
Virtuoso does its own color management. If you print an image or graphic from Virtuoso, it may look different than you might be used to.

TCP/IP vs. parallel port

What is quicker. We found out that it doesn't make a difference in speed. With TCP/IP you may place your printer wherever you want, and it seems that the power consumption during the data transfer is less with TCP/IP.

NeXT serial cable

This plan should help you to build up a printer cable for the serial port of the NeXT 68040 machines. Don't use Apple cables.



MiniDIN-8 (NeXT)

Pin	Signal
1	DTR
2	DCD*
3	TXD
4	GND
5	RXD
6	RTS
7	RTXC
8	CTS*

RS-232 (printer DB25)

Pin	Signal
8	DCD*
4	RTS
3	RxD
7	GND
2	TxD
5	CTS*
	not connected
20	DTR

Pins marked * are ignored on DeskJets and may be left unconnected.

NOTE

The MiniDIN on the EPSON Stylus Color 720 is especially for Apple computers and hard wired to a certain baud rate. This baud rate is too fast for NeXT machines, it won't work!

WITHOUT ANY WARRANTY

JetPilot supported printers

This is a list with supported printers (without warranty). You may freely test any other printer with this driver; simply choose the printer type which is next to the options your printer supports. Then switch the printer to a HP DeskJet emulation or Epson emulation. If you discover some compatible printers please let us know.

NeXTLaser	Yes the original NeXT Laser printer
Canon_BJ	most Canon Ink Jet printers
Canon_BJ_Color	most Canon Ink Jet Color printers
Canon_BJ-10sx	portable Canon Ink Jet
Canon_BJC4000	Canon BJC4000 printer
Canon_BJC70	Canon BJC70 printer
Canon_BJC800	Canon BJC800 printer
Canon_BJC610	Canon BJC610 printer
HP_DeskJet	DeskJet Classic
HP_DeskJetPlus	DeskJet Plus
HP_DeskJet_310	portable DeskJet 310 mono
HP_DeskJet_310C	portable DeskJet 310 with color option
HP_DeskJet_320	portable DeskJet 320 mono
HP_DeskJet_320C	portable DeskJet 320 with color option
HP_DeskJet_340	portable DeskJet 340 mono
HP_DeskJet_340C	portable DeskJet 340 with color option
HP_DeskJet_500	DeskJet 500 mono
HP_DeskJet_500C	DeskJet 500C color
HP_DeskJet_510	DeskJet 510 mono
HP_DeskJet_520	DeskJet 520 mono
HP_DeskJet_540	DeskJet 540 mono
HP_DeskJet_540C	DeskJet 540 with color option
HP_DeskJet_550C	DeskJet 550C color
HP_DeskJet_560C	DeskJet 560C color
HP_DeskJet_600	DeskJet 600 mono
HP_DeskJet_600C	DeskJet 600 with color option
HP_DeskJet_660C	DeskJet 660C color
HP_DeskJet_680C	DeskJet 680C color
HP_DeskJet_820C	DeskJet 820C color
HP_DeskJet_850C	DeskJet 850C color
HP_DeskJet_1200C	DeskJet 1200C color
HP_DeskJet_1200C_PS	DeskJet 1200C color PostScript
HP_DeskJet_1600C	DeskJet 1600C color
HP_DeskJet_1600C_PS	DeskJet 1600C color PostScript

Epson_LQ	EPSON LQ driver
Epson_EscP/2	most Pin Writers (not only EPSON)
Epson_LQ150	EPSON LQ 150 driver
Epson_LQ300	EPSON LQ 300 driver
Epson_Stylus300	EPSON Stylus 300 driver
Epson_Stylus400	EPSON Stylus 400 driver
Epson_Stylus800	EPSON Stylus 800 driver
Epson_Stylus800plus	EPSON Stylus 800+ driver
Epson_Stylus1000	EPSON Stylus 1000 driver
Epson_StylusColor	EPSON Stylus Color 720 dpi
Epson_StylusColor II	EPSON Stylus Color II 720 dpi
Epson_StylusColor IIs	EPSON Stylus Color IIs 360 dpi
Epson_StylusColorPro	EPSON Stylus Color Pro 720 dpi
Epson_StylusColorProXL	EPSON Stylus Color Pro XL 720 dpi
HP_LaserJet	LaserJet Classic
HP_LaserJetII	LaserJet II
HP_LaserJetIIP	LaserJet IIP
HP_LaserJetIII	LaserJet III
HP_LaserJetIIIP	LaserJet IIIP
HP_LaserJet_4	LaserJet 4
HP_LaserJet_4Plus	LaserJet 4 plus
HP_LaserJet_4L	LaserJet 4L
HP_LaserJet_4M	LaserJet 4 PostScript
HP_LaserJet_4MPlus	LaserJet 4 plus PostScript
HP_LaserJet_4ML	LaserJet 4L PostScript
HP_LaserJet_4MP	LaserJet 4p PostScript
HP_LaserJet_4P	LaserJet 4p
HP_LaserJet_4Si	LaserJet 4Si
HP_LaserJet_4MSi	LaserJet 4Si PostScript
HP_LaserJet_4V	LaserJet 4V (DIN A3)
HP_LaserJet_4MV	LaserJet 4V PostScript
HP_LaserJet_5	LaserJet 5
HP_LaserJet_5L	LaserJet 5L
HP_LaserJet_5M	LaserJet 5M
HP_LaserJet_5MP	LaserJet 5MP
HP_LaserJet_5N	LaserJet 5N
HP_LaserJet_5P	LaserJet 5P
HP_LaserJet_5Si	LaserJet 5Si
HP_LaserJet_5SiMX	LaserJet 5SiMX
HP_ColorLaserJet	ColorLaserJet